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FEATURES

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- Baltic Focus
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VIGAN Engineering S.A.
Rue de l'Industrie, 16
BE – 1400 Nivelles
Belgium
T: + 32 67 89 50 41
F: + 32 67 89 50 60
E: info@vigan.com
W: www.vigan.com

PUBLISHERS
Jason Chinnock
jason@dc-int.com
Andrew Hucker-Brown
andrew@dc-int.com

EDITORIAL
Louise Dodds-Ely Editor
louise@dc-int.com
Jay Venter Deputy Editor
editorial@dc-int.com
Samantha Smith Directories
directories@dc-int.com
Stephanie Hodgkins Office Manager
accounts@dc-int.com

SALES
Lourens van Emmenis Sales Director
sales@dc-int.com
Matthew Currin Senior Sales Executive
sales2@dc-int.com

CORRESPONDENTS
Brazil **Patrick Knight**
Canada **Ray Dykes**
India **Kunal Bose**
Asia **David Hayes**
Europe **Barry Cross**
Malaysia **Wira Sulaiman**
Philippines **Fred Pundol**
South Africa **Iain McIntosh**
Thailand **David Turner**
UK **Maria Cappuccio**
UK **Michael King**
UK **Richard Scott**
USA **Colby Haines**
USA **Walter Mitchell**

ADMINISTRATIVE OFFICE
Business Publishing International
Corporate House, 11 Sinembe Crescent
La Lucia Ridge, South Africa, 4051
Tel: +27 31 583 4360
Fax: +27 31 566 4502
Email: info@dc-int.com

HEAD OFFICE
Trade Publishing International Limited
Clover House, 24 Drury Road,
Colchester, Essex CO2 7UX, UK
Tel: +44 (0)1206 562560
Fax: +44 (0)1206 562566
Email: info@dc-int.com
Website: www.dc-int.com
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NOVEMBER 2014 issue

featuring...

Coal trade growth puzzle

Several factors shaping global import demand for commodities have become more difficult to predict. Potential for negative effects is evident. Prominent uncertainties are China's economic slowdown, the changing dynamics of coal imports into China, and a weaker outlook in the eurozone economy. But there are still many signs of growth in world seaborne dry bulk trade movements.

The latest (October 2014) IMF assessment of the global economy revealed a more cautious view on prospects for the period ahead. Emphasizing an uneven recovery (which has disappointed in the past few years) continuing, forecasts of economic activity were revised downwards again. In 2014 world GDP growth is now estimated at 3.3%, no better than seen last year, followed by a modest improvement to 3.8% next year.

Coal

Confidence in a positive outlook for coal trade has begun to recede. Within the dominant steam coal sector, although Asian imports may increase this year (as shown in table 1), the global total may be flat or lower. Reduced imports into Europe could prevent any overall advance.

A downbeat quarterly forecast, published recently by Australia's Bureau of Resources & Energy Economics, suggested that world steam coal trade (including land movements, but mostly seaborne) could decline by 19mt (million tonnes) or 2% in 2014, to 1053mt, followed by only a 1% increase next year. Sharply lower EU imports are predicted, together with only modest growth in China and India. Other forecasters are more optimistic about Indian coal purchases.

Iron ore

One commodity trade, the largest individual import element, has not been lacking in impetus this year. Many predictions of future growth remain bullish. China's iron ore imports are still rising at an impressively rapid pace and there are solid reasons for expecting further advances, perhaps over several years. During the first nine months of 2014, iron ore imports into China rose by 98mt to almost 700mt, a 16% increase compared with last year's same period. This performance was even more remarkable in comparison with steel production, which rose by 2% (although that figure may be revised upwards). Ore imports, prices of which have fallen, continue to gain market share, displacing higher cost and lower quality material produced by Chinese domestic mines.

Grain

Good grain harvests in a number of importing countries have adversely affected prospects for global trade in wheat and coarse grains over the twelve months ahead. Despite a boost from lower international prices, numerous importers probably will not need to raise their purchases.

Large recent summer harvests and abundant availability of supplies in Europe and China seem set to be reflected in lower import requirements. Imports of wheat, plus corn and other coarse grains into the EU, during crop year 2014/15 ending June 2015, could fall by 24% to 15.3mt based on International Grains Council estimates. China's imports could fall by 33%, to 12.5mt, while North Africa's volume may be 9% lower at 39.0mt.

Minor bulks

Various agricultural products and related commodities used in crop production form a significant part of minor bulk seaborne trade. A total of over 300mt consists of oilseeds and meal, rice, sugar, plus fertilizers. While prospects for individual commodities are not all uniform, an overall upwards trend seems to be continuing.

Bulk carrier fleet

Among bulk carrier size groups, the largest segment, comprising Capesize ships of 100,000 deadweight tonnes and over, is estimated to grow by 4–5% in 2014. As shown in table 2, newbuilding deliveries probably will be below last year's level in the current year, but scrapping also seems likely to diminish. This fleet, which now exceeds 300m dwt, represents about two-fifths of the entire world bulk carrier fleet, and orderbook schedules indicate more substantial growth in 2015.

TABLE 1: STEAM COAL IMPORTS IN KEY ASIAN COUNTRIES (MILLION TONNES)

	2009	2010	2011	2012	2013	2014*
Japan	96.2	107.9	106.6	113.7	114.5	115.0
South Korea	87.0	95.2	103.2	98.9	100.1	101.0
Taiwan	49.2	53.2	56.0	55.2	57.1	58.5
China	92.1	119.0	138.4	181.5	192.0	198.0
India	58.3	74.5	92.7	123.4	144.1	160.0
Total of above	**382.8**	**449.8**	**496.9**	**572.7**	**607.8**	**632.5**

source: various & BSA estimates **BSA forecast*

TABLE 2: CAPESIZE (100,000DWT & OVER) BULK CARRIER FLEET (MILLION DEADWEIGHT TONNES)

	2009	2010	2011	2012	2013	2014*
Newbuilding deliveries	21.0	38.6	45.6	41.9	22.1	19.0
Scrapping (sales)	1.4	2.7	10.5	11.7	8.1	6.0
Losses	0.0	0.2	0.0	0.0	0.2	0.0
Plus/minus adjustments	6.8	4.1	4.8	-0.2	0.0	0.0
Fleet at end of year	**170.2**	**210.1**	**250.0**	**280.0**	**293.8**	**306.8**
% change from previous year-end	+18.6	+23.0	+19.0	+12.0	+4.9	+4.4

source: Clarksons (historical data) & BSA 2014 forecasts **BSA forecast*

by Richard Scott, Bulk Shipping Analysis, Tel: +44 (0)12 7722 5784; Fax: +44 (0)12 7722 5784; e-mail: bulkshipan@aol.com

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Global fertilizer outlook

Maria Cappuccio

In its latest review of the global economy, the International Monetary Fund (IMF) confirmed that prospects had deteriorated since the beginning of the year. The path of economic recovery 'weak and uneven' was reflected in downward forecasts for global growth, at 3.3% for 2014 and 3.8% for 2015; the IMF also noted that, in some countries like the US, Sweden, Norway and the UK, economic recovery was solid, but in Japan the outlook poor and in the Eurozone, the probability of a further recession, likely. The IMF expects the vast majority of global growth is still to come from emerging markets. Economists remain pessimistic, downgrading estimates for China, Brazil and Russia, amongst others, hit by local, political or economic difficulties, while urging countries to provide a plan combining financial stimulus and structural reform to deal with the legacy of the financial crisis and the challenges of low-growth but tailored to suit individual economies. Reflecting growing economic uncertainty, global equity markets tumbled in mid-October, as investors sought safety in government bonds — some stock analysts link the current 'commodity crash' to the unexpected slowing of global growth, pointing to the downward assessments for growth in a number of advanced and emerging economies.

Abundant grain and oilseed harvest to set new record

Excellent global crop prospects for cereals and oilseeds forecast by the UN's Food and Agricultural Organization (FAO) to

GLOBAL FERTILIZER USE

1961–2018/19mt nutrients

Year	Nitrogen	Phosphate	Potash	Total
1961/2	11.6	10.9	8.7	31.2
1970/1	31.8	21.1	16.4	69.3
1980/1	60.8	31.7	24.2	116.7
1990/1	77.6	36.0	24.6	137.8
2000/1	81.2	32.5	21.9	135.6
2001/2	82.9	33.4	23.0	139.3
2002/3	85.1	34.1	24.7	143.9
2003/4	87.1	35.2	25.5	147.8
2004/5	90.2	37.5	25.6	154.7
2005/6	93.2	37.0	26.3	156.5
2006/7	97.4	38.1	26.9	162.4
2007/8	100.5	38.4	28.9	167.9
2008/9	97.7	33.7	23.4	154.8
2009/10	102.2	37.6	23.7	163.5
2010/11	104.1	40.6	27.5	172.3
2011/12	107.9	41.4	28.0	177.2
2012/13	108.8	41.1	28.7	178.6
2013/14e	112.2	41.7	30.2	184.0
2014/15f	114.3	42.6	31.0	187.9
2018/19f	119.8	46.2	34.2	200.3

Source: International Fertilizer Association

FERTILIZER PRICES $ PER TONNE FOB 2009–2014

	2014 Oct Wk2 $	2013 Oct Wk2 $	2012 Oct Wk2 $	2011 Oct Wk2 $	2010 Oct Wk2 $	2009 Oct Wk2 $
Urea						
Baltic	310	273	425	490	340	295
Persian Gulf	—	—	460	502	360	210
Ammonia						
Yuzhny	—	410	650	640	415	295
Tampa CFR	650	490	715	650	465	330
Middle East		—	705	—	—	—
Ammonium sulphate						
FSU		—	220	—	—	—
Di-ammonium phosphate						
North Africa			573	677	573	
US Gulf	413	373	—	635	570	480
China		—	—	—	—	—
Triple Super phosphate						
North Africa	—	—	485	565	460[1]	—
Muriate of potash						
Baltic	—	—	—	—	—	—
Vancouver	310	345	490	590	420	490

Source: Bloomberg, FarmFutures, Fertilizer Week, Fertilizer Market Bulletin, Profercy/1 Monthly average—Sept

increase to a new record just shy of 3Bn/t in 2014, better than last year, and, some 200mt (million tonnes) above the drought-hit 2012 harvest have, since the summer, contributed to weaker grain and oilseed prices, that are expected to remain weak for the rest of this year and much of 2015. The FAO confirmed that the global food price index fell again in August for the sixth consecutive month, the longest period of continuous decline since the late 1990s.

FAO HIGHLIGHTS THE SIGNIFICANT ROLE OF FAMILY AND SMALLHOLDER FARMERS

Feeding a growing global population without increasing the stress on the Earth's finite land and water resources promotes fervent discussion on the best way to make improvements to the global food system. This year, FAO's World Food Day event is focused on "Feeding the world, caring for the earth" — chosen to raise the profile of family farming and smallholder farmers, and the significant role they play in providing food and employment, while managing resources and protecting the environment, especially in rural areas. Contributing to the discussion, a report entitled *Leverage points for improving global food security and the environment* by researchers at the University of Minnesota's Institute on the Environment, found that by focusing on a few specific regions, crops and actions, had the potential to, not only meet the basic food needs of 3Bn more people, but also to reduce agriculture's environmental footprint.

FERTILIZER DEMAND STALLS AS CROP PRICES FALL TO MULTI-YEAR LOWS

The International Fertilizer Association's (IFA) assessment of the global fertilizer sector, earlier in the year, forecast a relatively positive outlook for 2014/15, based on declining but still fairly attractive prices for cereals and oilseeds, overall demand seen rising to 188mt with an increase for potash, phosphate and more modest demand for nitrogen; with demand expected to rebound in North America, with continuous growth in all other regions, and rates above 3% in Africa, South Asia and Latin America, the exception being Oceania. But since the summer demand for fertilizers was negatively affected by global economic uncertainty, huge harvests boosting stockpiles and resulting in steep price falls, at a time when fertilizer margins were pressured, due to higher operating costs, slower demand, growing supplies of nutrients and Chinese overproduction of phosphate and urea.

Longer term, the fundamentals for agriculture-growing population, dietary changes in the emerging nations, the impact of weather dynamics on food production-remain valid, the IFA forecast fertilizer demand, to rise to over 200mt by 2018/19, indicating a progressive slowdown of nitrogen, driven by efficiency gains in advanced and emerging economies, while

CEREALS AND OILSEEDS – PRODUCTION, USE & STOCKS 2013–2014/15 MT

	Prod 13/14	Prod 14/15	Use 13/14	Use 14/15	Stocks 13/14	Stocks 14/15
Wheat	715	721	705	714	186	193
Coarse grains	1278	1272	1237	1256	210	226
Rice	477	476	476	482	111	104
Total Cereals	2460	2469	2417	2452	507	523
Oilseeds	505	528	436*	454*	80	104

*Source: USDA-mainly harvested Jul-Dec/ *oilseed meal/oil consumption*

GLOBAL NITROGEN SUPPLY/DEMAND 2014–2018 MT N

Fertilizer	2014	2015	2016	2017	2018
Nitrogen capacity	178.4	187.0	193.8	199.7	201.5
Nitrogen supply*	152.8	159.6	165.8	172.1	176.5
Nitrogen demand	147.8	152.1	155.5	158.4	161.2
Fertilizer use	113.4	115.7	117.0	118.2	119.5
Nitrogen balance	**5.0**	**7.5**	**10.3**	**13.7**	**15.3**
% of supply	**3%**	**5%**	**6%**	**8%**	**9%**

*Source: IFA-data N/t basis * effective capacity derived by capacity x by the highest achievable operating rate*

GLOBAL UREA SUPPLY/DEMAND 2014–2018 MT UREA PRODUCT

Fertilizer	2014	2015	2016	2017	2018
Urea capacity	212.2	224.6	237.1	244.3	244.9
Urea supply	188.2	195.8	204.7	211.4	216.0
Urea demand	179.8	188.3	193.7	198.1	202.5
Fertilizer use	149.1	153.7	154.5	157.6	159.5
Urea balance	**8.4**	**7.5**	**11.0**	**13.3**	**13.5**
% of supply	**4%**	**4%**	**5%**	**6%**	**6%**

Source: IFA-data M/t urea basis

demand for phosphate and potash would continue to expand. The highest growth rates are forecast in Latin America — where land is expanding steadily — followed by Africa; while in Asia although demand is expected to fall in China, as nitrogen and phosphate fertilizer reach a plateau, scope for improvement in India depends on a better subsidy regime in place and in West Asia due to a better political outlook.

Reports indicate US growers to cut-back on fall application

Since June global cereal and oilseed prices have fallen dramatically due to a record global harvest of cereals and oilseeds. This year's corn harvest is forecast at over 991mt — and includes a huge US crop of 368mt — with yields of 174.3mt, more than beating expectations-boosting global supplies and weighing on international prices. CBOT futures prices for corn (Dec) contract fell from over $4.58/bu in June to $3.43/bu (Oct 20). While the IFA and analysts from major fertilizer companies, forecast a greater uptake of potash to replenish nutrient-depleted soils in the US this year and again next year, preliminary reports indicate that a number of US growers are cutting back on spreading fertilizer this autumn in response to, the fall in crop prices to multi-year lows, a delayed harvest and tight 2015 budgets-encouraging much greater scrutiny of costly items like fertilizer, seed and rent.

Nutrient prices mostly to decline in 2015

Fertilizer prices are mostly expected to decline in 2015 — phosphate rock and potash to decline by almost 25% in 2015, urea to average a fall of over 6% while TSP and DAP to make moderate gains. According to Rabobank, seasonal fertilizer demand from China, India and the US is unlikely to cause any prolonged rise in prices-bearish commodity prices to impact farmers decision to cut-back fertilizer applications; with demand also affected by record-low monsoons in India, a weakening euro

CEREAL EXPORT PRICES US $ FOB PER TONNE 2008–2013

	2014 Oct Wk2 $	2013 Oct Wk2 $	2012 Oct Wk2 $	2011 Oct Wk2 $	2010 Oct Wk2 $
US Wheat No 2 HRW	**289**	**327**	**368**	**294**	**298**
Corn No 3 Yellow (Gulf)	184	211	316	279	254
Sorghum (Nola)	229	233	311	262	—
Soybean No 2	410	515	581	488	476
Argentina (up river)					
Wheat	—	—	300*	—	—
Corn	—	—	294*	—	—
Soybean	414	527	584	491	473
Thailand B (Bangkok)	438	415	563	—	—
Rice White 100% 2nd grade	—	—	618*	616	497
Rice Broken A1 super	—	—	497*	—	—

*Source: FAO IGC USDA— Prices are based on indicative quotations. Necochea Port Jan/Feb1 *Monthly average—Sept*

and resistance to higher prices in the EU, lower estimates for Brazilian soybean acreage and weather concerns, while in the US-farm equity has risen significantly putting growers in a position to get the money they need for inputs-logistics seen as the big challenge as the demand for rail and barge service is increasing.

Global wheat plantings to rise in 2015

Global wheat plantings for 2015 were tentatively forecast by the IGC, 2.3% higher at 225.4m/ha (million hectares) driven by firm futures prices. Wheat sowings in the EU are taking place on a larger area forecast up 24m/ha under generally favourable conditions, at the expense of other coarse grain and oilseed plantings. Strategie Grains cautioned that weather conditions may affect planting prospects. In Russia, wet weather in the middle Volga region and in some regions of Central Russia may limit plantings and reduce the winter sown planted area by 3m/ha to 13m/ha. Conditions in the UK are satisfactory and the winter cereal area may increase; while in Asia, planting, of mainly wheat is underway in China, India and Pakistan.

Squeezed margins support smaller soya plantings

While local crop forecasters expect the area planted to soya in Brazil to rise by around 5% to 75m–79m/acres, with production of 89mt-96mt, Oil World has cut its forecast for the Brazilian harvest by 3mt to 89mt due to a difficult start to sowings. Conab, Brazil's official agency estimate the soya crop at 89–92mt, but 5mt below USDA's (US Department of Agriculture) current estimate of 94mt. In some areas north of Mato Grosso soybean prices have fallen to $7.90/bu for March delivery, below the cost of production $8.63/bu. Slow forward selling of last year's crop-just 10% of soybeans compared to a more typical 25–30%, as farmers hoard dollar-denominated assets; the possibility of sales concentrated around harvest time implies unusually strong harvest pressure on prices. CBOT November soybean contract saw prices fall from $12.44/bu (Jun 26'14) to $9.44bu (12.48pm 20 October 2014).

Oil world also estimate that Argentine sowings for 2014/15 may fall by 200,000ha to 19.6m/ha, that compares, with an estimate from USDA staff in Buenos Aires of plantings of 21m/ha, due to profit margins being squeezed. The fall in international prices, rising costs and weaker peso encouraged growers to hoard dollar-denominated assets like soybeans — using silo bags to increase on-farm storage; estimates suggest that 40–45% of last year's crop is still unsold — with fertilizers and herbicides for the current crop being bought on a hand-to-mouth basis. Argentine farmers rely on leased land for some 60% of the soybean area so delays help to lock-into falling land-rent.

Corn seed demand drops as soya seed doubles

Monsanto's seed sales rose in the June-August period boosted by sales in the agricultural division, especially soya seeds, which more than doubled, including the launch of Intacta, the genetically modified seed, in Latin America; while those of corn seed dropped in the last quarter, as US growers cut corn acres in favour of soybeans for the harvest underway.

Yara and CF Industries fail to agree terms

The US development of shale gas and tar sands has

GLOBAL POTASH SUPPLY/DEMAND 2014-2018 MT K_20

Fertilizer	2014	2015	2016	2017	2018
Potash capacity	50.5	54.7	56.7	60.3	60.7
Potash supply	43.6	45.2	46.9	49.7	51.4
Potash demand	34.6	35.5	36.4	37.3	38.3
Fertilizer use	30.8	31.6	32.4	33.2	34.0
Potash balance	**8.9**	**9.7**	**10.6**	**12.4**	**13.2**
% of supply	**21%**	**21%**	**22%**	**25%**	**26%**

Source: IFA-Data K_20/t basis

GLOBAL PHOSPHORIC ACID SUPPLY/DEMAND 2014-2018 MT P_20_5

Fertilizer	2014	2015	2016	2017	2018
Phosphoric acid capacity	55.6	57.7	58.6	60.4	61.5
Phosphoric acid supply	46.7	48.1	49.3	50.8	52.0
Phosphoric acid demand	43.8	44.9	45.8	46.8	47.7
Fertilizer use	37.3	38.2	39.0	39.7	40.5
Phosphoric acid balance	**2.9**	**3.2**	**3.5**	**4.0**	**4.3**
% of supply	**6%**	**7%**	**7%**	**8%**	**8%**

Source: IFA-Data P_20_5 tonnes basis

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revolutionized the energy sector resulting in lower natural gas prices in the US, which is having an impact on the global fertilizer industry; during the last two years, there has been a surge of announcements of new plant capacity in the US — access to cheap gas supplies significantly reducing production costs for nitrogen based fertilizers. Recently Norway's Yara, the world's largest nitrogen producer, and Chicago-based CF Industries held talks to consider merging the two companies. But despite identifying 'significant' operating and financial synergies, the discussions ended when both parties failed to agree on terms that met the requirements of their respective shareholders.

CF concluded that a proposed all-stock merger, would have given the two companies a 50:50 ownership, that did not adequately reflect the value of CF's significant near-term capacity expansions.

With global nitrogen capacity rising, the IFA forecasts supply to increase by almost 24mt N through 2018, almost twice as fast as demand at 13mt N (fertilizer 6mt N, industrial 7mt N), and to grow in East Asia (9mt N — especially non-fertilizer use), South Asia (3mt N), Latin America (2mt N) and in other regions by 0.4–1.0mt N, increasing the nitrogen surplus to over 15mt N by 2018. Credit Suisse forecast global nitrogen supply and demand would grow at similar rates of 2% a year.

The IFA, forecast ammonia capacity to grow by 16% to 245mt NH3 by 2018, with large increases expected in East Asia, Nigeria, Western Asia, Latin America, with global seaborne ammonia to reach 19mt, or possibly lower, depending on the integration of new downstream capacity. The significant increase in potential ammonia capacity in the US would increase capacity by over 25%, well above the IFA forecast by 2018, and a key concern for would-be investors, although many of the plants announced are expected to be cancelled due to labour, construction and or financing issues.

Ammonia prices unlikely to soften soon

Fresh from leading the failed merger discussions with CF Industries, Torgeir Kvidal, newly appointed CEO for Yara, forecast continued and robust demand for nitrogen fertilizers with deliveries significantly up in key markets including Europe, US and Brazil, with prices to remain volatile as traders deal with rising Chinese supplies of urea; however ammonia prices have bucked the trend, underpinned by supply chain disruptions in Trinidad, Tobago and the Ukraine — where exports out of the Black Sea are restrained — Russia and Ukraine failed to reach agreement on restarting natural gas deliveries, but output from the Caribbean may improve in the coming season. Typically, prices fall in winter on slowing demand, but prices in the key Tampa market for ammonia are at $640/t, with Black Sea origin at $530/t. Credit Suisse expect prices to moderate averaging $527/t in the Tampa market, and may outperform, due to the threat to Black Sea exports, but not until the end of the US autumn sowing period.

Urea capacity expansion driven by rising industrial use

With 60 new units planned, urea capacity is expected to increase to almost 245mt by 2018; overall demand, according to the IFA, is expected to rise by almost 23mt (fertilizer 10.4mt, industrial 12.3mt) to over 203mt, notably in East and South Asia (25 units located in China) and Latin America; rising industrial use in East Asia is expected to contribute two-thirds of the demand growth-leading to a urea surplus of over 13mt by 2018.

Urea prices expected to fall further in 2015

Prices of granular urea have continued to fall to $310/t at the Gulf (Oct 22); reduced demand from the US and Brazil have softened the market, which typically moves lower into early November. Small quantities have been booked at $350/t FOB (free on board) Egypt (Oct 24); with supply constraints from major exporting origins no longer an issue, attention is focused on future demand-concerns remain, that low crop prices could keep the market soft, longer than usual-uptake in Europe remains low as distributors appear unwilling to hold stock with farmers reluctant to buy.

Overproduction of urea in China led to large exports, supported by the government's decision to relax export taxes and the supply disruptions in Eastern Europe and the Middle East–North Africa region, that more than doubled by July to 5.3mt and following huge sales to India in September, could rise to a record 9mt by the end of the year. India continues to rely heavily on imported urea as production fundamentals in the country remain constrained.

Rising Chinese domestic demand for urea and lower supplies available, following large export sales, saw prices edge higher with restrictions limiting exports at the main ports in China. Asking prices for prilled urea have moved above $290/t FOB

China, with significant demand to come from India (further tender expected in November) and Pakistan supporting higher levels. Commodity broker Macquarie forecasts that higher prices seen this year are due to supply disruptions and that going forward weak supply/demand fundamentals will see, first urea, then ammonia prices fall and marks both urea and ammonia as bearish for the next five years.

Global potassium capacity is forecast to rise to almost 61mt K_20, with the largest increase expected to occur in North America (Canada), the EECA (Russia, Belarus) and East Asia (China); with supply to increase to over 51mt K_20, with potash demand expected to rise modestly by 3.7mt K_20 (fertilizer 3.2mt other 0.5) to over 38mt K_20 by 2018, leaving a potential surplus, depending on the rate of growth, of 13.2mt K_20 by 2018.

Global potash shipments forecast to rise to 60mt

PotashCorp confirmed it had strong sales to US buyers, driven by the need to replenish potash levels following back-to-back record harvests of corn and soybeans and increased sales to other major markets with Canpotex, the export consortium owned by PotashCorp, Mosaic and Agrium, fully committed with China driving some of the renewed potash demand. PotashCorp's CEO Jochem Tilk, noted "improved potash pricing trends" too. The group sold its potash for an average of $281/t (Jul-Sept) above the $263/t (April-June) period. Strong demand coupled with seasonal maintenance and outages, is expected to keep potash supply tight for the remainder of the year, with shipments expected to rise to 58–60mt in 2014.

Strong grain prices in China support potash demand

Domestic prices in China have reportedly strengthened due to robust demand for potash from NPK manufacturers and local producers facing rail constraints, boosting additional ocean shipments. Chinese potash consumption is forecast at 12mt ahead of North America 8mt and Brazil 8.5mt in 2014, driven primarily by rising domestic food requirements and strong prices for key grains such as corn — Dalian Futures Exchange, Jan '15 corn contract, Yuan 2336 ($381.73 — Oct 23) — and, when compared with the price of fertilizer, the ratio is 1.2:1, well above levels at the time of the last financial crisis in 2008. Elsewhere in Asia potash demand is said to be relatively stable, growth driven by increased application and a shift to potassium-intensive crops such as oil palm, sugar cane, fruits and vegetables. Indian fertilizer sales have picked up but rates are still well below the recommended norm.

Rising supply prospects and weak crop prices, likely to cap potash prices

With supply potential increasing-North America-Agrium's Vanscoy mine, PotashCorp, K+S legacy, and in Russia- Eurochem- at a time when weak crop values are most likely to constrain demand; the decline in prices of oilseeds in particular likely to cap demand in Brazil, a potential growth area for potash. Currently, Uralkali has a contract to supply China with 700,000 tonnes of potash at $305p/t on a CIF (cost, insurance, freight) basis and is seeking a 10% increase in the price for a new contract in 2015. Uralkali expects once Chinese contract negotiations for potash supply, seen as the industry benchmark, are concluded in January, this will stimulate growth, and forecasts global potash shipments to rise by 2mt to 60mt.

Credit Suisse saw a 'slight' rise in the price of potash, and forecast shipments of 56mt, lower than both PotashCorp and Uralkali, while other analysts took a cautious view on prices, seeing little scope for Brazil to increase shipments on the back of much lower commodity prices, especially oilseeds, likely to cap demand and the large quantities of potash imported earlier in the year; while a 10% increase in the potash price for China was less unlikely, in North America, tighter granular potash markets may provide some price support in the US market.

Phosphoric acid capacity to expand

Phosphate rock supply is expected to grow by 40mt to 258mt in 2018, with Morocco, China and Saudi Arabia responsible for almost two-thirds of the increase. The steep fall in prices last year saw phosphate rock at $100/t (Dec 2013) but prices have since increased to $120/t (Sept 30). The IFA forecast phosphoric acid capacity to rise to 61.5mt P_20_5 by 2018, with large additions in Morocco, Saudi Arabia, China and Brazil and global supply increased to 52mt P_20_5, and expected to outstrip demand by 4.3mt P_20_5 leading to an 8% surplus by 2018. While global capacity of the main processed phosphate fertilizers would grow by 5.1mt P_20_5 to 47.7mt P_20_5, of the 22 units planned, seven units in China, seven units in Morocco and Saudi Arabia, DAP capacity is expected to account for 80% of the increase.

Mosaic output hit by falling prices and strong ammonia costs

Supply challenges and strong demand in several key importing regions early on resulted in a tighter than anticipated phosphate market. Markets softened thereafter with Indian demand slow to materialize. At the end of September, the Mosaic Company, announced a cut-back in output to limit the build-up of high-cost inventory for its phosphate operations due to falling phosphate prices and stronger costs for ammonia (due to reduced supplies from the Black Sea and Trinidad) and sulphur; the Tampa ammonia contract for October settled at $640/t (the highest monthly settlement since early 2013) up from the third quarter average of $535/t, and in North Africa $630/t and above $680/t in Europe with sulphur around $150/t in most region. Jim Prokopanko Mosaic's CEO, forecast sales price for DAP in the closing quarter, typically a slow period, likely to come within a range of $440-$470/t as curtailments may tighten supplies, but stronger US exports and lack of Chinese sales (2.5mt DAP/MAP in the first seven months of the year) now that the low tax window has closed, could temper reductions this winter. Prices for DAP at the Gulf slipped $15 to $412.50 (Oct 22), PhosAgro's CEO Andrey Guryev, views the cut-back in production by large-scale producers as a strong offsetting factor against any significant price decrease in the low season environment.

While Mosaic, has joint ventures with other producers Ma'aden and Saudi Basic Industries Corp SJSC and expects to cap nitrogen costs through a long-term supply deal with CF Industries, beginning in 2017, in a bid to reduce raw material costs comparable to those of low-cost operators, like Russian-based PhosAgro and Saudi Arabia-based Ma'aden who produce ammonia and are able to access cheaper sulphur sources.

Despite the effect of much lower crop prices and their impact on fertilizer demand Mosaic forecast a good fall season in North America, with crop nutrients remaining affordable for farmers, to replace falling soil nutrients; elsewhere although DAP production is down in India, NPK production has been robust driving the need for imports and slow demand in Brazil may improve as growers prepare for the Safrinha crop; phosphate demand is forecast to remain strong with shipments to increase by 2% year-on-year to 65–66mt in 2014.

Poor monsoon leaves India with unsold stocks of imported fertilizer

The volume of land under cultivation, kinds of crops grown and the annual behaviour of weather are the principal determinants of use of chemical fertilizers by any country, *writes Kunal Bose*. Indian fertilizer companies got a scare earlier this year when the country's meteorological department made a forecast of a poor south-west monsoon during June to September. As it would happen, not only did the monsoon arrive late but rains in the first few weeks were well below normal. The south-west monsoon, which principally decides the fate of summer-monsoon crops, including rice, sugarcane some major oilseeds, cotton and raw jute, picked up strength end-July onwards. This, however, was not enough to spare zones in the country's north, north-east and south from being declared highly rains deficient or drought hit.

A fertilizer industry official says "monsoon delay of the kind experienced this year forced growers of rice and other crops to go on postponing land preparation and sowing operation. In a number of states, land shrinkage under summer-monsoon crops became a *fait accompli*. We saw it in 2012–13, how a deficient monsoon led to a 5.58 million hectare fall in land under various foodgrains from the previous year's nearly 72.1 million hectares. We are yet to know precise figures of land left uncultivated this season because of a bad monsoon."

However, the first estimate of production of all crops for summer-monsoon season shows foodgrains production of 120.2mt (million tonnes) is 8.92m tonnes less than the record output of 129.24mt in the corresponding season last year. Production of major oilseeds like groundnut and soybean and coarse cereals has also suffered a setback due to late monsoon arrival or overall deficient rains. Much like farmers, fortunes of fertilizer producers and importers are dependent on the behaviour of monsoon. In the event of monsoon failure, fertilizer units and dealers and retailers of nutrients are left with unsold stocks. The hit is taken mostly on account of imported fertilizers. The government Economic Survey says while about 80% of the country's requirements of urea (that is, nitrogen) are met by domestic producers, it remains very largely 'import dependent' for potassic (K) and phosphatic (P) fertilizers.

Imports of fertilizers are always planned and executed well in advance of their application in the field. Last year, India produced 22.5mt of nutrients while their requirements were 51mt. The huge gap between domestic supply and demand was met by imports. Prices of fertilizers in the world market are moved by what the world's largest consumer, China, and the second-largest, India, are going to import in a given period. Cartels in the commodity have been weakened in recent years but they still have some influence over price determination. The challenge for Indian importers like their counterparts elsewhere is to strike deals when nutrient prices have touched the floor or at close to that. Whatever commercial judgement is exercised, imports must precede a crop's growing season. If for a bad monsoon there is a setback in farm production as has happened in India this time, importers are left with unsold stocks costing them a pretty penny.

The Indian currency has suffered much value depreciation in recent times making imports costlier. RG Rajan, chairman of government owned RCF says "the company withstood [during 2013–14] severe economic onslaught in the form of substantial value fall of Indian rupee against US dollar. In recent years, there has been high volatility in fertilizer making raw materials prices resulting in creation of scarcity impeding production and marketing plans." The ordeal faced by RCF is, however, a common experience in the Indian fertilizer industry. According to an industry official, the government's target of 4% annual growth of the country's farm sector, which has a share of over 14% of the country's gross domestic product (GDP) is achievable provided conditions are found congenial, particular in allocation of feedstock natural gas to grow fertilizer production.

FAI director general Satish Chander, however, says the fertilizer industry is not in good shape due to some "stifling controls." He also contends that the fertilizer pricing policy remaining unchanged will continue to have an adverse impact on soil health, income of farmers and the industry's earnings. It is disturbing that the country has hardly seen any fertilizer capacity addition over the last 15 years while nutrient demand during this period was rising between 3% and 4% annually. On the contrary, in recent periods urea capacity of about 1.5mt was taken off the production line in the states of Karnataka and Tamil Nadu because of government failure to provide natural gas. The irony is the victimized units following government direction made considerable investment in making changes in their plants to be able to use gas instead of naphtha as feedstock. But the government in its turn failed to keep its commitment to supply gas.

No wonder India is becoming increasingly import dependent for all kinds of fertilizers. Government policy is to ensure availability of fertilizers at affordable prices to farmers, which New Delhi continues to defend in various forums, including the World Trade Organization. Retail fertilizer prices are much lower in India than their cost of production or imports. To make nutrients affordable for farmers and keep food prices in check, the government continues to reimburse the difference between cost of production/import and retail prices to fertilizer companies. However, ultimate beneficiaries of the subsidy are not fertilizer producers but millions of farmers. The industry keeps on complaining that the "stigma of subsidy" has wrongly befallen it in the public eye.

A contributing factor to the country's large fiscal deficit is the

over $11 billion India spends each year subsidizing farmers for selling fertilizers at below production cost. Incidentally, gas accounts for nearly 80% of the production cost of urea, a nitrogenous fertilizer that consumes more than half of the subsidy. The official target is to make direct transfer of the subsidy to individual bank accounts of farmers bypassing fertilizer producing companies. That will amount to deregulating the fertilizer industry, meaning the producers will fix nutrient prices on cost plus basis, farmers will buy their requirements at market prices and the government will pay them directly the subsidy amount. The proposed switch in subsidy payment will plug leakage of funds and ensure benefits reach farmers in full.

As India is having only limited success in raising production of gas, the principal feedstock for urea production, RCF has taken the lead to make the nutrient through coal gasification route. In partnership with Coal India Limited, the world's largest coal producer and two other government owned companies, RCF is in an advanced stage of planning a coal gas based 2,700-tonne per day ammonia unit and a 3,850-tonne per day urea unit at Talcher in Orissa, which abounds in coal. But India, which is fully import dependent on potash and must find gas in North America and the Middle East to make urea has become active in building plants in a number of overseas locations principally using joint venture route.

Indian Farmers Fertiliser Cooperative, the country's largest producer of nutrients, is to build a urea plant in Quebec in partnership with La Coop Federee as it is almost ready to commission a phosphoric acid plant in Jordan. In the meantime, Coromandel Fertilisers is planning a JV for the manufacture of phosphoric acid with Groupe Chimique Tunisien of Tunisia. The overseas venture will be part of the Coromandel's backward integration for its domestic phosphatic unit. Tunisia has rich deposits of rock phosphate, an ingredient for phosphoric acid. Rajan says Indian enterprises have many opportunities awaiting them abroad for "manufacturing fertilizers and mining of raw materials." The government admits that "overuse of nitrogenous and limited application of potassic and phosphatic fertilizers remain matters of great concern. The skewed use of fertilizers will stand in the way of improving productivity of land." Balanced fertilizer use will require India to build potassic and phosphatic plants abroad and market their production here in full.

Brazil imports of fertilizer set to continue increasing year-on-year

With production falling rather than increasing as had been hoped, but with demand growing strongly, Brazil is importing more fertilizer year after year, and will continue to do so for the forseeable future, *writes Patrick Knight.*

Brazil is on course to import about 24mt (million tonnes) of nitrates and potash this year, 11% more than in 2013, at a cost of about $10 billion dollars.

More than 70% of the 34mt of fertilizer to be spread this year, about 7% more than was used 2013, will have to be imported. This is because about 650.000 tonnes, or about 7% less will be produced in Brazil this year as in 2013.

Forty per cent of all the fertilizer supplied to farmers in Brazil is used by those planting soya, the output of which is now growing by about 6% each year, and is expected to do so for the foreseeable future. Between them maize, sugar cane and cotton, together with soya, use about 80% of all the fertilizer needed in Brazil each year. The steady increase in demand for grains, particularly of soya, means Brazil will need at least 40mt of fertilizer by about 2018.

It had been planned for about $13 billion dollars to be invested in projects aimed at increasing output in Brazil in the past few years. However, this did not happen, so most of the extra needed will have to be imported.

Above average world prices for soya, coupled with strong demand from China and other developing countries has allowed farmers to accumulate enough capital to buy large supplies of fertilizer in recent years, while the strength of the Brazilian currency also pushed up farmers purchasing power.

The situation has changed in the past couple of years, however, when the world price of most grains, as well as that of sugar, fell sharply. But this fall has not yet been reflected in a reduction in demand for fertilizer, of which Brazil is the world's fourth-largest consumer, after the United States, China and India.

The lower prices of most soft commodities has begun to hit farmers in the westerly state of Mato Grosso, the leading market for fertilizer. Many farms there are more than 2,000km from the Port of Paranagua, in the state of Parana, through which 40% of all imports enter the country. Congestion there, as well as at Santos, means ships waiting to unload potash and nitrates can sometimes spend up to 45 days in a queue.

The high cost of demurrage helps explain why the cost of transporting fertilizer from mixing plants adjacent to ports such as Paranagua and Santos, can add 30% to the cost of fertilizer in the fields.

As waterways continue to be improved in the north and north east of Brazil, where most new soya and maize plantings are concentrated, and with highways and railways being upgraded or extended as well, more fertilizer is gradually being imported via ports in the region. But it will be many years before this allows farmers there to pay less for the fertilizer they buy than they do now.

The high cost of transport could be tolerated when the grains price was high. But numerous farmers are already complaining that they will be producing soya at, or close to cost this year. Some can be expected to reduce plantings, if not this year, at least in 2015, if prices do not recover, which they have shown little sign of doing so far.

The past few years have seen big changes in the structure of the fertilizer industry in Brazil. When the industry was much smaller than it is now, the 'big four' trading companies which process and export much of the grains and sugar exported from Brazil, ADM, Bunge, Cargill and Dreyfus, used to process much of the fertilizer and arrange the import of the ingredients needed. The trading companies delivered fertilizer to farms, in exchange for farmers undertaking to send them their beans, maize and sugar in return.

The amount of fertilizer used in Brazil has doubled from less than 20mt to well over 30mt in the past decade and imports have increased much faster than that. Wanting to concentrate on their core business, the traders have gradually exited the fertilizer business. Their facilities have been sold to international companies, such as the Norwegian owned Yara, now the market leader, to Heringer and most recently, to the US owned Mosaic company.

The governments which have ruled Brazil for the past 11 years, led by the left leaning 'Workers Party' has been anxious for two large Brazilian companies, Vale, and Petrobras, both previously state owned, to play an increasing role in the fertilizer

CONSUMPTION, PRODUCTION AND IMPORTS OF FERTILIZER, MILLION TONNES

Year	Consumption	Production	Imports
2014	34.0	8.9	24.0 (est)
2013	31.7	9.3	21.6
2012	30.3	9.9	20.0
2011	28.3	9.8	19.4
2010	24.5	9.3	15.3
2009	22.5	8.4	11.0
2008	22.4	8.9	15.4
2007	24.6	9.8	17.4
2006	21.0	8.8	12.1
2005	20.2	8.9	11.8

business in Brazil. Although now nominally in private hands, both Vale and Petrobras are still largely controlled by the government. Vale knows all about mining, while Petrobras produces oil and gas, used to make phosphates. This company has long had interests in the fertilizer industry. But both companies have faced serious financial difficulty in recent times, so have been unwilling to make the major investments needed if Brazil is to move towards being self-sufficient in fertilizer.

Anxious to continue being influential in its troubled neighbour, Argentina, Vale bought the massive Rio Colorado potash project, located in the Andean foothills, from Rio Tinto in 2009. Vale began making the large investments needed to produce and export 3mt of potash by about 2018.

This project soon ran into difficulties, however, and Vale has now suspended operations there, after spending an estimated $2 billions on opening mine workings, starting to build a rail link which would transport potash to a new port to be built at Bahia Blanca and laying a pipeline to supply the fuel needed to process ore at the mine.

Because of the sharp fall in the world price of iron ore, Vale has been forced to delay several other key projects, notably the second phase of the Carajas mine. The company is now seeking a purchaser for the Rio Colorado mine, and is also trying to find a partner for other fertilizer projects in Brazil.

Brazil, much of whose massive territory has yet to be fully explored and mapped for minerals, is thought to have numerous deposits of potash, as well as nitrates. The largest and most promising potash deposits are in the Amazon region and are both isolated and deep underground, so will be expensive and complex to develop. The Worker Party government has shown very little interest in encouraging large scale projects of this type. It has concentrated most of its efforts in the past 11 years on raising the incomes and living standards of the less well off, often at the expense of industry. The currency has gained ground against the US$ and other hard currencies, which has made exports less competitive, and imports cheaper.

One result of this policy has been that the healthy annual surpluses in visible trade which Brazil accumulated in the early years of this century, partly, it is true, because the price of both soft and hard commodities were above average, are now falling. 2014 could see a trade deficit, the first for more than a decade.

Brazil is of course one of the few countries in the world, with sufficient spare land to grow and export substantial quantities of the foods, both grains and oilseeds, and also sugar and meat which will be needed in the next 40–50 years. The world population is expected to increase by several billions and incomes are expected to rise as well, with many people able to eat more and better than they do now.

Brazil's own population is now hardly growing and should stabilize at little more than the present 200 millions by 2050, which means that virtually all the extra food, or feed ingredients which are grown, will be available for export.

On the other hand, growing concern about the environment, and the threat of climate change, may limit the amount of extra land which can in fact be cultivated. Much of the extra food is likely to be the result of the steady rise in yields and if more fertilizer is applied, yields could almost double

Arable crops are now grown on about 50 million hectares of land in Brazil, whose herds of beef and dairy cattle, about 200 million strong, now graze on slightly less than 200 million hectares of land. But the number of cattle per hectare has risen steadily during the past few years, partly as a result of farmers switching to arable crops, partly because more fertilizer is being used to improve pasture quality.

Many ranchers are being tempted by the fact that growing arable crops and sugar cane as well as planted forest are now far more profitable than raising cattle on the average ranch, which is encouraging farmers to switch. DCi

ICS welcomes dramatic IMO progress on ballast water issues

Governments attending the International Maritime Organization (IMO) Marine Environment Protection Committee (MEPC) in October have made real progress towards agreeing solutions to major issues that have previously impeded ratification of the IMO Ballast Water Management Convention, says the International Chamber of Shipping (ICS), the global trade association for ship operators.

Speaking at IMO headquarters, ICS Secretary General, Peter Hinchliffe, remarked, "We are very pleased that IMO Member States have fully acknowledged the shipping industry's concerns by agreeing to start work immediately on a revision of the G8 type-approval guidelines to make the process for approving ballast water treatment equipment more robust. In the meantime, it has also been agreed, in principle, that any shipowner that has invested in first generation treatment equipment, type-approved under the current G8 guidelines, should not be penalized, provided that the equipment is operated and maintained correctly. The adoption by IMO of new Port State Control guidelines reflecting a fair and pragmatic approach to inspection is also an important additional step."

Mr Hinchliffe added "While some of the details still need to be finalised by the MEPC next year, an MEPC Resolution adopted at this meeting should do much to build confidence in the Convention amongst both shipowners and IMO Member States."

Global shipping's emissions 20% lower, says ICS

The total Green House Gas emissions from global maritime transport are estimated to have been over 20% lower in 2012 than in 2007, according to the International Chamber of Shipping (ICS), the global shipping industry's trade association.

The global shipping industry, which transports by sea around 90% of all world trade, is thought to have produced only about 2.2% of the world's total GHG emissions during 2012 compared to 2.8% in 2007.

The estimates are contained in the latest comprehensive study of the shipping industry's Green House Gas emissions prepared by the International Maritime Organization (IMO).

Speaking at the United Nations Climate Summit in New York, convened by the UN Secretary-General, Ban Ki-Moon, to give impetus to the negotiations on a new global climate change agreement, ICS Secretary General, Peter Hinchliffe remarked: "The latest IMO study, which uses satellite tracking, suggests there's been a significant reduction in absolute CO_2 emissions from ships due to the introduction of operational efficiency measures across the whole fleet. This includes operating at slower speeds, combined with more fuel efficient designs on board the large number of new build vessels that have recently entered the market."

He added "The reduction in CO_2 per tonne of cargo carried per kilometre by ships is even more impressive than the headline IMO figure for absolute GHG reduction because cargo moved by sea has continued to grow since 2009."

The shipping industry is committed to delivering further CO_2 emissions reductions, in partnership with its global regulator, IMO.

Shipping is already the only industrial sector to have mandatory global regulations in place to reduce it CO_2 emissions, which entered into force worldwide in 2013.

Nevertheless, according to Mr Hinchliffe: "The shipping industry fully recognises that governments expect even greater CO_2 efficiency improvements in the future. Given the very high cost of fuel which is soon set to increase by around 50% due to separate new rules on sulphur the industry already has every incentive to deliver this."

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Better cargo hold cleaning from Wilhelmsen Ships Service

Wilhelmsen Ships Service has unveiled an upgraded cargo hold cleaning solution, combining high-performance cleaning agents and mobile equipment to help ship owners, operators and their crews stay safe and compliant on a global basis.

With port turnarounds increasingly short and customers demanding consistent cleaning regardless of location, the solution offers a way to demonstrate best practice while managing compliance risks, says Jan Fredrik Bjorge, Product Manager at Wilhelmsen Ships Service.

"With Unitor's standardized hold cleaning solution, owners and operators know exactly what to expect when it comes to costs. The cleaning products are made for purpose and highly concentrated for more cost effective cleaning. Equipment is low-maintenance and durable, and therefore more cost effective in the long run. Customers are less likely to incur additional costs by failing to pass hold surveys," says Bjorge.

Standardized solution combines high quality chemicals with support for crew and consistent global supply to help customers manage costs

The kit includes everything the crew needs, it is easy to assemble and ready to use. The improved design makes it easier to manoeuvre and operate, resulting in safer operations in accordance with MLC regulations. In addition, the equipment is combined with high-performance chemicals, all supported by clear documentation and literature, e-learning and demonstration videos.

"Our cleaning solutions are designed to achieve the same results every time: safe, simple cargo hold cleaning and reduced turnaround times in port. With supplies available across our global network, we help customers stay compliant and save cost," Bjorge adds.

The process of cargo hold cleaning is more regulated than ever before. Any cleaning agents that may be discharged with waste water after cleaning must not be harmful to the environment. The Unitor cargo hold cleaning agents are not only effective, but also fully compliant with current regulations, notably Marpol Annex V.

Also available is Unitor Slip-Coat Plus, which provides a waterproof barrier to protect the hold, according to US Food and Drug Administration (FDA) approved standards, enabling carriage of grain and other foodstuffs.

Wilhelmsen Ships Service is part of Wilhelmsen Maritime Services, a Wilh. Wilhelmsen group company. It has the world's largest maritime services network, with 4,500 marine professionals servicing 2,200 ports in 125 countries. Wilhelmsen Ships Service supplies safety products and services, Unitor products, Unicool refrigerants, Unitor and Nalfleet marine chemicals, maritime logistics and ships agency to the maritime industry. Last year the company made product deliveries to 24,000 vessels and handled 67, 000 port calls.

All Unitor products and equipment are supported by a dedicated service team, providing practical advice and technical assistance on all aspects of cargo hold cleaning. Accessible to customers worldwide, they offer a level of expertise that ensures effective cleaning and gives customers the confidence that their vessel stays compliant.

Angola's Benguela railway completed

In Angola, the China Railway Construction company has completed construction of the 1,344km Benguela railway, which connects the Atlantic port of Lobito to the eastern border town of Luau, where it provides onward connections over the rail network of the Democratic Republic of Congo. The line, which has cost $1.83 billion, will eventually carry 20mt of cargo annually to the port and should enter operations later this year.

Mineral exports from Catanga, in the Congo, and from Zambia, will be some of the main commodities that will use the railway. In preparation for this, the port has built a specialist minerals terminal, which is served by a 310m long quay and has a storage area of 200,000m². This will serve ships of up to 50,000 tonness. Overall capacity at the terminal will be 3.6 million tonnes per annum.

Barry Cross

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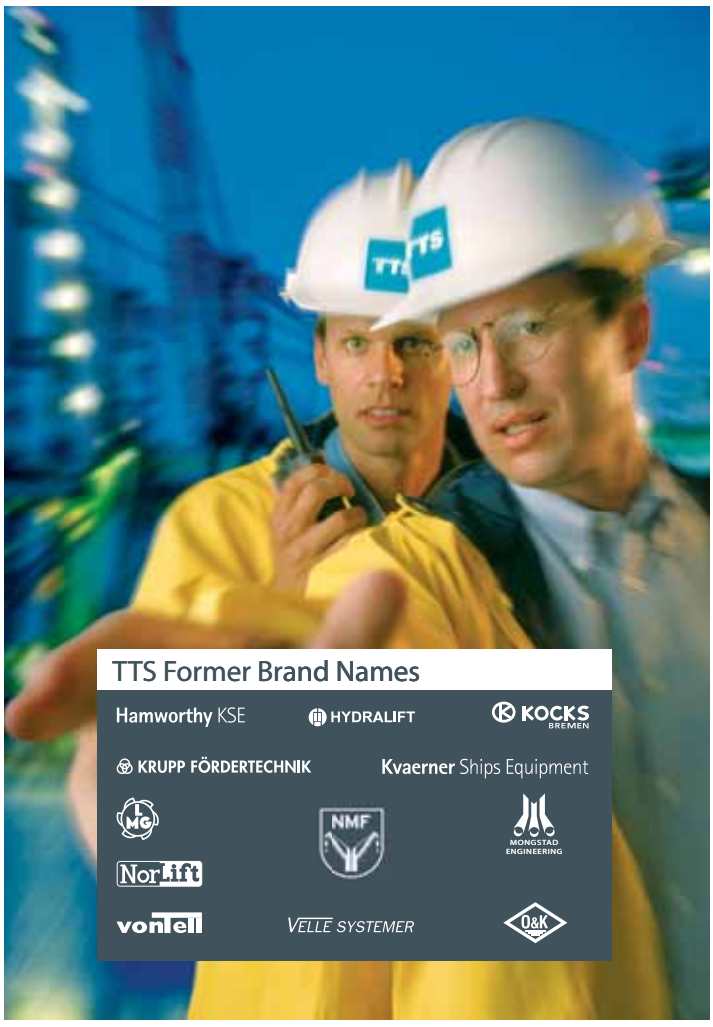

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First arctic cargo shipped through the Northwest Passage

On 19 September 19, Fednav, a Canadian-owned company and world leader in Arctic navigation, announced that its vessel, the *Nunavik* sailed from Deception Bay en route to China via Canada's Northwest Passage, with a full cargo of nickel concentrate. The *Nunavik* will be one of the first commercial vessels to transit the Northwest Passage completely, and the first to do so unescorted with an Arctic cargo, and with Canadian expertise.

The *Nunavik* is the most powerful conventional (non-nuclear) icebreaking bulk carrier in the world, and sails from Deception Bay, Northern Quebec year round, transporting product from the Canadian Royalties mine. The *Nunavik* was on course to deliver 23,000 tonnes of nickel concentrate to Bayuquan in China.

The *Nunavik* was supported by a shore-based team of ice navigation specialists from Fednav and its subsidiary, Enfotec. The vessel will receive regular ice charts including real-time satellite imagery in order to operate Enfotec's proprietary onboard ice-navigation system, Icenav™, further enabling safe and efficient transit.

The route to China via the Northwest Passage is some 40% shorter than the traditional Panama Canal route, and as a result, will reduce greenhouse gas emissions by more than 1,300 tonnes.

"Fednav is proud to have designed this remarkable ship and to plan the first independent commercial voyage through the Northwest Passage," said Paul Pathy, President and co-CEO of Fednav Limited. "It is through the extraordinary capabilities of the Fednav team, the ship's crew, and its world-leading technology that we can undertake this journey with confidence."

Fednav Limited

Fednav is an international shipowning company headquartered in Montreal. Its principal activities include the transport of bulk and general cargo worldwide. The company has offices in Antwerp, Barbados, Hamburg, Rio de Janeiro, London, Singapore, and Tokyo, as well as regional offices in Canada and the United States. Fednav also has terminal, logistics, ice analysis, and shipping agency services and divisions. It employs 260 people and nearly 2,000 crew members and stevedores.

GVF announces launch of maritime 'glossary'

The Global VSAT Forum (GVF) has announced the launch of its Maritime SatCom Forum (MSF) 'Glossary'. The document, earlier iterations of which were developed by the Maritime SatCom Forum Working Group of the GVF, has been further developed by the joint-chairs of the MSF, Martin Jarrold, Chief of International Programme Development, GVF, and Roger Adamson, Chief Executive, Futurenautics.

"The 'Glossary' comprises a highly comprehensive A to Z of the terminology used on a daily basis by the satellite communications industry in its dialogues with one of its key customer vertical markets" commented Martin Jarrold. Jarrold further remarked that having a working group, such as the MSF, which is focused on the maritime space, is a reflection of the fact that, "The technology of communications and the exchange of information it facilitates has undergone a highly-accelerated development, and with such advanced communications the maritime communications service environment has now progressed fully into the broadband age. Against this evolving technology and service backdrop, the MSF has built a strong relationship with InterManager – the international association of ship managers – the Secretary General of which, Captain Kuba Szymanski, has been a constant and forthright advocate of the 'Glossary'."

Adamson added that "The development of the 'Glossary' was driven by requests from the maritime customer marketplace for a detailed explanation and elaboration of the terminology commonly used by satellite communications solutions vendors, and this document will serve to improve the quality and effectiveness of discussions at the interface of the solutions seller and the solutions buyer."

Jarrold further commented, "Roger Adamson has previously collaborated with GVF in connection with the GVF-EMP Conference Partnership Broadband Maritime/Maritime Insights Conference Series and brings a wealth of maritime-related experience, as well as background knowledge of satellite communications in the maritime space."

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Handymax bulkers continue attracting interest

Richard Scott

Rapid capacity expansion and a bulging order book for new tonnage are prominent features of the Handymax bulk carrier world fleet. Shipowners in many countries still show great interest in acquiring these vessels.

This popularity is based on a perception that employment prospects are favourable, taking a longer term view. Handymax bulk carriers in the 40,000–65,000dwt (deadweight) tonnes capacity size group have very broad employment opportunities in a wide range of dry bulk commodity trades in most parts of the world. Their characteristics enable them to offer flexibility in the mode and pattern of sea transportation provided, ensuring lasting advantages.

Reflecting these characteristics the Handymax fleet grew strongly, by over two-fifths in deadweight terms over the three years' period up to the end of 2013. Although the pace of expansion has been decelerating it remains brisk, and substantial further enlargement is expected both in the current year as a whole and in future years.

Handymax bulk carriers are predominantly geared vessels, with cranes and grabs for loading and discharging cargoes. Installed cargo-handling gear enables them to operate efficiently in trades where shore cargo-handling facilities are either unavailable or inadequate. Consequently, coupled with a size range acceptable in an extensive range of ports and berths, their employment pattern is extremely varied. In addition to use in the coal trades, grain and soya trades, and in some iron ore movements, they are used widely in minor bulk trades including steel products, minor ores and minerals and for carrying other industrial and agricultural commodities.

A rapidly expanding fleet

Heavy investment in the sector, over recent years, has been encouraged by strong cargo volume growth performances in many trades, and prospects for further increases. During the period of three years up to end-2013, the Handymax fleet grew by 46.7m dwt or 42%, according to figures compiled by Clarksons Research. This addition raised fleet capacity to 157.8m dwt at the end of last year, comprising 2,990 ships. Over a five years' period, including high annual percentage increments in the early part, expansion was an even more impressive 89%.

Up-to-date statistics, showing the position at the beginning of October 2014, reveal that the world Handymax bulk carrier fleet consisted of 3,094 ships, with a capacity of 164.3m dwt. This sector total amounts to a vast carrying capacity, comprising just over one-fifth of the 750m dwt entire world bulk carrier fleet.

As shown by the accompanying table, Handymax fleet deadweight growth has been vigorous but decelerating sharply in

the past two years, amid declining newbuilding deliveries (following an earlier ordering slowdown), together with much higher scrapping of older tonnage. After surging sharply to a remarkable 20% increase in 2010, the pace slackened to an 18% rate in the next year before slowing further to 12% in 2012. During 2013 annual expansion was still brisk at more than 7% and, in the current year as a whole, a similar 6–7% increase is predicted.

Deliveries of newbuilding Handymax vessels from world shipyards declined to under 15m dwt last year, after heavier annual volumes in the 19–22m dwt range during the previous three years. These additions were partly offset by scrapping, which rose to 4.7m dwt in 2012 before decreasing to 3.5m dwt in 2013. Demolition sales this year are expected to decline again, but the newbuildings total also probably will be down, the combined effect of which may be only a small change in the fleet's percentage rate of expansion.

There are now distinct signs suggesting that further deceleration in growth may not occur during the next twelve months at least. Handymax newbuilding deliveries could start rising again in the period ahead, because a very large volume of tonnage is on order at world shipyards. Scheduled deliveries for 2015 onwards have been mounting rapidly, due to an ordering spree over the past year or more.

Contracts for new Handymaxes fell in 2011 and 2012. Then, last year, renewed interest amid mounting expectations that a freight market recovery was approaching, coupled with attractive prices quoted by many shipbuilding yards, caused these to surge to a new record high volume. The 2013 total of almost 29m dwt ordered was 56% above the volume placed in the preceding two years together. A further estimated 12m dwt was added in this year's first eight months.

Consequently the world orderbook is now massive. At the beginning of October 2014 according to Clarksons Research figures, 834 Handymaxes aggregating just over 50m dwt were on order, amounting to 30% of the existing world fleet in this size group. A comparison with the position twelve months earlier emphasizes how much the orderbook has expanded. The volume on order at the beginning of October 2013 was just over 32m dwt, representing 21% of existing tonnage at that time.

This expansion of well over one-half in the overall Handymax orderbook will be reflected in actual newbuilding deliveries during the next couple of years. Scheduled orders for 2015 completion have now reached almost 22m dwt. The final figure could be swelled by late deliveries of ships originally scheduled for the current year. Even after deducting a large percentage to allow for orderbook slippage, a typical but variable feature and some specific postponements and perhaps a few cancellations, it seems clear that shipyard Handymax deliveries potentially could grow very substantially in the year ahead.

HANDYMAX (40–64,999 DWT) BULK CARRIER FLEET (MILLION DEADWEIGHT TONNES)

	2009	2010	2011	2012	2013	2014*
newbuilding deliveries	10.5	18.8	22.1	20.9	14.6	13.0
scrapping (sales)	1.4	0.4	2.2	4.7	3.5	2.6
losses	0.0	0.2	0.1	0.1	0.2	0.0
plus/minus adjustments	0.2	0.1	0.0	-0.1	0.0	0.0
fleet at end of year	92.9	111.1	130.9	146.9	157.8	168.3
% change from previous year-end	+11.1	+19.7	+17.8	+12.2	+7.4	+6.7

source: Clarksons (historical data) & BSA 2014 forecasts **forecast*

Within the Handymax newbuilding orderbook, a high proportion comprises what are known as 'Supramax' ships exceeding 50,000dwt, and also the newer, larger 'Ultramax' sub-category of ships exceeding 60,000dwt. More than 90% of the entire Handymax order list now consists of vessels exceeding 50,000dwt.

Last year the Handymax bulker sector's statistical upper limit was raised from 60,000dwt to 65,000dwt, to accommodate the Ultramax ships sub-sector. A large number of these vessels will be delivered in the next few years. They are widely perceived as likely to have a valuable role in commodity trades increasingly requiring unit sizes with cargo handing gear and more capacity than the standard Supramax of around 52,000dwt. Their capacity is smaller than provided by the standard Panamax bulker of around 72,000dwt, usually a gearless vessel, and that distinction is also seen as valuable in many trades.

Growing employment opportunities

The typical features of a Handymax bulk carrier make it widely employable within at least major parts of nearly all the global dry bulk commodity trades. Exclusions, normally, are mainly a large proportion of iron trade and a substantial proportion of coal trade, where much larger Capesize and also Panamax tonnage are the most economical unit types and sizes required.

Coal trade is prominent among employment sources. In the past few years global trade in steam and coking coal has grown at varying but rapid rates, supplying more cargoes for Handymax ships as well as other bulk carrier sizes. This commodity forms the second largest seaborne trade only just below the largest, iron ore, and coal volumes are massive, reaching about 1.2 billion tonnes in 2013.

Global seaborne coal trade has grown at rates of between 6.2% and 9.5% in the past three years, but the current year's increase may be considerably slower. Much of the upwards trend in that period has been attributable to extra steam coal movements destined for power stations and other industries such as cement. Steam coal now comprises the greatest part, around three-quarters of the whole sector. The remainder, is coking coal trade related to the steel industry.

Larger size ships mostly benefited from additional coal exports from some countries but, among trade routes extensively employing Supramaxes, shipments from Indonesia have been a particularly dynamic element. Indonesian coal exports reached 323mt (million tonnes) three years ago in 2011, and in that year overtook Australia's volume to become the world's largest supplier.

Last year Indonesia's total reached 381mt, a cumulative 91% rise in annual volumes over five years. Short-haul voyages to China represent a large part. However, growth seems to be fading and the 2014 total is expected to be flat or only slightly higher. Exports of low-quality lignite, a coal type not normally included in international coal trade statistics, has provided another boost in recent years.

More variable Handymax employment is derived from grain (including soya) trade. This commodity's contribution varies greatly both in terms of annual global volumes, and geographical trading patterns. In the past twelve months up to mid-2014, trade resumed growth with a notable surge, although that higher level is not expected to be maintained in the current period.

Recent strength in grain and soya movements reflected higher import demand in many areas, coupled with improved availability in key exporting countries and lower prices on international markets. World trade in wheat plus corn and other coarse grains was 14% higher in crop year 2013/14 ending June 2014, at 307mt, according to International Grains Council estimates. Global soyabeans and meal trade in marketing year 2013/14 ending September 2014 was 11% higher at 167mt, based on calculations by the US Dept of Agriculture.

Handymax grain trade employment opportunities over the past twelve months benefited from larger imports into African and Middle East countries, as well as into China, other Asian countries and the European Union. Soyabeans and meal shipments to China and the Asian region, the EU and elsewhere increased. During the year ahead, 2014/15, the upwards trend in soya movements is expected to continue with a moderate increase. But, conversely, wheat and coarse grains trade could weaken amid reduced purchases by China, the EU and several other countries.

In the minor bulk trades group, some elements of which are actually very large and not really minor, there has been substantial enlargement in recent years. Much additional employment in these trades has been gained by Handymaxes. Annual overall volumes in this sector are estimated to have grown by approximately 17% cumulatively in the three years ending 2013, raising the total to a massive level just over 1.5 billion tonnes.

Among key individual elements, steel products trade (coil, sheet, plate and other items) is a large employer of Handymax tonnage. Seaborne steel products trade figures compiled by Clarksons Research show the global annual total rising from 248mt in 2010, after recovering rapidly from the severe setback in the preceding year. During the past three years further growth to an estimated 288mt in 2013 occurred. Another rise of about 3% could follow this year.

An extremely complex geographical pattern characterises steel trade, with many countries being simultaneously both substantial exporters and large importers. This feature reflects the hugely varied range of finished steel products grades available in various countries. Last year China exported 62mt and imported 15mt. South Korea exported 29mt and imported 19mt. The EU exported (to countries outside the area) 39mt and imported 31mt. These World Steel Association figures indicate the extent of two-way flows, generating massive demand for sea transport capacity and resulting in employment for Handymax and other bulk carriers.

Ultra-useful Ultramax

Within the Handymax size group, Ultramax bulk carriers have become the most desired vessel type for many shipowners. These ships have a carrying capacity at the top end of the statistical size range for Handymaxes: typically they provide 63-64,000 deadweight capacity. They are equipped with the standard cargo-handling gear of cranes and grabs, and the new designs also offer an attractive economic advantage when fuel costs are high, greater fuel efficiency. During the past couple of years, numerous Ultramaxes have been ordered, and newbuilding deliveries are increasing.

World-wide orders for new Ultramax ships are estimated to have totalled 320 in 2013, a more than five-fold increase compared with the preceding year. The orderbook has been greatly augmented this year by additional contracts. A very large proportion of the total has been placed in Chinese shipbuilding yards, which have successfully marketed new standard designs.

One of these standard products, the 'Crown 63' of 63,000dwt has attracted a substantial number of orders for the Chinese shipbuilder promoting it. Another design, the 'Dolphin 64' of

64,000dwt has proved even more popular, and ships of this type are on order at numerous Chinese yards.

Perceptions of expanding cargo potential for Ultramax bulk carriers is a key element of the focus on these ships, as well as operating efficiency aspects. Over a very long period ahead, ports serving many commodity trades around the world will lack adequate shore-based cargo handling equipment for loading or discharging. Consequently ships offering this capability will continue to be required on a large scale, and there are multiple trades where the typical size of an individual cargo has been increasing. Until quite recently the supramax vessel of 52–57,000dwt was regarded as the most valuable sea transport unit for such requirements, but a ship able to load a higher cargo volume is now seen as widely employable. Commodity trades to Asian destinations, often intra-Asian trading, are a particular focus of attention.

When cargoes of around 60,000 tonnes or more — often coal, ores and minor bulks — are lifted by gearless ships in the same size range as the new Ultramax vessels, a floating crane is needed at ports lacking facilities, significantly raising costs. This requirement partly explains why older, gearless Panamax bulkers which offer similar transportation capacity have become largely obsolete, combined with other disadvantageous features. The Ultramax can self-load from barges at an offshore transshipment terminal and then self-discharge at destination when necessary, in shorter haul trades within the Asian region and many other trades elsewhere. Together with the enhanced cargo size which can be accommodated, the potential benefits are clearly identifiable.

Fluctuating Handymax market

This year the Handymax freight market has not been able to hold on to last year's gains. In the final quarter of 2013, as illustrated by the Baltic Exchange Supramax Index, freight rates in this market sector strengthened sharply, resulting in an index level exceeding 1,500 points towards year-end. Improvement followed two quarters of low rates, when an index level during that period of well below 1,000 was seen, preceded by even lower levels earlier last year.

The index is based on several timecharter trip rates for a standard 52,000dwt size bulk carrier with installed cranes and grabs.

A downwards trend emerged in early 2014. During the northern hemisphere spring to autumn period following, the index level dropped below 1,000 again, sometimes a long way below, before signs of a possible slight hardening began.

There is still great uncertainty about both timing and magnitude of any sustainable market upturn. In the global dry bulk freight market as a whole, surplus shipping capacity is still a prominent feature, affecting the Handymax sector as well as other vessel sizes. Much of the excess has been absorbed by vessel productivity deterioration, manifested in slow-steaming and other trading 'inefficiencies'.

Global seaborne trade expansion and demand for tonnage has been growing at a healthy pace in the past few years and that trend continues. But the supply of transport capacity in the fleet has exceeded, sometimes greatly exceeded, increasing ship demand, leading to a generally subdued dry bulk freight market.

Shipboard grabs enable efficient, reliable on-board bulk handling

For more than 60 years, PEINER SMAG Lifting Technologies GmbH — PSLT for short — with its product, PEINER grabs, has stood for quality and customer satisfaction in the field of bulk goods handling. The wide range of products allows PSLT to provide the right answer to all customer requests in the field of geared bulk vessels. Owing to PSLT's many decades of expertise in development and construction of grabs, its customers have put their trust in the company and relied on PEINER grabs, particularly in the difficult market situation of recent years. To further develop this expertise, the company makes above-average investments in the research and development of products. Thus new designs and alternative materials are continuously brought into serial production. The goal of PSLT is to continuously improve its products while taking into account the requirements of the market.

At PSLT, the customer is always at the centre of attention. The size, shape and dead weight of grabs may vary and, therefore, be tailored in every respect to the needs of customers. PEINER grabs are adapted both for lifting devices and for each application to always find an optimal solution.

PEINER dual scoop motor grabs can be suited to the technical parameters of any deck crane. In combination with PEINER deck crane power supplies accessories, PEINER grabs can be operated with any common deck crane. For geared bulkers without deck crane accessories, PSLT supplies PEINER deck arrangement towers. These towers are flexible and can be quickly readied for operation.

A well-proven alternative to electro-hydraulic operated grabs, especially for countries with weak infrastructure, is the PEINER radio-controlled single rope grab. It is particularly suitable in this case because it is not only compatible with many lifting devices (a simple crane hook is enough), but also impresses with its user-friendliness and versatility. Using spill and kick plates, the grab can be adapted for a variety of bulk materials. Thus, within a very short time, any deck crane can be used for bulk goods handling without additional equipment. An external power supply is not required.

Maintenance is kept to a minimum thanks to the use of high-quality materials such as HARDOX and WELDOX in combination with an optimized design. This keeps the life-cycle costs as low as possible. A modular design enables the use of standard parts in different grab models, which greatly simplifies the storage and results in faster response times in the production of new machines and after-sales management.

Thanks to the intelligent design, it is also possible to match up high grab capacities with low dead weight.

Apart from the quality of PEINER grabs, PSLT is notable for its global service and dealer network that offers the customer round-the-clock customer service. In addition to the assembly and start-up provided by its technicians, the company also provides training for the operating personnel. Thus PSLT's customers get everything from one source.

Of great importance in the entrepreneurial thinking are the issues of environmental protection and sustainability. Environmental protection does not begin only when the grab is finished. Both at the work preparation stage and in the production process, care is taken to reduce the impact on the environment.

In addition, PSLT strives to keep the environmental impact associated with the use of grabs as small as possible. A number of features make it possible to minimize the loss of bulk materials. In addition to dust covers, these include special sealing systems on the side and bottom lips. The use of steel sealing strips, rubber-sealed lips, overlapping bottom and side lips or special side toothing prevents bulk materials from trickling down. In contrast to the competitors, PSLT's four-rope dual scoop grabs are also designed with just one, rather than two scoop pivot points. This results in such movement of scoops that ensures a synchronous closing and excludes any offset between scoops.

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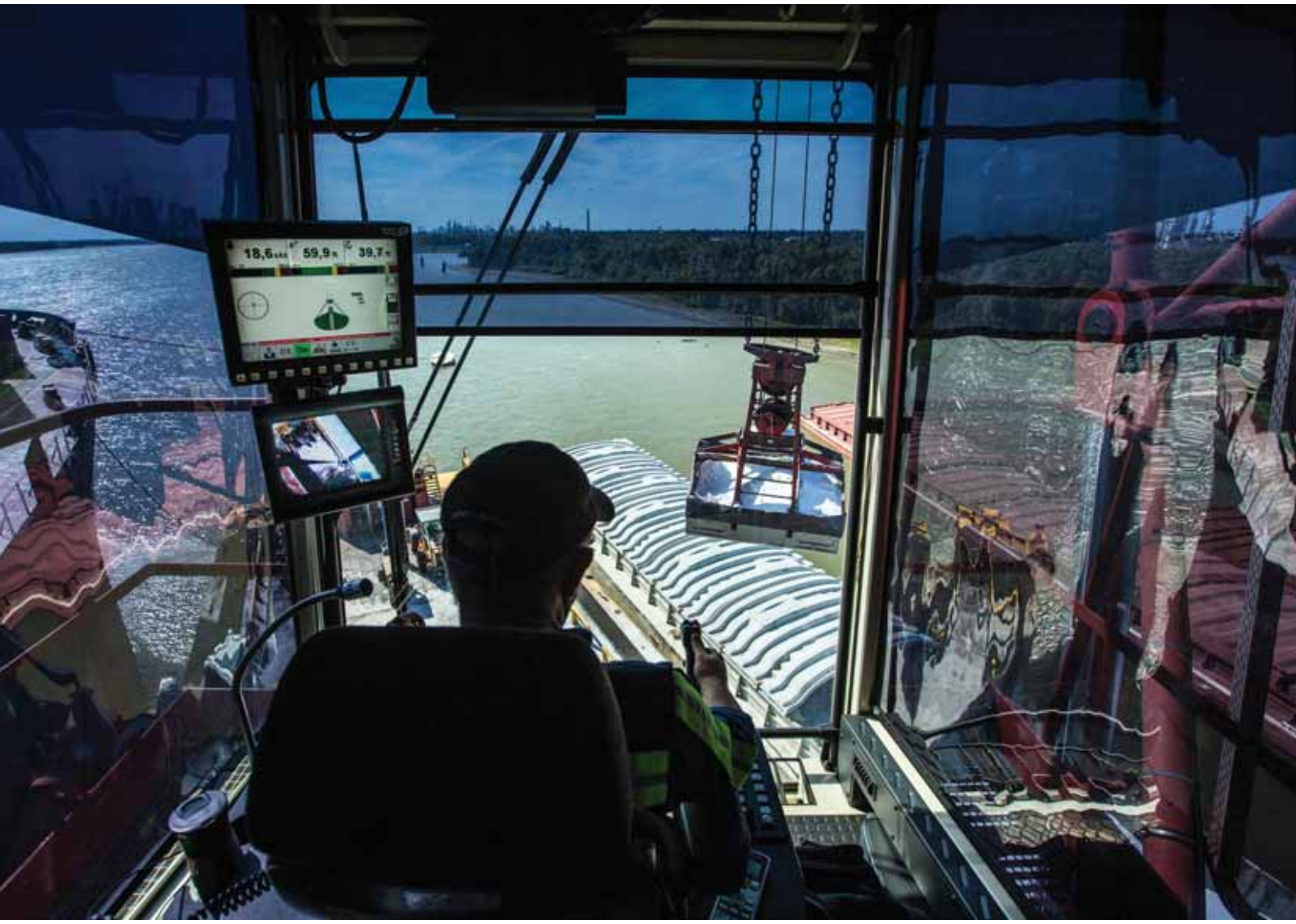

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Salt traffic up at Areia Branca

The port of Ilha de Areia Branca in Brazil, which is run by the CODERN port company, is reporting major increases in export salt traffic from its dedicated terminal. In April alone, traffic was up 183% compared to the same month in 2013. In total for that month, 147,100 tonnes of salt was handled. Overall, for the year, the terminal suggested that the business was up by at least 40%.

The upswing is down to low rainfall and a return of confidence in local salt production. In recent years, local companies have also been able to find overseas markets for their product. At the same time, salt exports from competitors in Chile have fallen. The lack of rainfall has also been extremely helpful, since previously downpours have damage production. *Barry Cross*

Fertilizer throughput rises at Paranaguá

Paranaguá and Antonina port authority reports that on a single day 34,000 tonnes of fertilizer were unloaded in a 24-hour period, which is a record in recent years. This increase in efficiency is down to logistics improvements undertaken in the last two years, allowing a steady flow of cargo from the quay.

The whole system is now computerized, with consignments loaded directly onto a conveyor belt system for movement to the Public Fertiliser Terminal (Tefer).

In the first four months of 2014, ports in that region of Brazil imported 3.1 million tonnes of fertilizer, up 11%. In part, this is due to a reduction in demurrage charges, which are down 8% over those levied in 2013. *BC*

Cargill continues investment in Brazil

In the last five years, Cargill has invested $1.2 billion in Brazil, with $320 million invested in 2013. Over the next two years, it is due to invest a further $500 million, which will mostly be spent on logistics upgrades and on expanding high value-added services.

The vast majority of the investment, which will take place between June 2014 and May 2016, will be in ports. This will amount to $200 million. Work includes increasing capacity at the port of Santarém from 2mt (million tonnes) to 5mt, mainly for soya. In addition, a river transshipment station will be built at Miritituba, also in the state of Paraná. *BC*

Southern Brazilian ports monopolize Mato Grosso soya

In the first four months of 2014, ports in the south of Brazil mainly handled export soya produced in the state of Mato Grosso do Sul. Of the 1.6 billion tonnes sold by the state onto the international market, 1.26 billion tonnes (77.45%) exited via port terminals in Paraná, Santa Catarina and Rio Grande do Sul. In the first five months, almost half of the soya from the state was exported via Paranaguá port, in Paraná. This amounted to some 519mt (million tonnes).

In addition to Paranaguá and São Francisco do Sul, other southern ports favoured were Rio Grande (8.36mt) and Imbituba (4mt). *BC*

China moots transshipment terminal for Valemax ships

Although China is continuing to refuse access to its ports by Valemax vessels, the Chinese ambassador to Brazil has noted that his country is interested in an association with Vale in respect of the transshipment of minerals from its bulk carriers to smaller vessels. The ambassador conceded that using the bigger vessels would help to drive down transport costs and that the transship cargo could then access Chinese ports.

In addition to an existing transfer station that Vale has established on the Philippines, it is currently building another in Malaysia.

Currently, it costs Vale $22 to transport one ton of iron ore; moved directly from Brazil to China using Valemax vessels would help to save seven dollars per tonne. At present, Australian producers are $10 cheaper compared to Brazilian output. *BC*

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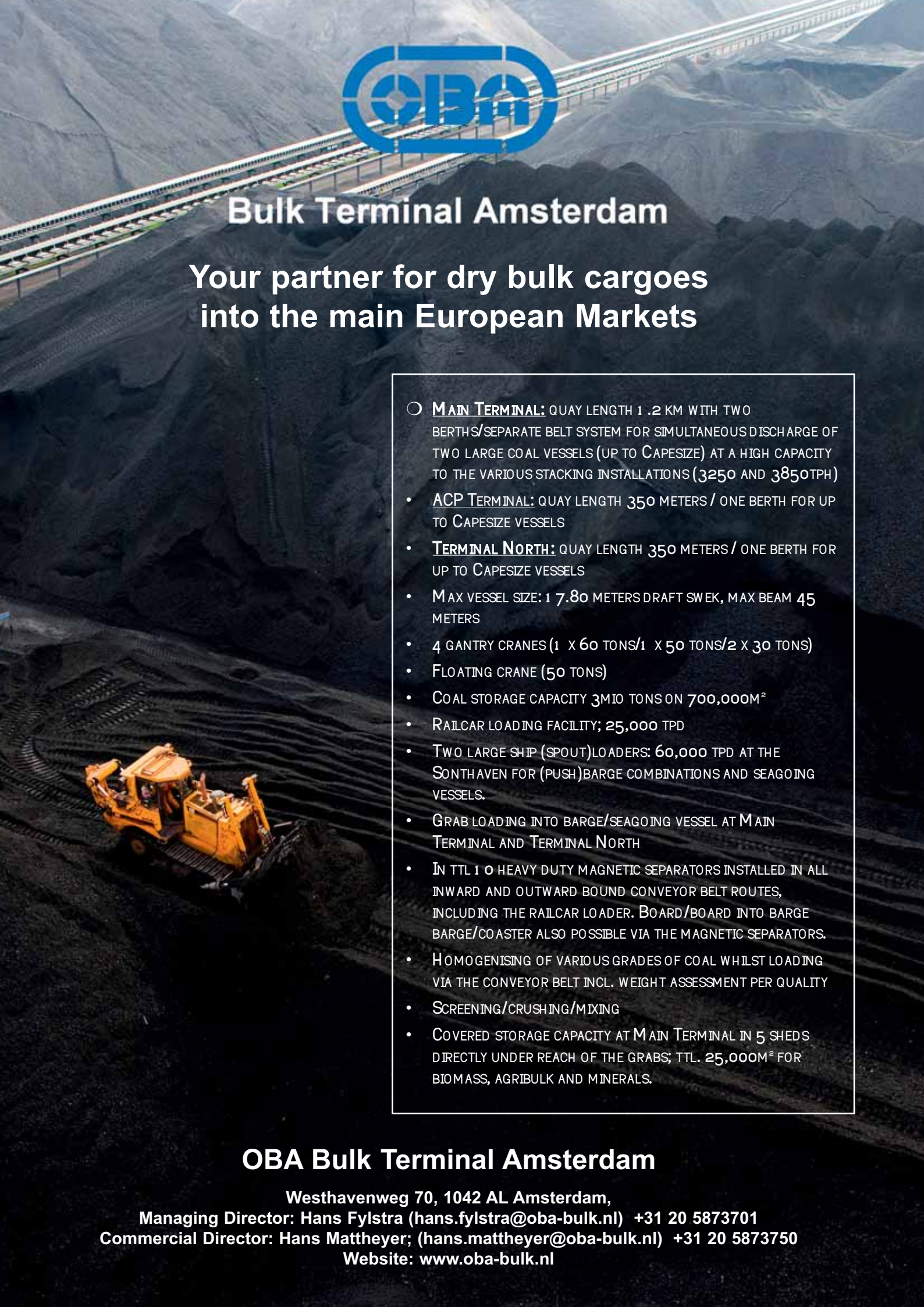

- **Main Terminal:** quay length 1.2 km with two berths/separate belt system for simultaneous discharge of two large coal vessels (up to Capesize) at a high capacity to the various stacking installations (3250 and 3850tph)
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- Grab loading into barge/seagoing vessel at Main Terminal and Terminal North
- In ttl 10 heavy duty magnetic separators installed in all inward and outward bound conveyor belt routes, including the railcar loader. Board/board into barge barge/coaster also possible via the magnetic separators.
- Homogenising of various grades of coal whilst loading via the conveyor belt incl. weight assessment per quality
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Paraguay to use Argentina's Ibicuy port

Paraguay is negotiating with the government of Argentina use of its ports at Ibicuy and Diamante. Ibicuy, in particular, is one of the most important deepwater ports in the region, exporting wood, grain and forestry products. It is responsible for the handling of 600,000 tonnes of produce each year, of which cellulose accounts for 100,000 tonnes.

Paraguay would like to establish a Freezone at the port, which would handle its own export products, since the established Freezone at the port of Rosario does not connect with the Paraguay inland waterway network. *BC*

Mejillones sets standard for concentrates

In Chile, the port of Mejillones has established high standards for the loading of zinc and lead concentrates. Safety systems are in place covering the reception of sealed containers and the storage of consignments in warehouses equipped with dust suppression systems. Transport to the quayside is via a tubular conveyor network, which prevents any contamination of the environment from the concentrates.

In addition, the port is relatively separated from the local community, located on the local industrial estate, which also ensures that contamination can be easily controlled.

Such has been the success of the handling of concentrates, that the port is now seeking to handle other mineral concentrates, too. *BC*

Noble new shareholder in Sitio 0

Noble Grain, which has majority Chinese investors, is the new shareholder of Sitio 0, the company that is building a new terminal at the Argentinian port of Quequén. Noble has obtained its equity stake from the US cooperative CHS, which formally had a holding of 30%. However, after the sale, each company will hold a 22.75% stake in the company.

Other investors in Sitio O R the Argentinian agribulk companies E-Grain, A&J Nari, Alia & Cia, and Lartirigoyen.

Phase I of Sitio 0 is currently under construction. It will have a 119,000-tonne capacity warehouse and a loading capacity of 1,200 tonnes per hour. Phase II will include the addition of a further berth and 100,000 tonnes of extra warehousing.

Forecasts suggest that the terminal, which has a 45-year operating concession, should begin operating in May 2015. *BC*

Dry bulk exports down at Bahía Blanca

There has been a sharp decrease in the amount of agribulk exported by ports in Bahía Blanca, Argentina, with total exports down by around 30.7% over the first seven months. During this period, traffic amounting to 4.18mt (million tonnes) has been shipped.

Wheat exports of 571,032 tonnes were 27% lower than the same period in 2013 and 60% down on 2012. Corn has been similarly affected. The 673,304 tonnes exported compares with 1.95mt in the corresponding 2013 period.

Barley, which in previous years had helped offset the loss of other grains, was also down, to 770,790 tonnes, which was a drop of 29%. Malt (–17%), sunflower oil (–23%) and soya pellets (–42%) also posted negative figures. Only soya, which amounted to 1.78mt, showed growth, of 27%. *BC*

Legal dispute shuts conveyors down at Paranaguá

In August, the conveyor system connecting grain silos operated by Paraguay in the Brazilian port of Paranaguá were shut down for an indeterminate period of time, following a judicial dispute with the companies that operate the system. Traffic carried by these conveyors accounts for 18% of the total port traffic.

The reason for the dispute is that the Mercosul consortium was recently awarded the concession to operate the conveyors, something which had been undertaken by Amazens Gerais Terminal Ltd for the past 25 years. Now, both are fighting for exclusivity in the use of the part of the conveyor system that connects the Export Corridor warehouses. *BC*

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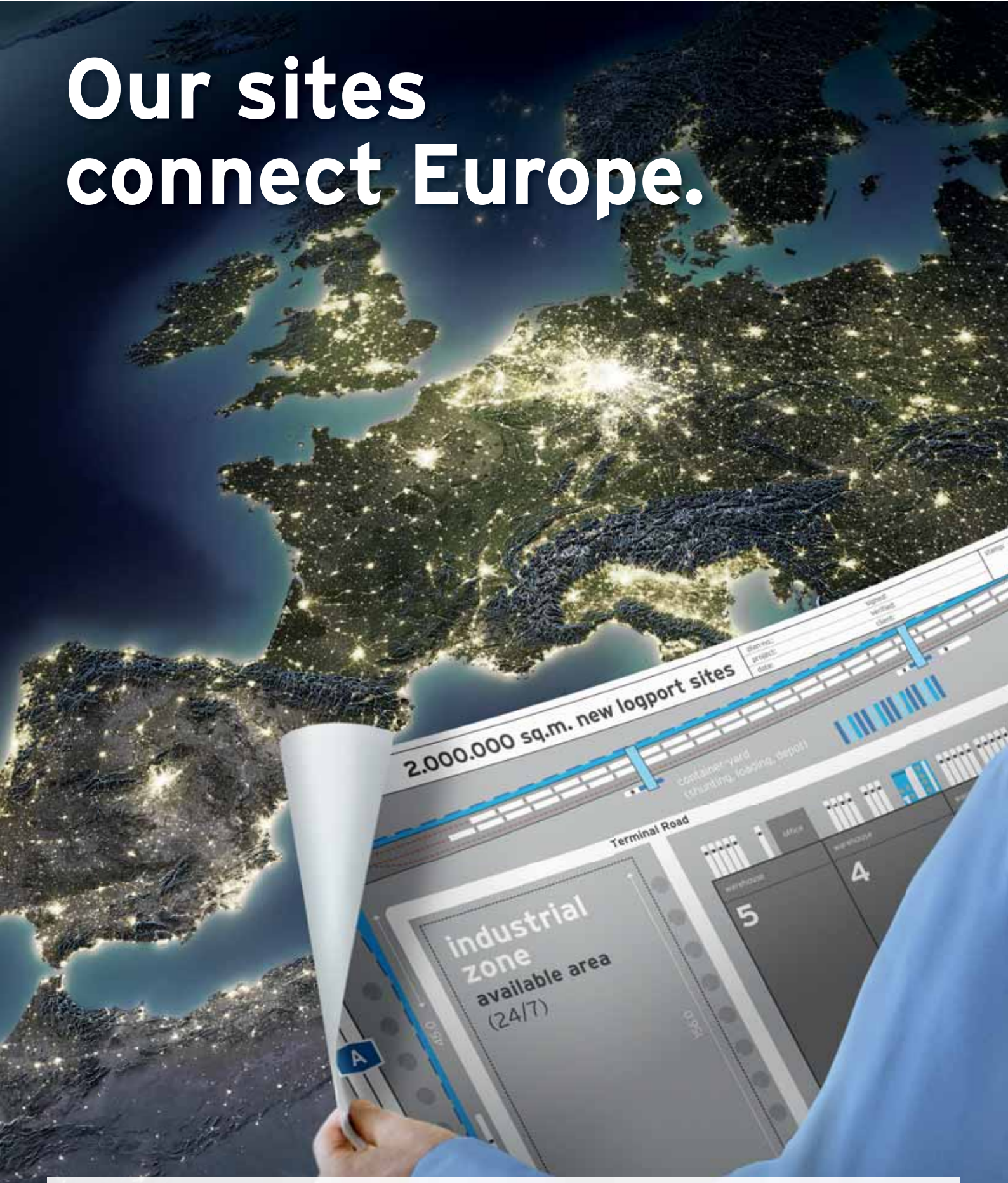

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Presidente Kennedy to become Brazil's most expensive port ever

Brazil's most expensive ever port project — Presidente Kennedy — is currently being assessed by the Environmental Institute (Ibama) prior to being given the go-ahead. It will require investment of $2.1 billion. The company responsible for the project, Porto Central, is 30% owned by the port of Rotterdam and 70% by TPK Logistica, the latter being part of the Polimix cement group. It is hoped that by January 2015, the necessary licence will have been granted allowing construction to go-ahead. *BC*

Cianport to open new terminal

Brazil's Transport Secretariat has given permission for a new Cargo Transshipment Station (ETC), which will be operated by Cianport, to open at Itaituba. This has a capacity of 3.5 million tonnes of dry bulk, which will be shipped along the Tapajós and Amazon inland waterway system. The company is now building a private use terminal at Santana, from where consignments will be exported. Investment of $18.5 million is being made, with the silos to store grain produced in the Midwestern section of the country. *BC*

Mumbai in cement promotion

Mumbai Port Trust is to lease 2.5 ha for a 30-year period to enable it to build cement storage silos with a combined capacity of 30,000 tonnes at Sewree, where a bulk cement handling and bagging plant is to be established. Cement sent here can be handled at any of the berths in the main port, thereby allowing private sector operators to deploy their own mechanized unloading systems. *BC*

Genova diversifies dry bulk traffic

In Genova, the dry bulk terminal has taken delivery of its first imported consignment of wood chip. This will be used as fuel in thermal power plants to generate electricity. The vessel, which was handled at San Giorgio quay, was transporting a consignment of 20,000 tonnes, which were later transported to end users by both road and rail. The terminal expects to be annually handling 80,000–100,000 tonnes of wood chips, following consolidation work undertaken by the port authority at San Giorgio.

The relaunch of the dry bulk terminal is predicated on the need to diversify commodities handled, with wood chip being yet another sign of this. Earlier this year, it also introduced a new bagging plant and another aimed at palletizing, while an anti-dust hopper has also been put into operation allowing the terminal to handle dusty products. In total around €2 million has been invested. *BC*

Vostochny buys more Marubeni handling equipment

The Marubeni Corporation has been awarded a $91 million contract to supply equipment for the Phase 3 development of the Specialized Coal Handling Complex at the Russian Port of Vostochny, which is due to be commissioned in January 2017. Equipment is to be delivered within 16 months.

The existing facility has a 98.9% level of automation, with coal arriving by rail being fed directly onto a conveyor system. Currently, the theoretical capacity is 14.2mt (million tonnes) per annum.

A second facility, the Universal Handling Terminal, uses grabs to handle up to 3mt of coal per year. The coal comes mainly from the country's Kuzbass region. *BC*

Freeport recommences shipments

The US mining company Freeport Indonesia has begun shipping copper and gold concentrates to Spain, following earlier shipments to China. This is the result of the government allowing the company to resume exports, with up to 50,000 tonnes expected to be sent abroad.

In January, the Indonesian government banned all export of raw minerals, but Freeport has been allowed to resume activities after committing to invest in the domestic mineral processing industry. *BC*

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AGM commences operations at Barcarena

AGM has reported that it has loaded its first bulk grain carrier at its new export terminal in Barcarena, in Pará. It is hoped that the terminal will serve expanding areas of the West and North of Brazil that are now cultivating grain. The facility, which ADM began operating at the end of July, could currently move 1.5 million tonnes annually. However it plans to expand this to 6mt by 2016. *BC*

New locations for ZHD Stevedores & Labee Group Moerdijk

ZHD Stevedores and Labee Group Moerdijk have each succeeded in acquiring ownership of a part of the former Namascor site as of 15 September 2014. The sites are located at Oostelijke Randweg no. 44–46 in Moerdijk and the 'Roode Vaart' harbour basin.

ZHD Stevedores

ZHD Stevedores is an independent, private stevedoring company with terminals in Dordrecht and Moerdijk. In addition, the company is active in Rotterdam with self-propelled floating cranes. It specializes in bulk handling, general cargo, steel products, coils and containers, as well as storage, distribution and port-related projects.

The new ZHD Stevedores site has a surface area of 28,000m², of which 4,500m² is occupied by a warehouse complex and 1,000m² is occupied by an office building.

With these new sites — in addition to its sites on the Vlasweg and Graanweg — ZHD Stevedores can further expand its services and respond to the growing market demand for water-located sites for open and covered storage.

Labee Group Moerdijk

Labee Group Moerdijk is an independent, private production and trading company that produces various environmentally friendly wood products, including: wood pellets, wood chips, fire logs and cat litter pellets. Labee Group Moerdijk has branches in Moerdijk and is also active under the trade names Energy Pellets Moerdijk, Woodchips Moerdijk and Woodflame Moerdijk.

The new Labee Group Moerdijk site has a surface area of 22,000m², of which 10,000m² is occupied by a warehouse complex. Labee Group Moerdijk will accommodate the further expansion of its existing activities at the additional location.

This expansion will allow Labee Group Moerdijk to expand its activities and improve its market position.

Deep water location

Both properties are located at the 'Roode Vaart' harbour basin, possible to accommodate sea-going vessels.

Moerdijk Port Authority

In a constructive dialogue with Moerdijk Port Authority, agreements were made regarding a sustainable water-bound access of both the properties by ZHD Stevedores.

ZHD Stevedores will be responsible for the exploitation and coordination of the entire waterfront (240 metres) at the Roode Vaart. This will result in efficient water-bound transshipment for both of these locations.

Rail connection

Both properties feature a rail connection on both the open area as within the warehouse complex.

Chennai takes another look at fuel handling

Chennai Port Trust is to undertake a six-month trial in the handling of metallurgical and petroleum coke in an attempt to make up for the loss of dusty cargo, such as coal and iron ore. The trial is to be undertaken with stringent environmental measures in place, while the Tamil Nadu Pollution Board is also being kept informed.

Since 1990, Chennai has handled the various types of coal, peaking in 2008/09, when it handled 9.85mt of mostly thermal coal bound for power stations. Unlike other types of coal, metallurgical coke is denser and harder and does not break down and generate dust when it handled. *BC*

Galigrain gets La Coruña concession

In Spain, La Coruña port authority has awarded Galigrain, the port's largest dry bulk stevedore, a concession to build a dry bulk warehouse in the outer harbour development. Investment of €4.5 million will be made in what will be a 100,000-tonne storage facility. This will cover an area of 9,500m², although plans exist to eventually in line with demand. *BC*

Kandla establishes gypsum discharge record

A new record for the discharge of bulk discharge of bulk gypsum has been posted by the Indian port of Kandla. In a 24-hour period, Maheshwari Handling Agency offloaded 34,192 tonnes of this commodity from the *Emerald Star*. *BC*

HBT to restart operations at Haldia

India's Shipping Ministry appears to be on the verge of reinstating Haldia Bulk Terminals (HBT), which quit the port two years ago halfway through a 10-year contract, blaming the pullout on law and order issues. The Ministry has put together a three-person committee to resolve the problem, which involves finding a fair deal benefiting both Kolkata Port Trust and HBT. *BC*

Indian coal shortages cause port congestion

A shortage of domestic coal is forcing India's power and steel companies to import large quantities of this from abroad, which has had the effect of producing severe over-crowding at the port of Paradip. At the moment, many generating stations have stocks of less than one week and the government is worried that this may result in power blackouts, prompting the Power and Coal Minister to urge importers to help boost stocks.

However, Paradip has warned that it is now operating at full capacity and cannot handle yet more imports. In the meantime, around 26 vessels are having to wait at anchor, with unloading once berthed taking an additional six days.

In August, consignments rose by 12% compared to August 2013, with imports at Paradip up 16% in the same period.

India is now facing a real crisis in the supply of coal, following a ruling by the Supreme Court that the established means of allocating coal mining concessions was both illegal and arbitrary, which could negatively impact on 218 concessions awarded since 1993 if a decision is go-ahead to withdraw these. *BC*

New Indian bulk port

In India, KSR Maritime Projects is seeking to build a port capable of handling 100mt (million tonnes) of cargo at Nakkapalle, costing $4.9 billion. Development will encompass four phases. In the first six years, it will have a 60mt capacity, later being expanded to 100mt. KSR has asked the state government for 3,500 acres of land on which to build a port. *BC*

Canadian Prime Minister Stephen Harper visits multi-user dock

In mid-October, the Port of Sept-Îles announced that Prime Minister Stephen Harper visited the worksite of the new multi-user dock, which has reached a significant milestone with the completion of civil engineering works.

Prime Minister Harper was accompanied by the Honourable Denis Lebel, Canada's Minister of Infrastructure, Communities and Intergovernmental Affairs and Minister of the Economic Development Agency of Canada for the Regions of Quebec, and Jean D'Amour, Quebec's Minister for Transport and the Implementation of the Maritime Strategy.

The construction phase of the multi-user dock, widely considered the largest maritime construction project in Canada, is now complete. All that remains is to install loading equipment. The $220 million construction project was made possible by a 25% contribution from the federal government under the Gateways and Border Crossings Fund. Of the remaining 75%, private dock users Alderon Iron Ore, Champion Iron Mines, Labrador Iron Mines, New Millenium, and Tata Steel Canada contributed 50%, while the Port of Sept-Îles covered the other 25%.

"Federal government funding was pivotal in helping us bring the five new dock users on board as financial partners," noted Carol Soucy, Chair of the Sept-Îles Port Authority Board of Directors. "By contributing to this project, which will have a huge impact in the region and all of Eastern Canada, the government has sent a clear message of strong support towards our region."

The construction site will be closed by late October. Two shiploaders, currently in the final fabrication phases in China, are expected to be delivered in January and installed in early 2015. The multi-user dock is slated to open around early summer 2015.

"This strategic facility will pave the way for future development in the region and the Labrador Trough," noted Sept-Îles Port Authority President and CEO Pierre D. Gagnon.

Sical to swap from iron ore to coal handling at KPL

Sical Logistics has been given permission to handle private coal rather than iron ore at Ennore's Kamarajar Port (KPL), where the facility in question has not been used for the last three years. However, this can only commence as of February 2016.
The iron ore berth, which is owned by Sical, has not been used since 2011, following a ban on iron ore exports imposed by the Supreme Court.

At present, the only other company handling non-Tamil Nadu Electricity Board (TNEB) coal in the port is the Chettinad group.

KPL argues that Sical does have the right to handle coal that the previously designated iron ore terminal under the 'mitigation relief measure', which allows a change in use if there is change the law. KPL must now obtain clearance from the Shipping Ministry.

In 2013/14, KPL handled 22.49mt of coal. However, the Chettinad terminal appears to be on line to be operating at full capacity at its two dedicated thermal coal berths, which it operates on behalf of TNEB. As a result, additional coal handling capacity is entirely justified.

Sical Logistics was first given permission to operate an iron ore terminal as a 30-year concession in September 2006 and is believed to have lost around $97 million following the decision by the Supreme Court. It is also estimated that conversion of the berths to coal handling will cost a further $32 million. *BC*

New sugar loading record at Santos

In the Port of Santos, the Copersucar Sugar Terminal (TAC) has established a new record for the loading of sugar into a single vessel. The *Christianna*, en route to Dubai, was loaded with 70,806 tonnes of sugar, the largest loaded in Brazil in the last eight years. This was undertaken over a three-day period.

In October 2013, TAC suffered a serious fire, which undermined its 5,000,000-tonne annual capacity, requiring the rebuilding of several warehouses. *BC*

Barcarena port opens

The new port of Barcarena has recently opened in Brazil, being 20 km from the city of Belém. The Ponta da Montanha Terminal is owned by Archer Daniels Midland Company (ADM), which aims to handle 1.5mt (million tonnes) a year during the first phase of operation, although could result in 6mt being handled by the end of 2014.

Investment of up to $200 million is being made in the facility, which was acquired by the company in 2012 and its redevelopment is being undertaken with a view to connecting road, rail and inland waterway at the port. It will mostly handle bulk grain, especially soya bean and corn from the midwest region and also from the states of Maranhao, Piaui and Tocatins. It is hoped that the location of the port will reduce freight costs for a exports by 34%.

According to the ADM, it expects to transport 80% of grain by inland waterway and around 20% by road until a new railway line enters in operation in 2020, linking Açailândia to Barcarena. *BC*

Sohar to become major grain hub

A major grain storage and handling terminal is to be established at the Middle Eastern port of Sohar by Atyab Investment, which is part of the public joint stock company Oman Flour Mills. The hope is that this new project will act as a stimulus for the creation of an agricultural cluster at the port and Freezone.

The terminal will be equipped with a silo complex, a flour mill and bulk grain handling facilities, which could eventually serve as a harbour for trading in grain commodities. It will occupy part of the relocated container terminal.

Up to 200,000 tonnes of grain will be able to be stored at the port in the first phase development, which could be increased to 300,000 tonnes as part of a second phase. Funding will be made available by the government.

The terminal will also handle bulk raw materials needed by the new sugar refinery that is under development in the adjacent grain terminal. Around $200 million is being invested by Oman Sugar Refinery Company at the port. This will have an annual capacity of 700,000 tonnes per annum, expandable to 1,000,000 tonnes within three years.

Atyab is also to build a flour mill at the port able to produce up to 500 tonnes per day. *BC*

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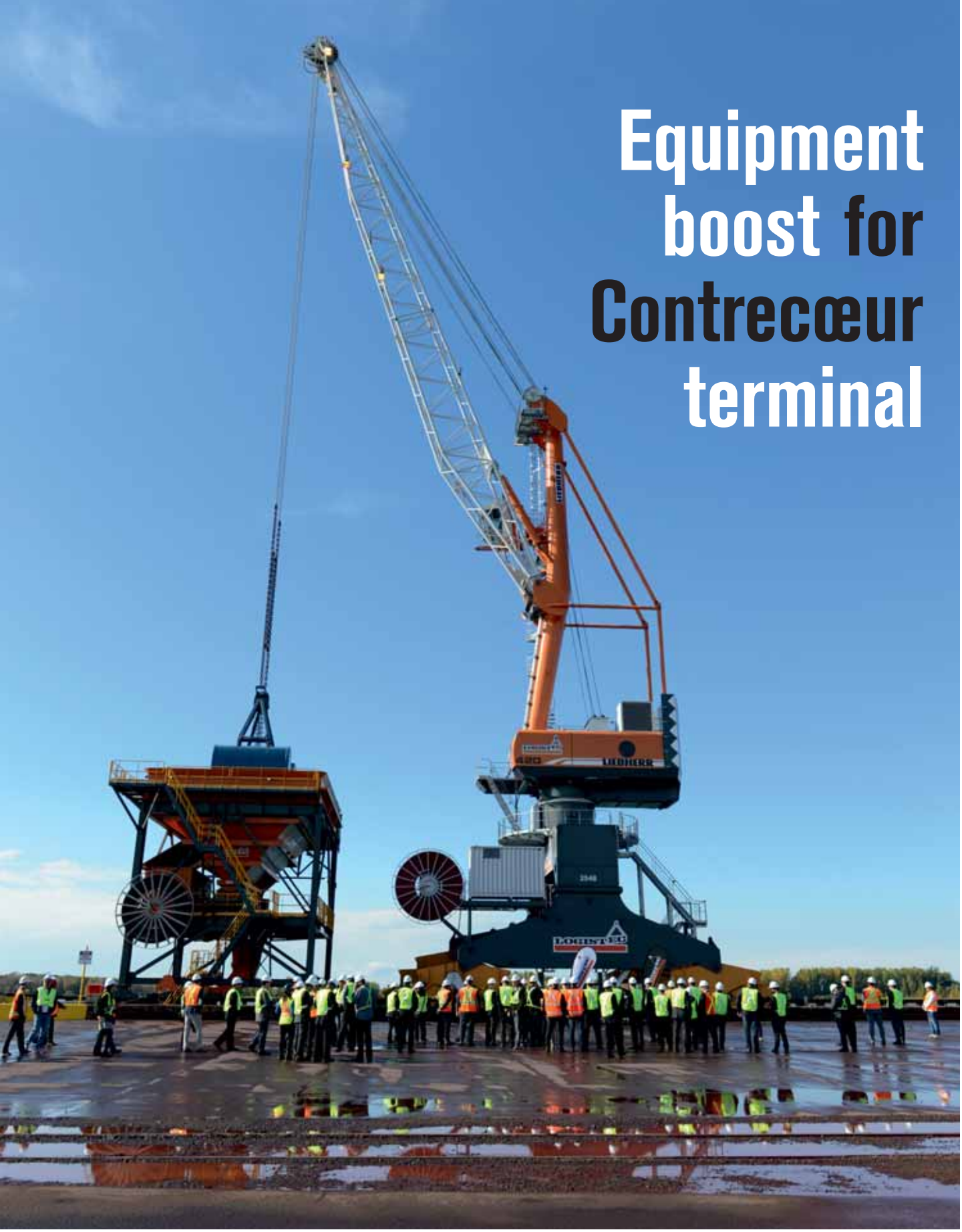

C$12 million modernization at Logistec's Contrecœur terminal includes new crane, hopper, and covered conveyors

Logistec has invested C$12 million over the past three years in renovations and new equipment at its Contrecœur terminal to move larger bulk volumes and work with a more diversified cargo base.

Contrecœur now features a brand new Liebherr LPS 420 crane with a capacity of 120 metric tonnes in lift mode and 75 metric tonnes in grab mode — the largest SWL (safe working load_ capacity in North America for a rail-mounted crane —

and has a wide range of grabs for all types of bulk cargo. Logistec also installed a new hopper, fresh tracks, and a state-of-the-art electrical supply and distribution system to suit the crane and hopper's modern designs.

Furthermore, Logistec has covered the entire conveyor system at Contrecœur, in addition to replacing a vital section of the equipment, reducing the total number of conveyors and transfer points, and installing supplementary dust collectors at key transfer points. This makes the loading and unloading process better for the environment, and further minimizes fugitive dust and loss of material for customers.

"With the upgrades that we've put in place, Contrecœur is now one of the most modern, efficient bulk-handling facilities along the St. Lawrence River," says Madeleine Paquin, President and CEO of Logistec. "This busy terminal has spent over 20 years building a reputation for handling bulk cargo, and we've now enhanced our ability to also handle breakbulk, project cargo, and heavy lift on site."

Contrecœur's strategic location, about 30 minutes outside of Montreal, provides ample, direct access to railways, highways, and barge services. The terminal is already a go-to destination for handling raw materials such as iron ore, fertilizer, bauxite, coal, and clinker. Logistec also provides terminal management and cargo handling services for several commodity suppliers who have already chosen the site as a multi-user distribution centre.

The technical improvements to the terminal also have significant environmental benefits.

"The new electrical system, combined with more modern equipment, will reduce green gas emissions and allow for better energy performance," says Daniel Jodoin, Vice President of Bulk Cargo at Logistec. "We are also providing a platform on which to encourage short sea shipping, which will transfer movement to its greenest form (on ships) rather than on truck or rail." DCi

France & Belgium

what's new in bulk cargo

Jay Venter

Port of Ghent strengthens position at Paris grain exchange Matif

In the course of the fourth quarter of 2014, the Port of Ghent will be a new delivery point for contracts for rapeseed meal and rapeseed oil that are being traded at the Matif grain exchange. In the grain world, this Parisian option and futures market is a very well-known and important exchange that forms part of Euronext. In this way, Ghent port is not only strengthening its position at this internationally renowned grain exchange but also as the granary of Europe.

The Port of Ghent is already quoted as a delivery point at the French Matif grain exchange for the products rapeseed and malting barley that are traded there.

For the Port of Ghent, the additional contracts for rapeseed meal and rapeseed oil can yield extra tonnes of storage in the future. A deal between seller and buyer determines where the goods have to be collected.

Ghent port also aims to become the delivery point for wheat and other kinds of grain in the future.

Biggest storage capacity for grain in Europe

This strengthens the Port of Ghent's position at the Matif grain exchange. This is not a coincidence, as the port is known as the granary of Europe, with the largest storage capacity for cereals and derivatives: 1.3 million tonnes. Specialized terminals and tanks are available for the storage of different kinds of cereals, meals and vegetable oils, both in the short and in the long term. These products are being used in the food sector, the animal feed sector and for the production of biofuels, among other things.

As far as cereals and derivatives are concerned, port of Ghent has trading partners in Brazil, Canada, Australia, France, the Ukraine and Romania, among other countries.

Grain being loaded onto the Ocean King D.

Belgian Eco Energy announces new power station in port of Ghent

On Thursday, July 3, 2014, Belgian Eco Energy announced the construction of a new biomass power station in the Port of Ghent: 'Bee Power Gent'

The plant, bearing the name of Bee Power Gent, will be built on the Ghent Coal Terminal site at the Ghent-Terneuzen Canal. For this purpose, Bee entered into a long-term agreement with the SEA-invest stevedoring company and with Ghent Port Company. SEA-invest is going to invest in the cranes, conveyor belts and storage silos.

The vicinity of the water is necessary because the biomass (short-rotation wood chips and agro waste flows) is supplied on board of seagoing vessels, both via transatlantic and European transport. The biomass that is used is 100% sustainable and is checked every two years by external parties.

The station's residual heat will be used by companies in the port of Ghent and in neighbouring houses.

The power plant will meet the strictest emission standards as to dust, nitrogen and sulphur.

450,000 families

Bee Power Gent will produce 200MW or 2% of the entire Belgian market (84TWh). This corresponds to the consumption of 450,000 families or about the province of East Flanders.

Investments amount to between €300 and €330 million and provide for 700 to 1,100 jobs in the first three years and afterwards for 100 to 120 permanent jobs.

The project is now in a far advanced stage. The Environmental Impact Assessment (EIA) has been officially approved and the building and environmental permits are expected by October 2014. The Flemish government already approved the green power certificates. The station will be realized by the third quarter of 2017.

About Bee

Bee is a Belgian integrated energy company active in the development, financing, construction and operation of renewable energy projects and the supply of power and gas to industrial customers. The company is financed by mainly Belgian industrial family capital.

The strategic focus mainly lies on developing a (decentralized) production park and selling the produced energy (electricity and heat) to local businesses. Bee has a project portfolio of wind turbines, cogeneration units (gas turbines and engines) and the 'Bee Power Gent' biomass power station.

Port of Ghent stands firm in 2013 owing to dry bulk and ro/ro

Ghent port registered a total waterborne cargo traffic of 48.2mt (million tonnes) in 2013, which is 2.6% less than in 2012. Its seaborne cargo traffic did better than the traffic by inland navigation. Consequently, it is the classic sectors with lots of added value and jobs that relatively stand their ground or are improving. Ghent sees its position as a bulk port reconfirmed and is at this moment the biggest dry bulk port of the country. Sweden, Russia and Brazil are its main trading partners.

Seagoing and inland navigation

For 2013, the overall waterborne cargo traffic amounts to 48.2 million tonnes. This is 1.3mt less than in 2012 or a decrease by 2.6%. Slightly less traffic by sea, a decrease of the cargo volume by inland waters also due to the strike of mid-2013 and fluctuating markets can explain this diminished traffic.

With 25,955,983 tonnes, the seaborne cargo traffic is in the region of 26mt, or 1.3% less than in 2012. Inland traffic experienced a decrease by 4% and finished at 22.2mt.

The diminished volume by sea is also mainly visible in the decreased transatlantic (deepsea) traffic. Shortsea shipping — navigation along the European coasts and on the Mediterranean — underwent a slight increase in 2013 as well and takes up just a little more than two thirds of the seaborne traffic.

With 2,948 seagoing vessels, the port counts 177 less than in 2012. For inland navigation, the number of vessels came out at 15,193, which is 903 units less than the year before. The worldwide scale increase is not only visible in seagoing navigation but even more also in inland navigation. There are fewer vessels calling at the port but on average, they transport more tonnes of cargo. Consequently, also the past year shows that the second, large new sealock in the Dutch port of Terneuzen is badly needed for the further development of the port and the businesses.

Sweden, Russia and Brazil

For the third year in a row, Sweden is the main trading partner for Ghent port thanks to its ro/ro traffic (3mt). Russia remains second, for the fifth consecutive year, mainly due to the steel traffics (2.3mt). The third place is taken up by Brazil with iron

ore and fruit juice (2mt) among other cargoes.

The United States occupy the fourth place with the handling of coal and wood pellets. Five is taken up by newcomer Latvia. This has to do with the transshipment of and trade in coal — from Russia among other countries — which is subsequently conveyed in transit. On six there is Norway (iron ore), followed by Canada (also iron ore) on seven. Eight is taken up by Great-Britain (sheet steel, among other cargoes), ninth is the Ukraine (anthracite and rapeseed) and tenth is Australia (rapeseed).

Ghent, biggest dry bulk port of the country

In its 2013 seaborne cargo traffic, Ghent saw an increase of mainly crude minerals and building materials (sand), of fertilizers and of ores. Agricultural products (cereals), chemicals and food products experienced a drop.

Ghent sees its position of dry bulk port reconfirmed. Even more so, Ghent is at this moment the biggest dry bulk port of the country. In seagoing navigation as divided according to the type of cargo, dry bulk takes up 16.4mt (63%). Also striking: ro/ro traffic increases by 16% to 2mt.

Consequently, it is the classic sectors with the classic businesses creating lots of added value and jobs that relatively stand firm or are improving.

2014: modest tariff increase

At the beginning of 2013, Ghent Port Company assumed that the port would be facing a difficult year. The first half year presented itself with a 6% loss in the total cargo traffic. The Port Company was obviously worried then. In the course of the third and fourth quarters the overall cargo traffic again improved, mainly owing to the activities of the classic sectors of dry bulk and ro/ro.

At the beginning of 2014, Ghent Port Company hopes for a continuation of the drive of the past six months. The Port Company now implements a modest increase of the tariffs for concessions and port dues. With a 1% increase, this rise remains below the figure of the index adaptations and is in line with the prevailing market trends of the ports in the region.

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the french port for dry bulk

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Euroports Group's Quay 168, in Antwerp, Belgium.

Euroports Group is an international operator in the maritime supply chain solutions. The group is an expert in the port and logistics services with long-term expertise in offering tailored maritime and logistics integrated services for all type of bulk commodities.

The company offers an extensive portfolio from core port activities such as handling and storage to a full range of value added services and transport management.

Customs clearance, ship agency, road and barge transport and freight forwarding services are offered in-house, all centralized through a single point of contact customer supporting the clients in their full transportation needs, combining one or more services and locations into an optimized 'supply chain solution'.

Euroports has been the partner of choice for the handling and logistics of dry bulk commodities in Belgium for decades, with facilities recognized as centres of excellence within the industry.

The group has a large presence in Belgium, where its Belgian brand deploys its activities in Antwerp, Ghent and in several inland terminals in the Liege and Charleroi area. A wide range of dry bulk commodities is handled at those locations.

In Antwerp, the company operates up to three dedicated bulk terminals to handle various products such as fertilizers, industrial minerals, fluorspar, spodumene, pyrobor, sugar, fly ash and kaolin.

Quay 518 was reconverted from grains to sugar back in 1984 and it is nowadays the world's largest independent facilities for beet sugar in Europe. The terminal has seen its dedicated storage surface enhanced through the years to its current capacity of 260,000 metric tonnes. Automated bagging lines as well as a fully automated and patented loading station for bulk in containers installed in 2012 are also available.

Quay 168 is the market leader in the region, storing and handling fertilizers and industrial minerals. The unique inland deep sea position of the Port of Antwerp guarantees advantageous hinterland connectivity and supply chain cost savings. The terminal covers an area of 320,000m^2 with up to 160,000m^2 of covered warehouses with capacity for 500,000 metric tonnes of bulk and bagged cargo. A fully equipped quay (cranes, loading and unloading equipment) secures high instant flexibility offering maritime and logistic activities across the 3km terminal quay side.

Means for value added services are also part of the unique offer at Quay 168. Bagging, blending and palletizing services can be added to the mix when needed. Terminal equipment includes seven fixed and two mobile bagging lines for 25–50kg bags with capacity of approximately 96tph (tonnes per hour) plus two fixed and three mobile max bagging systems with the capacity of 40tph.

Quay 168 invested recently in two key projects creating customer dedicated locations and solutions. This approach maximizes the quality of the services offered by Euroports. Handling over 80 different products, dedicated solutions increase the safety and quality performance.

The third bulk facility in Antwerp is Quay 54, a bulk terminal with dedicated connection to a neighbouring slurry plant, with kaolin as the main commodity handled. Quay 54 equipment includes conveyor lines, dust free hoppers and front end loaders, floating cranes as well as 60,000 tonnes of storage capacity. Recently, the terminal started handling pyrobor, offering a customer dedicated solution.

The terminal in Ghent specializes in dry bulk operations, and it is accessible to Panamax vessels. Main commodities handled are fertilizers and minerals. The facility offers weighing, sieving and bagging services, as well as available storage capacity for 200,000 tonnes, partly cGMP approved.

In the south of Belgium, Euroports operates inland terminals in Loën, Ile Monsin, Renory, and Seraing (Liège area) and Couillet (Charleroi area), which are connected to Antwerp via the Albert Canal. Products handled at those inland locations have historically been dry bulk commodities of all types, including raw materials used in the neighbour industrial sites.

Recent investments at Euroports Inland Terminals have been directed to diversify the portfolio of commodities handled and expand the company's activities towards the handling and processing of polluted soils, waste, general cargo, minerals and biomass sectors. The terminal is now a leading provider for the de-icing and wood pellet industry in the region.

The inland branch has a clear strategy for the coming months, which consists of continuing the diversification started and in the short term, getting the necessary permits to start, as well as the handling of hazardous waste.

About Euroports Group

- EUROPORTS is one of the largest port operators in continental Europe.
- EUROPORTS handles in total some 46 million tonnes annually in a wide range of products in industry sectors such as minerals, fertilizers, forest products, agribulk, metals, steel project cargo.
- The group consists of 22 port terminals in Europe plus two in China.
- A wide range of Transport Services (road transport, barge transport, sea chartering, ship agency, customs clearance) in-house to offer its customers 'last mile deliveries' to the hinterland.
- Ten contract logistics projects for various industrial customers at its sites.
- A global freight forwarding, company (Manuport Logistics) with offices across Europe, the Middle East, Asia Pacific and Latin America.
- EUROPORTS is owned by a consortium of institutional investors:
  - Brookfield Asset Management (Canada)
  - Antin Infrastructure Partners (France)
  - Arcus Infrastructure Partners (Italy & UK).

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Three new E-Cranes installed in South America in late summer

E-Crane has had a very busy end to the summer with three new E-Crane installations taking place back to back in South America, from July into early August 2014.

All three cranes are being used for grain handling operations at facilities located in Argentina. One E-Crane is installed at CHS, Inc. to unload Mississippi and Paraná sized barges into a hopper nearby on the dock. The other two new E-Cranes are installed together on a single barge at a UABL facility. The barge acts as midstream transfer system to move grain from material barges to Panamax sized ships.

CHS, Inc. purchased a pedestal mounted 1500 Series/Model 11264 E-Crane earlier this year.

Grain Handling at CHS, Inc

CHS, Inc. located near Zarate, AR, purchased a pedestal mounted 1500 Series/Model 11264 E-Crane earlier this year for its grain handling operation.

The E-Crane is dock mounted and transfers grain from Mississippi and Paraná sized barges to a hopper located on the dock alongside the E-Crane. The E-Crane has an outreach of 26.4m and a duty cycle capacity of 16.5 metric tonnes (18.2 US tons). The crane is equipped with a 14m³ hydraulic clamshell grab and is expected to achieve an unloading rate of over 1,000 metric tonnes per hour. The project is similar to the Terminal 6, S.A. installation which took place in 2013.

About CHS, Inc

CHS is one of the largest processers of soybean and grain. The company refines more than 1.3 billion pounds of soybean oil annually that's used in a wide variety of food products and applications, including margarines, butter, spreads and coffee creamers.

They process nearly 120 million bushels of soybean annually, the equivalent of million acres that's used to extend meat products, reduce costs and boost protein with lower fat content. At processing and manufacturing facilities in the United States, Israel and China, they produce 3 million tons (2.7 million metric tonnes) of soy protein products, including soybean meal used in animal feed and soy flour and textured soy proteins used to boost protein for manufacturing human and pet food products and more.

Barge Mounted E-Cranes — Midstream transfer system at UABL

Two 700 Series E-Cranes were installed on a single floating barge at UABL, located near Pueblo Esther, AR, to work together unloading grain barges.

One E-Crane is a 700 Series/Model 4264 with 26.4m of outreach and a duty cycle capacity of 5.5 metric tonnes (6.0 US tons). The second E-Crane is a 700 Series/Model 4290 and has a slightly longer outreach of 29.0m and the same duty cycle capacity. Both E-Cranes are equipped with a 4.5m³ hydraulic clamshell grab and work simultaneously to unload Mississippi and Paraná sized barges.

The two cranes are mounted on a 54 x 16.5m barge. Two identical hoppers are also located on the barge, along with a grain elevator and shiploading arm system. The E-Cranes unload grain from the material barges located on one side of the crane barge and load the grain into the hoppers. The hoppers output the material onto the conveyor/shiploader system which transfers the material into Panamax sized vessels located on the other side of the crane barge.

About UABL

UABL is the largest supplier of transport on the Parana-Paraguay river system servicing Argentina, Bolivia, Brazil, Paraguay and Uruguay carrying cargo over more than 4,000km of river.

The company has a combined total of more than 85 years of experience in the activity as well as in multi-modal transportation. This know-how allows it to meet the particular challenges of each of its clients in all of the areas that they operate and serve. With 500 barges and more than 20 pushboats, the company annually transports more than 3.5 million tonnes of cargo. The product mix is varied from general cargoes; grain and grain by-products, minerals, liquid and petroleum products, to wood products and containerized cargoes.


Two 700 Series E-Cranes were installed on a single floating barge at UABL, to work together unloading grain barges.

Antwerp: European centre for bulk handling

The Port of Antwerp has over 1.4 million square metres of covered and open storage space for dry bulk cargo. The port also has eleven dry bulk handling terminals with full trimodal access. This makes Antwerp one of the leading European centres for dry bulk storage and handling, *writes An Damen, Antwerp Port Authority.*

Coal, iron ore, non-ferrous concentrates, cement, industrial minerals, fertilizers, grain, sugar and scrap – these are just a few examples of the wide range of dry bulk products that are handled in the Port of Antwerp. Together they represent a total of some 15mt (million tonnes) per year.

The port has eleven dry bulk handling terminals with full trimodal access. This speeds up transit times, maximizes connectivity and provides seamless integration between foreland and hinterland.

Excellent connections

The Port of Antwerp is an important centre in the global supply chain and the leading European port for shipping to and from North America, South and Central America, Africa, the Middle East and the Indian subcontinent. Various dry bulk services connect the port to locations worldwide, usually on a chartering basis. In addition, frequent shortsea and feeder services link the port to more than 200 locations in Europe and North Africa.

Each year, a total of some 14,500 bulk carriers, from Handysize up to Capesize, call on the Port of Antwerp. There are more than 900 logistics companies in and around Antwerp, including providers of road, rail or barge transport solutions. This diversity of service providers guarantees competitive rates.

Inland navigation

The prime mode for dry bulk cargo is the inland waterway. The frequent barge departures towards numerous destinations in Europe are testimony to the aforementioned statement. Just as with the sea-going vessels, the port accommodates various types of barges. Located in the middle of the Scheldt-Meuse-Rhine delta, the port is directly connected to the Albert Canal, the 1,500km Belgian inland waterways transport network, and the European inland navigation network. For example, it takes about 20 hours for a barge to reach the Ruhr region (Duisburg) and 72 hours to reach Switzerland. Northern France can be reached in 24–36 hours.

Rail network

The Port of Antwerp is known for its excellent access by rail. All of the terminals in the port area are directly connected to the rail network, providing the port with more than 1,000km of railway tracks. Various rail freight companies serve the Port of Antwerp, with regular connections to north-western Europe.

Road transport

The Port of Antwerp is situated at a crossroads of motorways that connect Antwerp not only to the rest of Belgium, but also to the Netherlands, Germany, France and the rest of Europe. For example, trucks can reach Frankfurt in about five-and-a-half hours and Paris Ile-de-France in just over four hours. International road hauliers specializing in the transport of all kinds of dry bulk products offer a full range of trucks and equipment.

Biggest in the world

With a surface area of 13,057ha, the Port of Antwerp is one of the biggest ports in the world. It is also Europe's largest port in terms of storage area, and Europe's second largest port in terms of total volumes handled.

The total volume of 190mt handled in 2013, is the result of the work of more than 140,000 professionals. These include many specialists offering value-added logistics (VAL) services such as stock management, quality control, weighing, sorting, conditioning, grinding, mixing, labelling or packaging of goods.

Terminal operators

The Port of Antwerp is proud to be able to present terminal

continue to invest in dry bulk. One of them is Vollers, which erected a brand new bulk warehouse for cocoa. The unique, innovative and above all state-of-the-art 8,000m² warehouse has 27,000 tonnes storage capacity.

This investment shows that Antwerp offers more scope than ever for new initiatives. "The Port of Antwerp is particularly proud that a player like VOLLERS invests in innovative infrastructure. It demonstrates not only the importance of the Port of Antwerp for commodities such as cacao, but is also the perfect example of the ambition that the Port of Antwerp has set for itself in its strategic plan: a conscious choice for a sustainable port with focus on added value creation."

operators that are known for their professionalism, productivity, dependability, service-oriented approach and customized service. Operators that rely on highly skilled and competent staff and specialized equipment. For dry bulk handing in particular, the service providers in the port area offer tonnes of experience and expertise in the transport, handling, processing and storage of all kinds of dry bulk materials.

Furthermore, the comprehensive choice of dry bulk terminals and operators allows customers to benefit from highly attractive rates.

Innovation and development

Also, private companies in the Port of Antwerp

Ports of Antwerp and Shanghai strengthen collaboration

The port of Shanghai, the largest in the world, and the port of Antwerp, the second-largest in Europe, are to collaborate more closely. A memorandum of understanding (MoU) was signed to this effect during the recent trade mission to Shanghai.

Antwerp and Shanghai have maintained close relationships with each other ever since they were first twinned in 1985. The twinning agreement was subsequently confirmed during the Belgian trade mission to China headed by the then prince Philippe of Belgium in 2004. Now, ten years later, the two ports have undertaken to collaborate intensively with one another in a number of fields. Antwerp's maritime know-how is strongly represented in the port of Shanghai, as no fewer than 240 Chinese port professionals have been trained by APEC, the training subsidiary of Antwerp Port Authority.

Characteristics

The port of Shanghai is the largest in the world, with a freight volume of 776 million tonnes in 2013. The number of containers handled last year was 33.61 TEU. Antwerp for its part is the largest port in Belgium and the second-largest in Europe. With a freight volume of 190 million tonnes and 8.6 million TEU, last year was a record year for the port. Both ports are absolute leaders in their respective regions. It is hardly surprising, therefore, that such world players are eager to collaborate more closely.

Collaboration

With the MoU that has just been signed Antwerp and Shanghai have agreed to among other things exchange information about their respective hinterlands, carry out joint promotion and set up training courses for maritime professionals.

Antwerp attaches such great importance to the Shanghai region and South China that it appointed a permanent representative there in 2008. Ever since then Jan Van der Borght has worked tirelessly to raise Antwerp's name recognition in China. And not without success: last month the City of Shanghai presented him with a Magnolia Award for the second time in recognition of his contribution to the economic development and international influence of Shanghai. He is only the second Belgian and the first foreign port representative to have received both a Silver (2012) and a Golden Magnolia Award.

Knowledge transfer through APEC

'Friendship through port knowledge' is the baseline of APEC, the training centre for the port of Antwerp. Thanks to the many years of friendship between Antwerp and Shanghai many maritime professionals from China have been trained in Antwerp. APEC has been recognized since 2004 by the State Administration of Foreign Experts Affairs in China (SAFEA) as a qualified 'overseas training institution' for Chinese delegations. Indeed it is the only European port-related training institute to have received such recognition from SAFEA. APEC has also maintained collaboration arrangements with various Chinese partners for several years now. More than 3,800 Chinese specialists have already received training from APEC.

Euroports Inland Terminals enters into new markets

Gaining and growing market share in these new markets is a clear objective for Euroports Inland terminals: "We want to grow in these new markets, and aim to achieve this in a structural and sustainable way", says Muriel Baugnée, "This implies that we continue to invest in our infrastructure and equipment. Our applications to obtain the necessary permits for handling hazardous waste well within 2015 are in full progress." The company expects that these investments will definitely support the ongoing business relationships with its current customers and will also fuel further business growth and diversification.

A good example of EIT's showcase-model reconversion is the starting business relationship with AB Inbev/Jupiler.

In collaboration with André CELIS and AB InBev, Euroports Inland Terminals succeeded in providing the best, lean and green solution to both companies. This is resulting in a significant CO_2-emission reduction for AB Inbev's logistics flows, which also brings a decrease of their carbon footprint.

After loading pallets on a dedicated and André CELIS-managed barge in Louvain, the cargo arrives in Liège where it is discharged at Euroports Inland Terminals' Monsin facilities. Pallets are then loaded directly on AB InBev trucks for a last-mile delivery to the customer's Jupille plant close-by. Muriel Baugnée: "Euroports Inland Terminals is pleased to collaborate with clients such as these, who are open to favour barge transport over truck transport to reduce costs and CO_2-footprint."

About Euroports Belgium

Being the Partner of Choice in Maritime Supply chain solutions is Euroports' mission. The group consists of 22 port terminals in Europe plus 2 in China. It handles a wide range of products in industry sectors such as minerals, fertilizers, forest products, agribulk, metals, steel project cargo. The group combines its service and industry knowledge on its quaysides in the different ports with in-house transport services, allowing it to offer fully integrated international logistics solutions to its clients.

Euroports Belgium, the Belgian part of the group comprises several port terminals in Antwerp, Ghent and inland terminals in the Liège and Charleroi area. Products handled vary from dry bulks such as minerals and fertilizers to breakbulk commodities such as steel, pulp and paper.

The Belgian organization also offers an extensive portfolio of logistics services such as ships agency, inland navigation, customs clearance and road transport. A unique logistics solution tailored to clients' product flows gets engineered, combining one or more services and locations into an optimized 'supply chain solution'.

Work at Montoir de Bretagne in progress

Sand terminal upgrades

The work on developing the new sand terminal is nearing completion at Montoir de Bretagne's multi-bulk cargo facility.

The nautical operations (installation of the platform, provision of access ramps) orchestrated by the Nantes – Saint Nazaire Port teams were finished early in September. The companies Sablières de l'Atlantique and CETRA have taken up their respective temporary occupancy permits and have commenced the site development work. The target date for the start of operations is early 2015.

At the ro-ro terminal, work is going ahead on the construction of ro-ro berth N° 3. The spatial preparation phase began at the end of August and will go on until the end of October. This stage will then be followed by the first maritime work, including notably the piling work. The berth is due to be commissioned by the end of 2015.

IDEA Bulk Cargo Services extends its storage capacity

At the Montoir de Bretagne multi-bulk terminal, IDEA Services Vrac (Bulk Cargo Services), a wholly owned subsidiary of IDEA Groupe, is completing work on extending its storage facility. The warehouse will be operational at the start of December 2014.

Designed to receive bulk agri-foodstuffs, its surface area is set to expand from 10,500 to 15,000m² and its storage capacity from 50,000 to 75,000 tonnes, thereby permitting the development of import volumes. The number of cells will also be increased by 50 %, rising from six to nine.

Bordeaux Atlantic Port nominates Europorte to run Verdon Terminal

Earlier this year, Bordeaux Atlantic Port has made a decisive step in the re-launch of the Verdon terminal, the deep water port at the entrance to the port of Bordeaux in France.

Following a public tender process which attracted four reputable candidates, the port of Bordeaux has chosen Europorte as its preferred candidate to operate the Verdon terminal. The important industrial and logistics platform known as the Grand Port Maritime de Bordeaux, is spread along the 110km of the Gironde estuary. It is situated at a crossroads of land, sea and river routes and is made up of seven specialist terminals. The port handles a wide variety of traffic flows including, cereals, oils, wood, paper, petrochemicals minerals and containers, it handles approximately nine million tonnes of freight each year.

The public tender process marked an important step in the re-launch of the Verdon terminal, a deep water port that can accommodate the largest ships, and the development of container traffic at the port of Bordeaux in preparation for the anticipated growth in volumes to the wider south west of France.

The port of Bordeaux's ambition, to make the Verdon terminal an efficient high performance deep water port, served by a regular rail shuttle that will link it to the rest of south west France, is starting to take shape.

Europorte, the rail freight subsidiary of Groupe Eurotunnel, which has already demonstrated its expertise at other French ports, shares this ambition and goals and will implement a full logistics chain from unloading ships to running trains. This will enable modal shift from road to the mass transport modes of sea, river and rail across the port of Bordeaux's hinterland.

With the completion of the terminal agreement between Europorte and the Grand Port Maritime de Bordeaux, the re-launch of the Verdon terminal will now enter a start-up phase, before full scale operations begin.

HAROPA: a high-performance dry bulk port

The Hong-Kong-flagged cargo-ship Hebei Shijiazhuang, *loading in HAROPA – Port of Rouen some 50,000 tonnes of feed barley. (photo ©Rémi Hondier)'*

HAROPA, the joint venture between the ports of Le Havre, Rouen and Paris (France), is a new port system joining forces to provide end-to-end competitive solutions, thus constituting the fifth-largest North-European port complex.

HAROPA provides 55 sea and river terminals dedicated to the handling of dry and liquid bulks from the sea to the east of the Paris area. Dry bulks account for a significant part of the overall traffic of HAROPA ports, in addition to container traffic for which they rank # 1 in France. Dry bulks especially include grain (wheat, barley, etc.), coal, sugar, malt, cocoa, oil seeds, fertilizers, sand, gravels and crushed stones, aggregates, snow-clearing salt, peat, cakes, biomass, etc. HAROPA recorded 14mt (million tonnes) of dry bulk traffic in 2013 (+24%).

The BOCS shipping line's ship, African River, *loading wheat bound for Africa in Rouen during the last grain season. (photo ©GPMR)*

Coal traffic: good figures for 2013

HAROPA recorded traffic of over 2mt in 2013 that is a 26% rise against the previous year.

HAROPA-Port of Le Havre experienced a clear upturn and the imports of industrial coal also increased in HAROPA-Port of Rouen where five Capesize vessels were received by Sea Invest as well as

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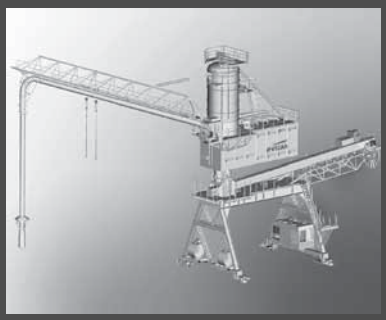

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Bulk cargo ship Densa Shark *is the longest ship ever received in Rouen to offload coal. (photo ©Laurent Duclos)*

double calls by Panamax vessels, which generates a maritime-river traffic (of around 100,000 tonnes) bound for the Paris area city heating. There is also traffic growth for petroleum coke via Honfleur and Rouen, reaching 70,000 tonnes in 2013. Coal recorded a drop in the first six months of 2014 due to a mild winter and the stoppage of a unit of the thermal station in Le Havre for works.

Cereals: High-quality produce and strong growth

Cereals alone account for more than half the tonnage of dry bulk (7.4mt, that is +35 %). The recovery of grain exports was achieved far beyond the forecasts of mid-2013, with a rise of more than 1.9mt of the exports of wheat and barley in 2013, compared to the previous year. The year 2013 is therefore a better one than average, despite stiff international competition, and of a very good quality owing to the crops in the Rouen hinterland. HAROPA-Port of Rouen is the leading European port for wheat export, with the main destinations being Algeria and Western Africa being on the rise.

It is worth noting that Le Havre port has strongly risen as regards the export of cereals (especially barley and malt to Asia and Africa) in containers. In 2013, there was a strengthening in the cereal trade, by especially the creation by 'Interface Céréales' and 'Axéréal' of 'Granit Céréales', an association for grain marketing via HAROPA-Port of Rouen, which will come on-stream in the coming months.

Considering the first six months of 2014, grain bulk trade and agri-business continue to be on the rise, with 4mt (+2%); the exports of wheat and barley still increase as they form the second part of a very good and steady grain season for 2013/2014 reaching 7.45mt (+12.4% against the previous season). Algeria, Morocco and Saudi Arabia are the first purchasers of the cereals from HAROPA-Port of Rouen which exported, during the season, around 50% of French common wheat and more than 40% of French barleys.

Stable traffic for aggregates in 2013 and high increase in 2014

With 1.9mt of aggregates, HAROPA records stable traffic. High growth also recorded at the terminals of HAROPA-Port of Rouen (756,000 tonnes of aggregates, +22.3%) especially due to the business of the SPS company in the Rouen area which started in July 2012, the contract of construction of the A 150 motorway developing traffic from Norway via Stema in Rouen and the business of Holcim Yeoman/Eurovia in Saint-Wandrille, also in Rouen area. New prospects are being made concrete by the concessions of marine aggregates along the English Channel sea coast, developing volumes extracted of more than 15mt per year for twenty-five to thirty years. The first six months of 2014 saw a 50% increase through the Port of Rouen.

Oilseeds

Rape imports for the agri-fuel factory Saipol in Grand-Couronne (Rouen area) have recorded a good year.

Flours

Exports of flour in bags are on the rise, owing to new trades by Soufflet bound for Angola.

Dry fertilizers

GPN being bought out by the Boréalis Group very positively strengthens the industrial site of Rouen/Grand-Quevilly and develops the export of ammonium nitrates. The logistics of imports of dry fertilizers via Rouen is part of Cap Invest business, being created between Cap Seine, Sea Invest and In Vivo. On import also, Koch, the American company, is growing in partnership with Sénalia, and the other operators show dynamism in inbound ammonium nitrates and compound fertilizers.

Snow-clearing salts

A year of recovery for HAROPA-Port of Rouen terminals, as regional authorities and motorway management companies have built up their stocks again.

HAROPA has gained international recognition of its technical means and human expertise and those of its industrial partners specialized in the handling, storage and distribution of dry bulk cargo.

About HAROPA

HAROPA, the fifth-largest port complex in Northern Europe, is a joint venture between the ports of Le Havre, Rouen and Paris. Connected to every continent owing to a first-rate international shipping offer (with connections to 600 ports worldwide), the 'one-stop' hub forms a global transport and logistics system, capable of providing a comprehensive end-to-end service. HAROPA handles around 120mt of cargo by sea and waterway each year. HAROPA business represents 160,000 jobs. DCi

Bulk basics in the Baltics

regional cargo movements and handling

Aerial view of the Port of Klaipeda in Lithuania.

Louise Dodds-Ely

Investments raise Lithuania's Port of Klaipeda to a whole new level

The largest investments in the history of the Port of Klaipeda, implemented last year, have already borne tangible fruit. In 2013, 301 million litas (approximately US$110 million) excluding VAT were invested in the infrastructure of the Port of Klaipeda — three times higher than the investment in 2012, or two times higher than at during any one-year period of the port's lifetime.

For the port infrastructure, 50 times more European Union (EU) fund were used than in 2011. The work carried out in the last year has propelled the Port of Klaipeda into a new era — it has now morphed from a feeder port into a hub port, i.e. cargo distribution centre where containers and bulk cargo are distributed to the entire Baltic Sea region.

"Due to the implemented huge investments, the prestige of our only Lithuanian Port is rapidly raising at the international level. We are very happy that the importance of the port and the ongoing investment are valued and understood by our politicians. A huge achievement was that we were able to persuade the government and parliament that it is not required to use profits in order to plug the holes in the budget of the Klaipeda State Seaport Authority. In 2013, a profit of 81.4 million litas (US$30 million) was made; in accordance with the previous model, almost half of that amount would be taken from the port. There is no need to prove that the port's assets make the best investment, because it gives a return period of 2.5 years. Such a payback is staggering not only for a state company, but in business generally," said the director general of the Klaipeda State Seaport Authority Arvydas Vaitkus.

It is estimated that the state investments in the infrastructure of the Port of Klaipeda attract twice the private capital investment in the property designed for logistics, shipbuilding and repair services. The port can properly invest the state assets into the state property, improving it and creating additional value. What is created in the port largely determines how the revenues of almost 800 companies will be generated. About 23 000 people are employed at the port and port-associated companies.

"Statistics shows that our port is the fastest-growing port in the Baltic Sea; during the last decade, the load of the Port of

Klaipeda has been increasing about 7% every year. The closest competitors of the port are the ports located to the north of Klaipeda. Constant investments, modernization and construction of new terminals enable it to compete successfully with the neighbouring ports and gravitate to a leading position. This factor has been assessed also by our business partners from abroad. For instance, transit cargo from Belarus increased even by a quarter in the first half of this year — such a leap in turnover was determined by the increased carriage of food products, fertilizers, feeds, containers and other goods.", said Vaitkus.

The director of the Port Authority emphasized that continuous investment is vital. It is intended to make investments over 1,149 million litas (US$420 million) in the port's infrastructure by 2018. More than half of that amount will be allocated for the deepening of the Port: 600 million (US$220 million) for the deepening of the shipping channel and 150 million (US$55 million) for extra depth at the quays.

"During the year of 2013 we have proven to the port users that we are their partners. We promptly dealt with a number of port development problem. We need to understand that the port will not achieve anything without investment. Due entirely to the investment made, the Port of Klaipeda has started this year as a hub port of bulk cargo and containers. Our next task is to take care of the companies based in the southern part of the port, in the Malku Bay, which have been undeservedly forgotten. We must develop the port steadily. Our other target — to deal with the port's rail infrastructure issues and develop additional areas for the port's needs, including the creation of the added value," said Vaitkus.

The agility of the Port Authority was demonstrated during the implementation of the LNG (liquefied natural gas) project as well, which is currently in the final stages.

"Such a rapid pace of works has not yet occurred throughout the entire history of the Port of Klaipeda. Last year, in such a short time we were able to do as much as it had not been done in the previous years. I would like to point out that the dredging works were started only on 8 February 2013, although they had to be launched on 15 November 2012. Under these difficult conditions, however, the Port Authority was able to complete these works a month earlier than it was promised to AB 'Klaipedos nafta'. We feel a responsibility to ensure that the project proceeds smoothly, that the required depth are ensured as well as the security," said the head of the Port Authority.

According to Vaitkus, container loading is of great importance to the port, helped by the development of the container terminal which has been in operation for 20 years. The reconstruction of quay 143a has opened up new opportunities and led to a huge leap in container volumes.

The growth in fertilizers load is also impressive. Compared to the first eight months of the previous year, fertilizer load has increased by more than 36%. In total, 8.1mt (million tonnes) of fertilizer were loaded in the Klaipeda Port this year, 2.2mt more than in January–August of 2013.

Klaipeda Port complements the budget

Logistics and ship building and repair services provided at Klaipeda Port contribute significantly to the GDP growth in Lithuania (indirectly related to 18% of the country's GDP), the government sector's revenue and job creation. The Port of Klaipeda employs about 23,000 people directly, and port-related companies employ about 185,000. The state budget replenishes by an average of nearly half a billion litas (US$0.18 billion) a year from the port's operations, and the annual revenues of the port-related companies reaches 1.5 billion litas (US$0.55 billion). A large part of the investment funds is also earmarked by the city of Klaipeda for its needs. Klaipeda Port is continuously investing in infrastructure, regularly allocating funds for the city needs: building of streets and highways, reconstruction of crossings, passages, social, cultural and sport projects. Over the last 14 years, the Port of Klaipeda has allocated 129.2 million litas (US$47 million) to Klaipeda city.

It is expected that the capacity of the Port of Klaipeda to load larger quantities of fertilizers will be increased by a new bulk fertilizer terminal. This is one of the largest investment projects in the history of the Klaipeda sea cargo company KLASCO, for the purpose of which 70 million litas (US$25.6 million) were used.

Currently, KLASCO's fertilizer loading capacity — up to 2.6mt of liquid and up to 4mt of bulk fertilizers per year — is the largest at the port. The terminal stands out by its ecological, technological and commercial security. Closed load ensures the quality of each consignment transportation in the port from the wagon to the ship. Modern technology speeds up the loading process and shortens the time of the vessel standing at the port. The loading process of the new 100,000-tonne-volume bulk fertilizer warehouse is fully automated. Now different fertilizers can be loaded simultaneously to two Post-Panamax ships at the quays with a depth of 14.5 metres, or to one ship, but with two loading machines, thus reducing the loading time by double and achieving the capacity of up to 3,000tph (tonnes per hour).

The Klaipeda Port's fertilizer load volume was especially increased notably by UAB 'Biriu kroviniu terminalas' (BKT, Bulk Cargo Terminal), which performs the loading of fertilizers to containers as well. The BKT model suggests how a variety of ways can be found through the loading of traditional cargo and fertilizers in order to improve the loading efficiency and create the additional value added. BKT is one of the most efficient terminals in the port.

Possibilities for improving agricultural production have been widened after the company BEGA launched a versatile agricultural product export-import terminal, which is currently one of the largest and most modern in the Baltic region. The terminal is equipped and arranged in such a way that at the same

The new EU Structural Funds programming 2014 - 2020 m. provides 450 million litas from EU funding for the Port's activities. Adding the funds borrowed by the Port Authority, is its intended to invest 1.5 billion litas in the infrastructure.

Langh Ship Cargo Solutions' 20ft container

Langh Ship Cargo Solutions' 20' Open Top Bulk Container completes the supply of containers it offers for lease. The payload of the container is 30 tonnes and the tare weight is 3.95 tonnes.

Mining the market

The container's properties make it ideal for use in the mining industry. The mining industry sets different requirements to containers than many other industries. The transported product is heavy, sticky, and sharp — in one word, difficult.

The 20' Open Top Bulk Container is the answer to the wishes of the industry. The container's flat walls are made of special steel that is three times stronger than normal Corten-steel; they are painted with a paint that endures the demanding nature of ores or scrap. Due to the flush walls the container is easily emptied in unloading and there is no need for manual removing of cargo residues.

The container's hard open top roof makes the loading very fast for wheel loaders and the normal bulk hatches on the roof are suitable for silo loading. All the details are designed bearing in mind the nature of the transported products. Shields of the roof's locking mechanism work as guide posts for the roof and the forklift pockets under the roof make it possible to handle the roof easily with a forklift.

The Langh Ship Cargo Solutions product family includes several transportation methods, which are suitable for transportation of heavy and sensitive steel products, heavy bulk products and even for flexitank use. Langh Ship Cargo Solutions has set as its goal to be 'Superior in Steel Transport'.

time, when two ships stand on the pier, one of them can be unloaded, and the other one can be loaded. This saves customers' time; the export-import terminal's project and technologies are adapted for loading in both directions at the same time. This gives the Port Authority almost double revenue.

"Such a modern, technologically equipped terminal, which exhibits reversing options, has never been seen in the Baltic ports. The good news is that the Port of Klaipeda is becoming from a feeder port not only to a container, but also to a bulk cargo hub. The implementation of the investment in this terminal opens wide opportunities to attract entirely new goods." said Vaitkus about the prospects for the future.

The Port of Klaipeda has distinguished itself not only by a leap in fertilizer and container loading, but also by increasing ro/ro cargo traffic. Over the past two years, ro/ro cargo load grew by 14% in the region, and the Port of Klaipeda remains the ro/ro cargo leader in the Baltic Sea with 5mt of cargo per year. The port's capacity to load this type of goods should further increase in the future, since in June of this year the Klaipeda Central Terminal was opened in the Port of Klaipeda — the most advanced passenger and cargo terminal in the Baltic countries.

Simultaneously, this terminal can accommodate as many as three vessels of any type: ro/ro passenger ferries, ro-pax ferries and cruise ships. The terminal can accept up to around half a million of passengers, to reload 5mt of ro/ro cargo. Currently, it is being negotiated what shipping lines will come to work in this modern terminal.

During 2013, the perspectives of the Port of Klaipeda were elevated to a completely new level. The central and southern part shipping channel has been dredged to 14.5 metres and widened by 150 metres.

"The key challenge for the future — the depth. We have no other choice, because 'Baltmax' ships are our greatest target. The depth in the Belt straight is 17 metres, the dominant maximum draught of such vessels is about 15 metres. We should be oriented into such ships so they can moor in Klaipeda. Otherwise, they will sail to other ports, where such a possibility exists or is being created. Thus, the dredging programme is one of the essential tasks. It is not enough to dredge the channel; we need to reach a certain depth also at the quays, where a large amount of goods is generated and where there is a great demand for ships. Future target is 17 metre depth up to the southern part. In this case, we should not only deepen the shipping channel itself, but also improve of the Port's gates," Vaitkus explained.

Another area in growth has been seen is cruise shipping. In 2014, the largest number of cruise ships visited the Port in its history. The giant cruise-ship *Celebrity Eclipse* was the longest vessel ever to call at the port, with a length of 317 metres and a height of 61 metres.

"The Klaipeda State Seaport Authority is a state company, it focuses not only on the commercial result or a direct return on investment. We are making a lot of investments that are necessary to society, the taxpayers, although this is not always useful to the Port Authority as a commercial institution. We can rejoice that we have completed another very important project, which is relevant to the residents and visitors to the city — officially completed the reconstruction of the Kairiu street, called the business card of Klaipeda, that leads from the international ferry terminal to Klaipeda city. The Klaipeda State Sea Port Authority had started the reconstruction of a 2.5km section three years ago. The work cost almost 30 million litas (US$11 million). This street is just one of many that has been reconstructed by the funds of the Port Authority. We annually invest in the well-being of the city of Klaipeda an average of 9.2 million litas [US$3.4 million]," said the head of the Port Authority.

According to the data of the port's administration, companies operating at the Klaipeda Port pay on average about 1.5 billion litas (US$0.55 billion) to the state budget per year, which represents a staggering profit for the state. Another important figure is the jobs generated. Klaipeda Port, and its associated companies, provides employment for 185,000 people.

Klaipeda Stevedoring Company BEGA: focusing on agribulk

In September this year, BEGA loaded 74,000 tonnes of grain on the Iran-bound PIERA*, the largest ever grain shipment in the history of Klaipeda sea port.*

BEGA, Stevedoring Company operates nine berths in Klaipeda sea port, Lithuania, with a total length of 2km. BEGA offers a full range of port services and logistic solutions, including cargo handling, storage, freight forwarding, distribution, transshipment, ship agency, packing of bulk products and others. The company specializes in handling of dry and liquid (non-oil) bulk products. The main commodities, handled by BEGA, are dry and liquid fertilizers, minerals and agricultural products.

During the two decades of operation, BEGA has fully developed dry and liquid fertilizers and raw materials, such as phosphates, apatite concentrate, handling facilities.

Recently BEGA has been focusing on agribulk which, as a percentage of its total cargo throughput, has increased from 7–8% in 2010 up to 25% in 2014 .

In 2012, in co-operation with Klaipeda state sea port authority and Cargotec, BEGA launched the Universal agribulk export-import terminal with total annual capacity of 2.5mt (million tonnes) and a storage capacity of 180,000m^3 (planned expansion to 240,000m^3 by 2020).

The terminal currently operates two berths on the jetty (each 240 metres in length) with the depth of 14.4m and the maximum vessel draught of 13m (further expansion plans are already under way).

BEGA's multi-modal terminal complex features an integrated Siwertell solution from Cargotec, and it was developed to focus on new business in the region.

BEGA can now handle both the export and transit flows of agricultural products. For example, agricultural operations are now not limited to a particular season, so BEGA can meet fluctuating market demands for grain, soyabean meal and other feed derivatives.

The terminal is dedicated to loading and unloading vessels (simultaneously), as well as transshipping bulk cargo directly from larger to smaller vessels for onward distribution. It also is equipped for loading and unloading rail wagons and trucks. Separate storage compartments enable the terminal to store complete or part loads from large vessels, as well as smaller bulk parcels.

The largest amount, loaded into one vessel, was 74,000 tonnes (on the *PIERA*, which departed on 17 September bound for the Middle East); this was the largest ever grain shipment in the history of Klaipeda sea port. In total this year BEGA plans to handle 1.5mt of agricultural products, of which 1mt will be Lithuanian exported grain.

Grains for large shipments to the BEGA terminal are mostly transported by rail and small number of trucks. Also this season BEGA is accepting grain from small ships from Scandinavia and other Baltic states. The handling operations of loading Panamax vessels with exported grain and unloading smaller vessels with transit grain on the jetty are being performed simultaneously.

BEGA

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STEVEDORING COMPANY

BEGA provides cargo handling, storage and other transport and logistics services. The Company is fully equipped for loading/unloading vessels with max. draught of 13,2 m, railcars, trucks, transporting and warehousing of dry and liquid chemical, construction, food industry, agricultural and other products.

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Continuous investments have made it the leading dry bulk port in Finland.

The draft of 13 m allows Panamax class vessels to load full loads of 75,000 ton, and larger vessels (120,000 DWT) have loads of more than 100,000 ton.

PORT OF KOKKOLA, FINLAND

www.portofkokkola.fi

THE BEGA COMPANY OPERATES SIX MAJOR SPECIALIZED BULK TERMINALS

Terminals and commodities	Storage capacities	Annual capacity
Dry bulk fertilizers Bulk phosphor and nitrogen fertilizers; phosphoric feed supplements	185,000 tonnes (planned expansion to 230,000 tonnes by 2020)	3,700,000 tonnes
Liquid fertilizers Liquid nitrogen fertilizers	45,000 tonnes (planned expansion to 60,000 tonnes by 2020)	1,200,000 tonnes
Bulk export-import terminal Apatite concentrate, phosphates; soda ash, etc.	120,000 tonnes (planned expansion to 160,000 tonnes by 2020)	2,000,000 tonnes
Universal agribulk terminal All type of bulk agricultural products	180,000m³ (planned expansion to 240,000m³ by 2020)	2,500,000 tonnes
Liquid food and technical products terminal Edible and technical oils	9,000m³ for technical oils and 2,500m³ for edible oils| (planned expansion to 11,500m³ and 5,500m³ respectively by 2020)	150,000 tonnes
Liquid chemical products Monoethylene glycol	6,500m³	100,000 tonnes
Cement	Loading capacity — 250tph Unloading capacity — 100tph	500,000 tonnes
Packaging, bagging of bulk cargo to containers, bags and big-bags from 25kg up to 1,200kg and larger, as required	Bulk cargo packing capacity – 2,500 tonnes/day	900,000 tonnes
Territory for prospective terminals	13ha	Planned new capacity – 6,000,000 tonnes

Lithuania is usually exports about 2–2.5mt of grain per year. Due to the geopolitical situation, Ukrainian feed exporters are searching for the ways to get into the European market. BEGA is capable of handling the flow of Ukrainian feed. BEGA is also a developing distribution centre for South American soyabean meal flows to Eastern Europe and CIS countries.

BEGA Universal agribulk export-import terminal: loading specifications

- loading the warehouse: 1,200m³/hour;
- loading the vessel: 1,500m³/hour;
- unloading the vessel: 1,200m³/hour;
- loading the railway wagons (trucks): 600m³/hour; two railway

wagons or trucks at the same time);
- unloading the railway wagons (trucks): 1,200m³/hour (four wagons or two trucks at the same time)

Klaipeda Stevedoring Company BEGA: main data

- the length of berths: 2km;
- maximum depth at berths: 14.4m;
- maximum vessel draught: 13.2m;
- total area: 30ha;
- the reserve area for logistical and industrial activities: 8ha;
- bulk terminals storage capacity: 450,000 tonnes (planned expansion to 730,000 tonnes by 2020);
- liquid reservoir capacity: 70,000m³ (planned expansion to 100,000m³ by 2020); and
- the total capacity of terminals: 8mt per year (planned expansion to 14mt by 2020).

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MANTSINEN

Riga Central Terminal acquires Mantsinen 200 ES HybriLift® material handler

Riga Central Terminal (RCT) is acquiring a Mantsinen 200 ES HybriLift® material handling machine, which will considerably increase the company's cargo handling efficiency. Expected delivery time of the equipment is December 2014.

"The machine will enable us to strengthen coal handling operations, including unloading wagons and stockpiling coal. Mantsinen 200 ES HybriLift® is one of the largest hydraulic material handling machines available on the market which proved reliability and efficiency in coal handling operations. Today, RCT is looking into increasing annual handling volumes and this machine is one main part of RCT's total investment project. Machine is features the unique Mantsinen HybriLift® energy saving and recovery system," says Eri Esta, chairman of the RCT Board.

Mantsinen 200 ES HybriLift® features a 10.5 metre-wide rail-mounted gantry with a free height of 5.7 metres under gantry. This set-up will allow two rail-wagons to pass through the machine undercarriage. The machine has a reach of 35 metres, which will easily allow stockpiling up to 12 metres high and over 25 metres wide. Mantsinen will provide after sales services together with new partner Willenbrock Latvia.

Mantsinen is a family company based in Finland. Mantsinen has been providing economical and ecological material handling solutions for more than 50 years and producing material handling machines for 15 years. Mantsinen has a strong market

share in coal handling in Russia and is now looking into expanding markets into Baltic countries.

Located in the port of Riga, RCT is the largest stevedoring company in Port of Riga, having provided services since 1996. RCT is a part of the Riga Commercial Port LLC (RTO) group. In 2013, RCT handled 10.4mt (million tonnes) of cargo with revenues reaching €22.3 million. RTO is the leading investor, developer and operator of port terminals and transit services in the Republic of Latvia. Cargo volumes handled by RTO in 2013: terminal operations (11.9mt), railway transportation (9.6mt), and forwarding services (11.5mt). The consolidated turnover of RTO companies in 2013 was €209 million.

Cuypers Vorkliften Nv selects the strongest Mantsinen 200 M in Antwerp

In August 2014, Mantsinen Group Ltd Oy delivered a Mantsinen 200 M HybriLift® to Cuypers Vorkliften Nv, in the Port of Antwerp in Belgium. The Mantsinen 200 M HybriLift® is a mobile hydraulic harbour crane, mounted on a wheel-based undercarriage. This Mantsinen harbour crane is used mainly for loading steel coils and other steel products and it boasts impressive productivity of 60 cycles per hour in steel coil handling.

Cuypers Vorkliften Nv in Belgium is an Antwerp-based rental company, which specializes in heavy forklift trucks, container reachstackers, empty-container handlers, ro/ro-tractors (2x4 and 4x4) and hydraulic cranes. Cuypers Vorkliften is a renowned operator in Port of Antwerpen, providing short- and long-term rental with experienced and trained operators or drivers when necessary. The machinery is available for virtually all kinds of material handling and the fleet includes several special attachments. Cuypers Vorkliften head office and service workshop is centrally situated in the Port of Antwerp area and the company is known for its 24/7 services.

Mantsinen 200 M HybriLift® is the newest and largest investment for Cuypers Vorkliften Nv. World-premiered in June 2014, it is currently the strongest and largest hydraulic material handler on markets with a wheel-based undercarriage. Crane reach is 26 metres and lifting capacity is impressive 36 tonnes at 20 metres reach. Despite the enormous size of the machine, it provides precision, speed and safety which hydraulic material handlers are well known for. Mantsinen 200 M HybriLift is equipped with stage 4 final Volvo diesel engine, which is boosted by Mantsinen HybriLift® energy storage and recovery system. HybriLift® technology was launched by Mantsinen in 2008 and is has a strong track record of improving energy efficiency by up to 35%.

Owners of Cuypers Vorkliften Nv, Lieven Van Hoylandt and Marc Cuypers are pleased with their new investment. Van

Hoylandt comments "Mantsinen 200 M HybriLift® has proven to be a very efficient, safe and economical crane for our operations". Cuypers continues: "At this moment machine is operating at Wijngaard Natie terminal and mainly handling steel coils, every lift between 10–36 tonnes net weight by using the special attachment for steel products especially designed 'by Cuypers' for coil handling". Cuypers' coil clamp has been tested for 4,000 operating hours (SWL 25 tonnes) with a Mantsinen RHC 140 hydraulic crane, delivered to Cuypers 2007.

Cuypers Vorkliften has been extremely satisfied with the performance of Mantsinen 200 M HybriLift® and has already placed a repeat order. Van Hoylandt comments: "the speed of the crane is more than we expected and fuel consumption less than was calculated, so far our future plans are to utilize this modern crane in our rental ship loading and unloading operations with materials of breakbulk. We have also made the repeat order for second Mantsinen 200 M HybriLift® crane. The second crane will be delivered February 2015 and will be operating at Nova & Hesse-Noord Natie Stevedoring NV terminal."

Mantsinen announces strategic partnerships

Finnish Mantsinen Group Ltd Oy has announced a partnership with Latvian SIA Willenbrock Latvia and Lithuanian UAB Willenbrock Baltic for the distribution of Mantsinen hydraulic cranes and material handlers, as well as after sales service on existing and new machines.

WILLENBROCK BALTIC is a well-known company, which has been serving harbours and terminals in the Baltics since 2007. It has a strong focus on maintenance and is committed to provide the best possible service 24/7. Service points are located strategically in Riga and Klaipeda from where all the customers in Latvia and Lithuania can be served quickly with fully equipped service trucks.

WILLENBROCK BALTIC is already a dealer of Terex-Fuchs, Linde, Konecranes SMV and Terberg among other non-harbour-oriented industry products. Chairman of the board at Willenbrock companies Gediminas Simkus says: "Mantsinen has a long history as a logistic service provider in the Baltics and the company already has a good reputation here. Now we are bringing Mantsinen back with their new product range and with our local services. Mantsinen cranes and material handlers offer unbeatable efficiency and fuel-economy compared with other machines on the market. Energy saving is a global trend, which all port operators emphasize in coming investments. We are happy to be able to offer the most economical and ecological material handling solutions for bulk and general cargo handling in Latvia and Lithuania."

Speaking for Mantsinen Group Ltd Oy, area sales director Tapio Pirinen comments that "Mantsinen is fortunate to find a partner who is so well known for good service and has a strong presence in the local harbours. Latvia and Lithuania are not large markets, everyone knows each other and good reputation is worth more than gold. Therefore it was important for us to find a partner that has already earned its reputation and whom the customers can count on at all circumstances."

Finland's Port of Inkoo: specialist in bulk handling

The Port of Inkoo in Finland specializes in bulk cargoes, and handles approximately 1.3 million tonnes of bulk each year. The port is a privately owned, public commercial port.

Right next to the port is the Fortum power station, which has its own port facilities that the Port of Inkoo can use, if needed, by separate agreement.

The port's whole traffic is tramp shipments; there is no liner traffic into the port.

The port is one of the 23 winter ports in Finland, which are kept open by the icebreakers of the Finnish Maritime Administration in wintertime. The ice conditions are, however, easy at Inkoo during normal winters, and thus the channel is almost always ice-free.

The port specializes in the handling and storing of dry bulk materials. Its competitiveness is based on flexible handling and storing possibilities, long experience in handling of bulk materials and the port's geographical location together with good connections by sea and road.

The port is situated in the bay of Fagervik at Inkoo district. There are good and fast road connections to Helsinki and other main centres of trading and industry. The distance to Helsinki by road is about 60km, to Lohja about 30km, to Lahti about 150km, to Turku about 120km and to Tampere about 200km.

Port regulations accepted by the local authorities of Inkoo on 17 March 2005 must be followed within the port area.

The company has its own stevedoring department, which offers vessel and cargo handling services at the port of Inkoo, and its own clearance and forwarding departments at Inkoo and Parainen offering services for vessel in these ports and other ports in the near distance.

Equipment and storage

The Port of Inkoo has three cranes — one 10-tonne crane on rails on the quayside (capacity 200–400tph [tonnes per hour]); and two mobile multipurpose cranes (maximum lifting capacity about 6 tonnes and 10 tonnes, operating at 140–400tph for bulk goods, and 150–200m³/hour for round timber).

Other equipment includes:

- loading belt for gravel (loading speed about 300tph);
- six frontloaders (17–22 tonnes); and
- trimming machines, forklifts; and
- one weighbridge.

In terms of storage, the port offers 30ha outdoor storage areas, as well as 14 warehouses, ranging in size from 800m² to 2,500m². It also has a 4,500m² warehouse for china clay.

Security

The port complies with the security regulations according to IMO's (International Maritime Organization) ISPS rules valid since the 1 July, 2004.

The port area is a closed area where by sea only vessels complying with international safety regulations can arrive, and by land only those vehicles or persons who are permitted to do so by the port authorities. Persons unauthorized to visit the port area can be removed from the area, if necessary by assistance of police, customs or border guards.

The vessels shall before the arrival to the port give their security report to the port either through their agent or direct to the port.

Services

The port offers services for vessels. In addition to the port's own services there are many specialized companies in the neighbourhood offering repair and maintenance services. These companies can be easiest reached by the port service/ship's agent. Services include: mooring and unmooring; towage; electricity; water; ice breaking; and waste collection and environmental services. Fresh water can also be supplied.

Bulk handling activities at the Port of Grenaa

The Port of Grenaa in Denmark is continuously investing in further growth. In February 2014 the Port of Grenaa increased its capacity with a new Gottwald mobile crane. The crane is suitable for both bulk and heavy lift and has a capacity of up to 140 tonnes. The Port of Grenaa has modern equipment and can solve all types of tasks concerning loading and unloading with now two Gottwald mobile cranes and two loading machines; Sennebogen 860 M special and Fuchs.

The decision to purchase the new Gottwald mobile harbour

NEW MOBILE CRANE STATISTICS

Gottwald HMK 7608 B	
Year 2009	
Crane lift capacity:	140 tonnes, range 20 metres
Bulk handling:	range up to 51 metres
Equipment:	two grabs of 18 and 24 m3

crane was to enable the faster handling of more bulk products, something that the Port of Grenaa — and its customers — has wanted for a long time. Henning Laursen, managing director of the Port of Grenaa, says, "Now we are looking forward to receiving a new grab for the crane. It will increase capacity and speed significantly.".

More competitive

Both Port of Grenaa and its port customers are looking forward to the opportunities that the new crane provides. If it is possible, for example, to load a ship in two days instead of three, this makes a big difference to the bottom line:

Being able to operate with two cranes is simply a prerequisite for being able to operate effectively enough, primarily in relation to loading, but also in the sense that we can quickly empty the vessels, so overall, they spend less time in port.

A fantastic harvest at Djursland

A long and hot summer in Denmark has meant lots of grain, also in the warehouses at the Port of Grenaa. Even outdoor areas were used by one of the customers to store mountains of grain. It has been the best harvest for many years and the earliest as well. Mainly it is wheat for fodder but barley for fodder, rape and malt barley as well pass through Grenaa, Denmark. Most of the grain is being shipped out to markets outside Denmark.

The Port of Grenaa has great expertise in the handling of liquid and dry bulk cargo. It offers all the necessary equipment and storage and warehousing facilities. Further investment is planned in the form of two bulk warehouses, which are expected to be completed by spring 2015.

Clean ship's sides reduce NORDEN's fuel consumption

Dampskibsselskabet NORDEN A/S is an independent shipping company incorporated in Denmark. NORDEN was founded in 1871, making it one of Denmark's oldest internationally operating shipping companies. NORDEN operates in dry cargo and product tankers worldwide.

In dry cargo, NORDEN is active in all major vessel types. It is one of the world's largest operators of Supramax and Panamax dry cargo vessels and has considerable activities in the Handysize and Post-Panamax vessel types as well as activities in Capesize. The company's Handysize and Post-Panamax activities are operated commercially by NORDEN Handysize Pool and NORDEN Post-Panamax Pool, respectively, which also operate vessels from Interorient Navigation Company Ltd. (INC), Cyprus.

NORDEN's fleet is among the most modern and competitive in the industry and NORDEN operates a mix of owned chartered tonnage, in total 209 dry cargo vessels and 46 tanker vessels — as of 30 June 2014. In addition NORDEN has a newbuilding programme with 35 vessels on order, i.e. dry cargo 31 and tanker four — as of 15 September.

Fuel consumption increasing progressively

As soon as a vessel increases speed, fuel consumption increases progressively and greatly. An example: if a Panamax vessel goes from a speed of 12 knots to 14 knots, daily fuel consumption goes from 25 to 35 tonnes. Since one tonne of bunker oil (standard with 3.5% sulphur) costs approximately US$575, such a speed increase will quickly and heavily impact costs.

Keeping fuel costs low

NORDEN has since 2007 had a climate action plan to reduce fuel consumption, and when the financial crisis broke out in 2008, this also made it reduce the speed of its bulk carriers and product tankers — back then, that was called 'slow steaming', but today is known as 'right steaming'.

Since January 2013, NORDEN has worked systematically to reduce the fuel consumption of the company's fleet of owned and chartered bulk carriers and product tankers through a newly established Fuel Efficiency Team. With bunker oil costs last year of US$671 million, fuel is NORDEN's largest expense item after hire paid for the chartered fleet. Increased focus on cleaning ships' sides overgrown with algae, mussels, etc. has resulted in fuel savings of approximately 2% during the first half of 2014.

Cleaning of ships' sides quickly earned back

In round figures, cleaning a Panamax vessel costs US$25,000, and it takes one day. If the vessel has been overgrown to an extent where fuel consumption is up by 25% and we assume that the vessel sails at 12 knots, cleaning costs will be earned back within around ten days.

The Fuel Efficiency Team spent the first year developing tools, and the results of this work are now in earnest beginning to show. During the first half of 2014, the team's work has led to measurable fuel savings based on greater co-ordination of the different fuel saving initiatives together with systematic data collection and analysis supported by consistent follow-up. Ships' sides overgrown with alga, mussels, etc. can at worst mean a doubling of the vessel's fuel consumption, and by focusing on cleaning of overgrown ship's sides, NORDEN has reduced fuel consumption by approximately 2% across the fleet.

"Two per cent may not sound as much, but in terms of money, this is a substantial saving when considering the fact that NORDEN spent US$671 million in 2013 on bunker oil for the fleet of 44 owned and 241 chartered bulk carriers and product tankers," says Head of Fuel Efficiency, Peter Sinding, who is a Master of Maritime Engineering.

In addition to the fuel savings made by sailing with clean ship's sides, savings were made by controlling the speed of the vessels more closely.

Better speed control

The team's area of responsibility also includes the product tankers and bulk carriers which the Cypriot shipping company Interorient Navigation Company (INC) has put into the pools operated and managed together with NORDEN — i.e. the product tanker pool Norient Product Pool (NPP) as well as the Handysize and Panamax pools.

The systematic and coordinated monitoring by the Fuel

Efficiency Team of the more than 300 vessels operated by NORDEN and NPP has made it possible to quickly and accurately pinpoint the vessels which are not sailing fuel-wise as they should — which are not performing.

All vessels can be compared

One of the main reasons for the success of the Fuel Efficiency Team is the fact that the team has developed tools that strip the daily reported figures from wind, waves, current, draught and speed variations. Each vessel's fuel consumption is seen in relation to hypothetical conditions such as a speed of 12 knots, fully laden and calm weather.

"In doing so, we achieve a measure of the vessels' fuel efficiency which does not change when the speed is increased as the markets go up or because it is windier during wintertime compared to summer. This makes data from all vessels comparable," says Sinding, whose team is far from done reducing the vessels' fuel consumption.

Monthly meetings

Every month, the team meets up with the heads of chartering and operations in NORDEN and NPP to discuss what to do about the vessels that are not performing. There can be a number of measures. In addition to cleaning overgrown ship's sides, it could be cleaning the propeller, it could be expedited docking, and it could be changed operation of overgrown chartered vessels which we do not have enough time to clean if they are only chartered for a single trip. "We are going for the low-hanging fruit. And with further fine-tuning of the measures, we can go even further," says Sinding.

How NORDEN finds the right vessel

With 35 vessels on order and for delivery in the years 2014–17, NORDEN's order book is quite substantial. Read here about the process that the projects department in Dry Cargo must go through before a contract for a new vessel can be signed.

Should we buy the vessel or should we rather charter the vessel — typically for a period of seven years and with purchase option?

This is one of the essential questions which NORDEN must consider when deciding on whether to expand the existing active fleet.

At the end of the first half year of 2014, the active fleet counted 255 vessels — 209 dry cargo vessels and 46 tankers. These are 45 owned vessels, 50 vessels on charter with purchase option and 160 vessels chartered without purchase option or only for single voyages.

With investments in 18.5 vessels, 2013 became the largest net investment year in NORDEN's history, and investment in additional 7.5 vessels in the first quarter brings the order book to 35 vessels — 31 dry cargo vessels and four tankers. These are modern, fuel efficient vessels for delivery in the years 2014–17, and the investment is in excess of US$1 billion. All vessels have been ordered while prices were attractive — which they still are in spite of the negative market development.

It is the projects department in Dry Cargo which is responsible for buying and selling dry cargo tonnage while the Tankers Department handles acquisition and sale of tanker tonnage.

Pros and cons

About pros and cons of either owning or chartering dry cargo vessels, the head of the projects department in Dry Cargo, vice president Henrik Lykkegaard Madsen, says: "The number one advantage of owning a vessel instead of chartering it is greater flexibility.

This goes for both the operational as well as the commercial aspect — for instance in terms of where to and with what we are sailing — and it also goes for timing of a possible sale. When chartering, we are bound until expiry of the fixed term of the charter agreement which is typically seven years. On the other hand, owned vessels require a greater amount in tied-up funds, and as owners, we also assume the risk of increasing operating costs."

Easier to charter

If the decision is for NORDEN to charter a vessel with purchase option, the company will have a finished vessel delivered by the company chartering out the vessel. So NORDEN does not have to care about the chartered Capesize vessel, the 10.5 chartered Panamax vessels and the seven chartered Supramax vessels in the Dry Cargo order book before delivery as all technical specifications, including and in particular fuel efficiency, payment and other terms of the charter contract, have been agreed upon. The owner is fully responsible for the construction of the vessel, including supervision at the yard during the construction.

In contrast — when NORDEN decides to own a newbuilding — it must itself find a yard to build the vessel and, later on, supervise the ongoing construction with its own superintendents at the yard. This is the case with the four Panamax vessels and 8.5 Supramax vessels in the Dry Cargo order book.

Advantage of being a repeat customer

"Especially when ordering owned vessels, we will look into what former business partners can offer. The yards are often very loyal and flexible towards repeat customers — something we experience often in Japan. But we always evaluate relevant designs of pretty much all quality yards, who could be considered, and we end up choosing the yard that can offer the right vessel and at a competitive price," says Lykkegaard Madsen.

All 31 dry cargo newbuildings in the order book will be delivered by Japanese yards known well by NORDEN.

Two to three yards in the short list

The projects department in Dry Cargo has quite effective methods of comparing the commercial value of the different ship designs, while the technical standard is often more difficult to assess without being in close dialogue with the yard. Therefore, a very detailed assessment of the possible candidates is usually limited to two to three yards.

"The commercial and financial requirements and limitations are assessed first. Subsequently, the projects department enters into close co-operation with NORDEN's newbuilding department in order for our requirements specification to the yard to be as complete as possible before we go into the concluding price negotiations with the yard," says Lykkegaard Madsen.

Delivery time from a Japanese yard is currently three to four years.

Poland's MTMG Terminals handles wide variety of bulk product

MTMG Terminal is located at the main entrance to the Port of Gdynia in Poland, and is directly connected to the railway and road communication systems.

Within the structure of the Port of Gdynia, MTMG as a universal terminal renders the services of reloading, warehousing, big-bagging and sorting all kinds of bulk cargoes in port and maritime turnover. It is a multipurpose stevedoring company which handles cargoes like coal, coke, agri products, minerals, aggregates, sugar, fertilizers and other dry bulk and liquid cargoes. MTMG operates on five quays with depths from 9m to 13.5m. Maximum vessel length is 300m and there are no air draught limitations.

Although MTMG Terminal only came into being as a state-owned company in 1995, activities connected with stevedoring started when the Port of Gdynia was built in 1923. The terminal was privatized after Atic Services of Paris, bought the shares in 2011. From September 2014, a new owner — Hestya Energy B.V. — has taken over. Hestya Energy B.V. is a private company pursuing the development of European dry and liquid bulk terminals with the goal of creating a diversified asset portfolio through greenfield development, the acquisition of existing terminals and the acquisition of existing refining sites and related infrastructure and the conversion of these into storage terminals.

Cargoes handled

MTMG Terminal is a multi-purpose terminal and, as such, it handles bulk products that include coal, coke, agri products (such as soya bean meal, wheat, rape seed, maize, rye), feldspar, aggregates, crushed stones, sugar and so forth. This list will continue to grow, as MTMG aims to be able to handle any bulk goods that its customers require. In the past year, MTMG has handled approximately 6mt (million tonnes) of bulk cargo. The majority of the bulk cargoes related to imported/exported coal, imported soya bean meal, and exported wheat.

In terms of liquid cargoes, MTMG handles these at its two dedicated quays. They include: ether, xylene, diesel, n-butanol, white spirit gasoline, hydro wax, paraxylene and many others including chemicals of the 3rd, 6th, 8th and 9th classes according to the IMDG code). MTMG is also able to handle general cargo.

MTMG's bulk cargoes fluctuate to some extent, in response to changes in some markets. The soya bean meal, imported coal and feldspar markets are relatively stable, while exported wheat, coal/coke and imported aggregates fluctuate rather more.

Global reach

In terms of bulk customers, MTMG's reach is truly global. Currently, it has agreements with customers in Australia, Argentina, Brazil, Holland, the United Arab Emirates, Germany, France and others. This customer base is stable.

Coping in a competitive market

MTMG Terminal strives to remain competitive against direct competitors such as the Port of Gdansk, Szczecin and Swinoujscie, as well as other companies within the Port of Gdynia itself. The company remains competitive by offering a universal, modern terminal that offers high quality, customized services with stable, competitive tariffs.

Equipment and storage

MTMG Terminal offers a huge variety of handling equipment to secure dedicated loading/discharging operations. All companies within the Port of Gdynia are separate, private companies.

In terms of covered storage, currently, MTMG has three flat warehouses with a surface area of 16,000m^2 and a four-chamber dust-tight warehouse with a cubic capacity of 20,000m^3. It also has a total open area of 70,866m^2 where cargo can be stored outside.

Keeping it green

MTMG believes firmly in the need to safeguard the environment. To keep dust emissions low, it uses spraying equipment for cargoes laying on stockyards. For agri products, it is building

THE XR-PROGRAM
is ready for the market

HIGH QUALITY AND TOTAL ECONOMY

HEAVY LOADS AND HIGH TORQUE

LARGE OIL FLOW ENSURES HIGH PRODUCTIVITY

The XR-program consists of compact and powerful rotators with strong bearings. Thanks to the proven vane motor technology the XR-rotators are high torque, have good compliance and also have balanced braking.

Their compact and robust construction provides an ability to withstand heavy static and dynamic loads, both positive and negative forces as well as side forces.

The XR-rotator provides high oilflow for grapple cylinders due to large channels – ensuring high productivity and overall economy.

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covered belt conveyors that feed directly to the warehouses.

Recent developments and future plans

MTMG Terminal is investing in a new warehouse, which will enable it to store a further 60,000 tonnes of agribulk, using modern, fast discharging technologies. Other projects are under way to expand open and covered storage. MTMG is also carrying out dredging work at one of its quays, to increase draught from 11 to 13.5m, with further work planned to increase this to 15m to enable the handling of Baltmax vessels.

Indexator's XR-program is ready for the market

XR-rotators offer a complete solution for heavy work within forestry, material handling, scrap handling, recycling and timber handling.

Innovation and product development are natural ingredients within Indexator Rotator Systems' daily operations.

Now, the XR-program has been launched for applications where extremely high demands are placed on rotator functionality. Indexator Rotator Systems, producer of rotators and ancillary equipment, has now extended its experience further into other professional areas of application.

The XR-program consists of compact and powerful rotators with strong bearings. Thanks to the proven vane motor technology the XR-rotators have high torque, good compliance and balanced braking. Their compact and robust construction provides an ability to withstand heavy static and dynamic loads, both positive and negative forces as well as side forces.

The XR-rotators provide high oilflow for grapple cylinders due to large channels — ensuring high productivity and overall economy.

"We will successively extend the XR-program with more models and variants. Currently we introduce XR 500 and XR 600, where variants with an extra channel for central lubrication also is avaliable.", says sales and marketing manager, Erik Svensson.

XR-rotators offers a complete solution for heavy work within forestry, material handling, scrap handling, recycling and timber handling.

Polsteam: worldwide cargo ship operator

Polsteam, formerly known as the Polish Steamship Company (in Polish: Polska Zegluga Morska, PZM), is an international cargo ship operator based in Szczecin, Poland. It operates in Poland and nine other countries and continents. Most of its operations take place in the USA, Canada, South America and Western Europe. Polsteam is a state-owned enterprise (SOE) with around 3,000 employees.

In the group, sea transport companies prevail, including Zegluga Polska S.A, Polsteam Frachtowanie, Polsteam Shipping Agency, and Unity Line.

The Polsteam Group also comprises IT business Medialand, Polsteam Zegluga Szczecinska, tourism and catering and Marine Medical Services. The group includes also Pazim, a company providing management of the most attractive office and retail complex in Szczecin, Poland.

Polish sea ports are experiencing a positive period, with significant records being achieved in Gdynia and Gdansk, as well as in Szczecin-Swinoujscie.

The focus of commodities in Polish ports has changed in recent years. Not long ago, bulk cargo used to dominate, but there has been a shift towards general cargo — mainly containerized — which represents close to the total handled.

Bulk remains a major market, however, especially coal, coke, aggregates and grain.

Most of the dry bulk freight across the Baltic Sea region is handled in universal ports serving hinterlands within a rich spectrum of industries. This means that even small ports handle different kinds of bulk cargo; in Finland, for example, 25 ports out of 47 involved in international traffic serve at least three categories of bulk (excluding wood in any form).

Large ports, of course, handle many more categories of bulk. The Port of Riga, the number one dry bulk port in the Baltic region, besides three main commodities (coal, ore and grain) also lists in its statistics dry chemicals, woodchips, ferroalloys, peat, construction materials, scrap, sawn timber and metals.

Port Szczecin-Swinoujscie: expert in bulk handling

Handling bulk at the Port of Swinoujscie.

The ports complex of Szczecin and Swinoujscie is crucial for the Polish economy. The largest dry bulk cargo centre on the Polish sea coast, it handles the majority of the country's coal import and until now has handled nearly 100% of its sea-shipped imported iron ore.

Other dry bulk cargo handled by the ports of Szczecin and Swinoujscie include grain, other agribulks, aggregates, coke, dry and liquid chemicals, fertilizers, and minerals.

Bulk carriers up to 270m in length, 13.2m in draught and about 100,000dwt can berth in Swinoujscie while Szczecin can accept vessels up to 215m in length and 9.15m in draught. Both ports are complementary to each other: after partial unloading in Swinoujscie, some bulk carriers proceed to Szczecin for final discharge. Similarly, ships partially loaded in Szczecin go to Swinoujscie to complete loading.

Bulk handling operations are dominated by two large companies — Bulk Cargo-Port Szczecin and Port Handlowy Swinoujscie — both of which operate a number of dedicated quays, storage facilities and handling equipment manned by experienced personnel.

Port Handlowy Swinoujscie handles mainly bulk cargo, which accounts for over 90% of its throughput. Big volumes of exported coal prevailing in the past; nowadays these are replaced by imported steam and coking coal for coking plants in Poland, Slovakia and Czech Republic.

The Hutników Quay in Swinoujscie specializes in handling big shipments of imported iron ore. Its annual capacity is about 12mt (million tonnes) per year. The terminal in Swinoujscie offers reloading of aggregate, biomass, coke, grain, steel products, project cargo and other general cargo.

Bulk Cargo-Port Szczecin is the most universal stevedoring company in Polish ports with a comprehensive reloading, storage and forwarding services covering all kinds of cargo. It operates 11 multipurpose quays providing up to 3,500m of berthing line.

SHARE OF BULK CARGO HANDLING IN POLISH SEAPORTS, JANUARY-AUGUST 2014

	Szczecin-Swinoujscie	Gdynia	Gdansk
	%	%	%
Coal	48.0	20.7	31.3
Iron ore	100.0	0.0	0.0
Other bulk	38.1	16.6	45.3
Grain	24.1	47.1	28.9
Petroleum products	12.7	1.4	85.9

The company specializes in handling and storage of bulk cargo, such as coal, coke, iron ore iron, scrap, grain, liquid bulks, etc. and general cargo. Quality of work is approved by ISO 9000:2008 certificate.

Coal

Coal is one of the largest cargo volumes handled in the ports of Szczecin and Swinoujscie. In Swinoujscie, coal accounts for up to 25,000 tonnes/day unloaded at two quays: Górników and Hutników.

The Górników Quay is equipped with two wagon tipplers, defreezing installation, 156,000 square metres of open storage for up to 1,000,000 tonnes, and a shiploader capable of handling 2,000 tonnes per hour. Unloading of vessels is provided by two mobile Liebherr cranes. The Hutników Quay is equipped with 40-tonne and 25-tonne gantry cranes.

In Szczecin, 1.5mt of exported and imported coal is reloaded annually in a dedicated handling area equipped with a wagon tippler and a 1,000tph (tonnes per hour) shiploader.

Iron ore

Iron ore is handled mainly at the Hutników Quay in Swinoujscie,

Iron ore at the Port of Swinoujscie.

equipped with 40-tonne and 25-tonne gantry cranes, providing the total handling capacity of 25,000 tonnes per day, the largest on the Polish coast. There is an open storage area of total 70,000 tonnes. The cargo can be loaded or unloaded into river barges by floating cranes at the same time.

Unloading and loading also take place at the Chemików Quay equipped with two 20-tonne gantry cranes, a sheltered conveyor and storage space for 100,000 tonnes.

Grain and agribulk products

Both ports of Szczecin and Swinoujscie provide handling and storage services for grain and agribulk products. In Szczecin, Elewator EWA terminal operates a new flat storage 45,000 tonnes warehouse for meal and grain. The terminal provides specialist services, including handling, storage, weighing, drying, cleaning, fumigation and pest control. All handling operations are supervised by computer-controlled weighbridges. The loading or discharging of vessels takes place at the rate of 12,000 tonnes per day for grain and 7,000 tonnes per day for feed.

In Szczecin EWA silo with capacity of 55,000 tonnes for grain is situated and it is the largest one on the Polish coast. There are three other silos in the port of Szczecin of total storage capacity 27,000 tonnes.

In the Port of Swinoujscie, at the Portowców Quay, a big cereal terminal of BUNGE started its activity at the beginning of 2012. This modern terminal with storage capacity of 50,000 tonnes can handle all types of cereal.

Biomass handling.

Biomass

The ports of Szczecin and Swinoujscie offer handling and storage of bulk volumes of biomass both in export and import. Cargo can be handled directly or indirectly and stored on paved yards or in roofed warehouses depending on the type of cargo.

Areas for development of bulk activities

Port Szczecin-Swinoujscie offers attractive development areas with full infrastructure and prepared from a legal and formal point of view to invest in bulk handling and storage activity or port-related industry.

Bulk activity in figures

Port Szczecin-Swinoujscie offers:

- 700,000m^2 of open storage area;
- 180,000m^2 of covered storage;
- 151,000m^3 of tanks;
- 177,000 tonnes of silo storage for grain;
- 9km of quays equipped with facilities dedicated to service bulk cargo;
- bulk cargo turnover in 2013: 4.5mt of coal, 2.7mt of iron ore, 2.9mt of other bulk, 1.6mt of grain, 1.6mt of petroleum products;

Liquid bulk cargo

Various kinds of liquid bulk cargo are handled in both ports. In the port of Swinoujscie, Czech manufacturer DEZA operates a tar pitch terminal with a yearly throughput of about 40,000 tonnes.

Similarly to Swinoujscie, Szczecin also has dedicated terminals for pitch and coal tar handling which operate at Huk Quay, Wałbrzyskie Quay and Parnica Quay in Szczecin.

The new sulphuric acid terminal, opened in 2012, operates at the Katowicki Peninsula close to a bulk cargo handling area in Szczecin. Three tanks of total 33 thousand tonnes at the Katowicki Quay were built by METRACO. A company providing professional cargo handling is Bulk Cargo Port Szczecin. Ports of Szczecin and Swinoujscie also handle petroleum products. Both ports have specialized terminals operated by PKN Orlen and Baltchem.

A large development potential has also been created by building a new outer port in Swinoujscie with a platform for servicing LNG carriers.

Gdansk seaport grows in importance

(photo Kacper Kowalski/Port of Gdansk Authority SA)

On 6 November 2013, the Inspector of Construction Supervision for the Province of Pomerania, granted permission sought by the Port Polnocny Ltd company to operate the dry bulk terminal in Gdansk, Poland.

The permission includes the repairs of the Rudowy Pier, the construction of storage yards with an area of almost 100,000m^2, new technological equipment, staff and workshop facilities, transformer stations, road networks and utility and service lines — taking up an area of 15.5 hectares of the most attractive port land having direct access to the deepwater regions of the Gulf of Gdansk. Consequently, Port Polnocny Ltd owned by the Belgian group SEA-INVEST is now operating on 59.2 hectares of land using two cargo piers suited to handling coal and ore, which can accommodate the largest ocean-going vessels that can navigate through the Danish Straits.

Port Polnocny (Northern Port) — the flag-ship investment project of the 1970s — came into focus of Belgian interest in 2007. Having recognized the advantage of berthing facilities for 280-metre long bulk carriers with a 15-metre draught, they acquired the majority block of voting shares of the company that was established in 1991 following the privatization of the Commercial Seaport in Gdansk. The Belgian company of SEA-INVEST, which since the inter-war period has developed its experience in 25 ports all over the world, made the right decision: Gdansk is the right choice for successive maritime investments.

The project funded by SEA-INVEST and developed on the land managed by PGA SA is in fact the closing of another investment launched by the Port of Gdansk 40 years ago. However, although the liquid fuel piers operated by the erstwhile Port Polnocny were suited to handling both export and import goods, the Weglowy Pier (coal pier) was only capable of exporting coal from Poland using the advanced and efficient technologies. It was not until now that it is possible to shift coal from vessels onto freight cars and vehicles at a rate (30,000 tonnes) similar to that of loading a ship (35,000 tonnes). This is how the situation has changed in terms of exchange of goods with Poland, which in fact had been forecast by the designers of Port Połnocny — this is the requirement that the Port of Gdansk has to meet.

(photo Kacper Kowalski/Port of Gdansk Authority SA)

(photo: Port of Gdansk Authority SA)

The volume of goods handled by the SEA-INVEST Group in the ports across Belgium, France, the Netherlands, Germany, Africa, India, Russia and Gdansk totals more than 120 million tonnes of dry, liquid, containerized and refrigerated cargoes — ranking as the European leader in terms of port turnovers and logistics chains.

From Antwerp to Ghent, Bayonne, Bordeaux, Calais and from Caronte, Rotterdam, Abidjan to Cape Town, SEA-INVEST provides jobs to more than 6,000 people. The analysis of Gdansk port natural location shows the following advantages: facilities to accommodate the Baltmax-class ships all year round in an ice-free port, highly efficient and continuously modernized rail and road services connecting the port with Poland's industrial hinterland and with the entire Central and Eastern Europe.

These advantages can guarantee a successful project delivery of setting up in Gdansk a distribution centre suited to handling coal, iron ore, aggregates and biomass. This is the shortest way to launching a profitable hub for dry bulk cargo in the Baltic Sea.

The current infrastructure facilities including automated defrosting and unloading of freight cars, sorting, storage and loading of bulk carriers at the Weglowy Pier has been expanded with two 75-tonne cranes which — given the support of dumping and loading machines and a conveyor system with a capacity of 4,000 tonnes per hour — are suited to unloading a ship at the Rudowy Pier using the technology and at a rate that will prove satisfactory to each and every shipping and cargo operator.

The SEA-INVEST Dry Bulk Terminal in Gdansk looks quite impressive today. The port landscape — until recently rather coarse and plain, reminding the viewer of the wartime destruction — is now changing substantially thanks to the investments of recent years. In co-operation with PGA SA, every successive business partner contributing their innovative ideas in the form of investment projects, has the guarantee of profitability and success. Consequently, they are helping Gdansk to regain its significance determined by its natural advantages centuries ago and to strengthen its position as an ocean port facility and a Baltic hub suited to handling a full range of vessels and cargoes.

Adjacent to the Naftoport Coal and Liquid Fuel Terminal and to the Deepwater Container Terminal (DCT) — the Baltic hubs that have already earned their reputation — the SEA-INVEST Dry Bulk Terminal adds to the courageous dreams of Poland's drawing benefits from its excellent access to the sea. The announcement regarding the construction of the PERN fuel base, expanding the container throughput capacity and providing new facilities for passenger traffic, among other projects, shape the perspective presented in the port development strategy, bringing to mind the rational use of benefits derived from the direct sea access.

Golfetto Sangati: grain handling expertise

Golfetto Sangati, owner of the brand name Berga, is very experienced in the handling of grain and other bulk products.

Since 1952, the company has designed, manufactured and delivered complete, turnkey grain handling systems. Its product range includes:

- intake from truck and/or rail wagons;
- intake from ships;
- belt conveyors;
- chain conveyors;
- bucket elevators;
- slides, diverters;
- truck and/or wagons loading out; and
- shiploading.

Golfetto Sangati (GS) has long and extensive experience in ship-unloading. At the beginning of its activities, GS was manufacturing and supplying pneumatic type unloaders with capacities up to 600tph (tonnes per hour).

Due to the increased demand of higher capacity unloaders, GS has included in its product range a continuous mechanical unloader, chain type, with a capacity up to 1,500tph.

It is very well known that power consumption per tonne for this type of unloader is about a third of that used by traditional pneumatic systems.

Shiploaders are also part of the GS range. The company can provide its clients with mobile or fixed installations with kick-in/kick-out of the vertical pipe. A specially designed feeder makes it possible to load the ship through the hatch dust-free.

GS's handling system at the Port of Costanta in Romania.

One of GS's recent projects is a grain terminal for shiploading at the Port of Costanta in Romania. The client, Canopus, is a JV between TTS of Romania and Cargill of the US.

The plant has a 300tph intake system from trucks, as well as silo loading. The silo unloading, as well as the transfer to the jetty where the mobile shiploader is located, are rated at 800tph.

This loader, capacity 800tph, is rail mounted and it receives the grains from a belt conveyor along the jetty that feeds a vertical chain conveyor. The product is than discharged into a belt conveyor located on a swivelling boom. At the end of the boom, there is a telescopic pipe made of hardox steel that with the kick-in/kick-out movement, by two hydraulic pistons, allows to reach all hatch corners. At the end of the telescopic pipe there is a rotating feeder with dust suppressor.

The plant is under erection and is due to have been commissioned by the time this issue goes to press.

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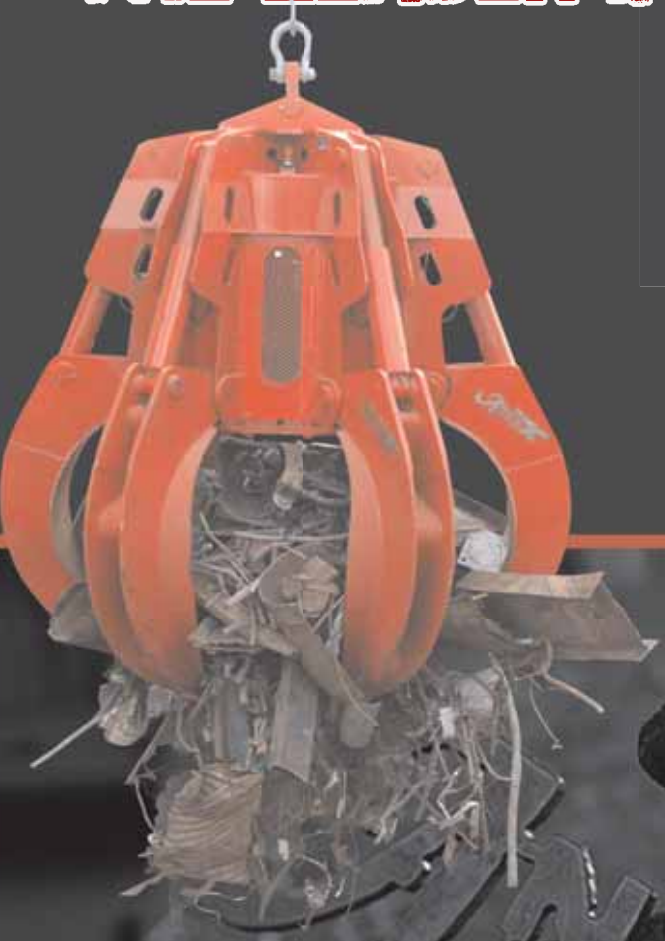

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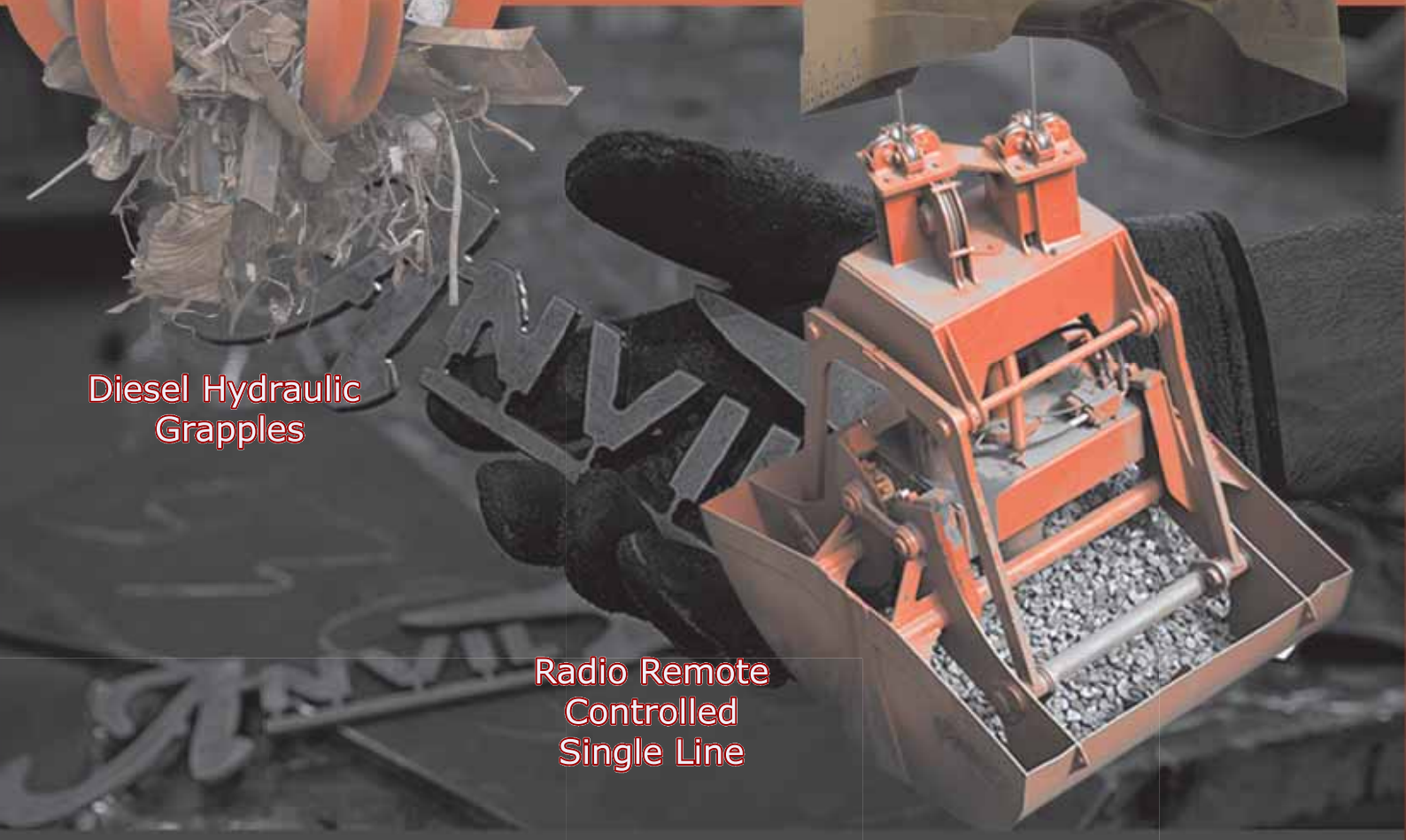

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DHHI celebrates modularization, erection and delivery of equipment for Australia's Roy Hill iron ore project

The first fixed stacker of 13,700tph has finished modular assembly and is ready for shipment.

On 24 September, in Dalian, China, Dalian Huarui Heavy Industry Group Co., Ltd. held, on the assembly site of equipment for Roy Hill iron ore project, a launching ceremony for the modular assembly of large bulk material handling equipment for Roy Hill iron ore project (Australia). The first fixed stacker of 13,700tph (tonnes per hour) made by DHHI for Roy Hill iron ore project has finished modular assembly and is ready for shipment. This project employs a new mode of implementation and delivery, i.e. modular assembly, which is also the first time that a Chinese company has carried out the modular assembly of large bulk material handling equipment. This new mode can help improve the quality of products, and at the same time it helps DHHI to enhance its competitiveness and get a larger share in global markets.

Representatives from many of the world's famous companies participated in this ceremony. Those companies include Hancock Group, Roy Hill Iron Ore Holdings Pty Ltd., Samsung C&T Engineering & Construction Group, Du Loffi Spengler (Australia) Co., Ltd., Adani Group (India), Vale (Brazil, formerly known as CVRD), Mitsubishi group (Japan) and Anglo American plc (UK).

Barry Fitzgerald, president of Roy Hill Iron Ore Holdings Pty Ltd. said in his speeches that, those equipment under built by DHHI are at present the largest ones in Roy Hill iron ore project, and the independent design, manufacturing as well as large modular assembly and shipment will all be listed at the forefront of this industry in the world.

Song Jiajing, president of the board of DHHI said in his speeches that, the Roy Hill iron ore project is so far, among the export projects, the one with the most types of products, the most difficult one in terms of production organization, the one with the maximum contract amount, the one with the strictest quality requirements and the one with the most participating organizations. This project is representative of the trend in the development of the current world's largest bulk material handling equipment — that is, equipment is becoming much larger, more high-end, intelligent and environment-friendly.

The Roy Hill project is the next iron ore mining, rail & port project to be developed by Hancock Prospecting Pty Ltd. (Australia) in the Pilbara region of Western Australia. The wharf has been designed capable of handling vessels up to 320,000dwt Capesize, and is the largest iron ore project under construction in Australia.

DHHI's contracting of equipment supply for this project is a milestone in its international market development. Through the delivery mode of modular assembly, DHHI also wishes to demonstrate, to the whole world, its significant advantages in technology and quality of its products, and to promote its competitiveness in the global market.

Modularization and erection

The modular assembly of large bulk material handling equipment means carrying out unit assembly and preliminary debugging on assembly sites adjacent to the wharf, followed by modular disassembly, modular packaging and shipment, in accordance with the transport requirements for customer's site. This is a completely new mode of project implementation and delivery of large bulk material handling equipment to international customers.

It aims to significantly reduce the installation and commissioning time for equipment on the customer's site, and minimize the problems that might be encountered in the installation and commissioning processes. Therefore, the high costs for field installation and commissioning of equipment in countries with higher labour costs can be significantly reduced. Furthermore, it enables the customer to have access to its equipment earlier. DHHI will be the first Chinese company that puts this new mode of project implementation and delivery into practice.

DHHI

DHHI (Dalian Huarui Heavy Industry Group Co., Ltd.) is a large enterprise in the field of major technical equipment development in China heavy machinery industry. The company comprises one headquarters, five major development bases, eight branches, 14 wholly-owned subsidiaries, two majority-owned subsidiaries and three joint-stock subsidiaries. DHHI currently has over 10,000 employees, among which there is an engineering and technical personnel of over 1,800 people.

The company owns various assets valued at nearly RMB 20 billion yuan, and covers an area of over two million square metres. It mainly provides technical outfits and high-tech products and services for China national economic spheres such as metallurgy, ports, resources, mines, engineering, traffic, aerospace and shipbuilding. The company has formed a product mix of nine major products, i.e. metallurgical machinery, hoisting machinery, bulk material handling machinery, harbor machinery, energy machinery, drive and control systems, engineering machinery and marine machinery.

Brazilian bulk terminal again chooses Terex Port Solutions' mobile crane to handle fertilizer

Fospar commissions second G HSK 4316 B

Terex Port Solutions (TPS) has installed a second Terex® Gottwald portal harbour crane in the terminal of Fospar S.A. Fertilizantes Fosfatados do Paraná (Fospar) in Paranagua, Brazil. In the port 300km to the south of São Paulo, the Model 4 crane in the G HSK 4316 B variant supports an identical crane which was delivered in 2012. They are both used together to handle fertilizer on the finger pier of the terminal, where they have replaced two obsolete cranes.

Efficient technology provides potential for further development

Fospar operates the terminal in Paranagua controlled by Mosaic Fertilizantes Do Brasil Ltda. (Mosaic), the leading global manufacturer of phosphates and potash. With the two G HSK 4316 B cranes, which currently handle 2.5 million tonnes of fertilizer a year, the company also sees itself as equipped for future growth, as Ronaldo Sapateiro, port manager at Mosaic explains: "The cranes unload seven to ten ships a month with an average of 30,000 tonnes of fertilizer on board and even open up further potential for us in view of constantly increasing handling rates." Furthermore, he continues that due to their compact construction, comparatively low weight and individual portal solution, it is as if they are made for the finger pier.

Dedicated grabs for fertilizer handling

The machines are tailored to on-site conditions with a track gauge of 12m and a clearance of 7m under the crane portal. The cranes offer a maximum lifting capacity of 33.8 tonnes with a radius of 32m and were delivered to Fospar by Terminal Full Dealer (TFD), TPS distributor in Brazil, with two dedicated mechanical grabs for the fertilizer. Rene Tarapanoff, sales manager at TFD, explains: "One grab can lift up to 14.7m³ fertilizer with a density of up to 1.6 t/m³, the other is designed for 19.5 m³ of fertilizer with a maximum density of 1.2 t/m³."

Efficient use of the crane thanks to specific training courses

To use the cranes as efficiently as possible, Fospar has made use of the training developed especially for crane operators and service employees by TPS. This is divided into two blocks including a theoretical and a practical part, as Tarapanoff explains: "Fospar's service manager and three other employees participated in the theoretical training. A practical training course was also conducted on site when the crane was commissioned so that the crane operator and further service staff could learn about the machine."

Adaptable portal solutions for various terminal infrastructures in demand worldwide

Terex® Gottwald portal harbour cranes are in demand worldwide for various terminal infrastructures, where they represent a cost-efficient alternative to bulk gantry cranes or continuous ship unloaders. Portal harbour cranes offer proven Terex Gottwald mobile harbour crane technology and allow unimpeded operation of road trucks, trains and, in the case of Fospar, conveyor belts underneath the portals. They can also be adapted to the respective infrastructure conditions. TPS has supplied many portal harbour cranes to customers around the globe. The track gauge of these cranes is between 10m and 20m, depending on the environment, and the clearance between 4m and 8m.

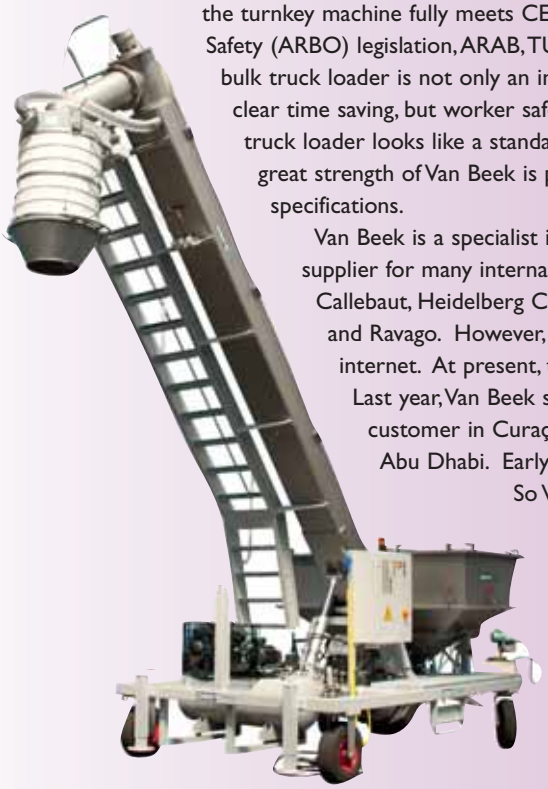
About Terex Port Solutions

Terex Port Solutions is part of the Material Handling & Port Solutions business segment of Terex Corporation that supplies customers in ports with a unique combination of machines, software and services under the Terex and Terex Gottwald brands. Whether it is ship-to-shore cranes, reach stackers or fully automated, integrated handling systems for containers and bulk, Terex Port Solutions provides reliable solutions for rapid, safe, efficient handling of all forms of cargo with low downtimes and excellent return on investment.

Dino® bulk truck loader loads quickly and safely

The Dino bulk truck loader from Van Beek is used worldwide for loading bulk goods efficiently. The Dino® loads bulk goods that are packed in big bags, and even shovelled loose bulk goods are no problem.

The basic capacity is 40m³ hour (or 80m³ per hour) and the turnkey machine fully meets CE standards, Health & Safety (ARBO) legislation, ARAB, TUV etc. In short the bulk truck loader is not only an investment that gives a clear time saving, but worker safety is also substantially improved. The bulk truck loader looks like a standardized device, but that is just an illusion. The great strength of Van Beek is precisely that every machine is made to customer specifications.



Van Beek is a specialist in screw conveyor systems and preferred supplier for many international organizations such as BASF, Nestlé, Callebaut, Heidelberg Cement Group, Nillezen, Halliburton and Ravago. However, the Dino is also very popular on the internet. At present, two American projects are under way. Last year, Van Beek supplied a (cement) Dino to a customer in Curaçao and two Dinos were shipped to Abu Dhabi. Early this year, Van Beek's mechanic serviced existing Dinos in Korea and Spain. So Van Beek Dinos can be found all over the world.

To continue to serve customers, the Van Beek sales engineers are available for new questions from the market. Since Van Beek develops and produces everything itself in house, this enables innovations to be integrated in the existing design. For example a Dino was recently designed for a French customer with a special pneumatic docking unit to connect the Dino to the bulk truck.

Gambarotta Gschwendt. bulk solid mechanical

Bucket elevators

***"TIREX"**- Receiver from trucks and feeder for several bulk materials*

95 years of reliable experience

'chainflex M' – service life guaranteed for one million double strokes

Energy chain and cable specialist igus has launched a new range of cables specifically for cable carrier applications that do not require high cycle rates. With a guaranteed service life of one million double strokes, the new chainflex M range is a cost-effective alternative for such applications.

"Our current range of chainflex cables is guaranteed for five million double strokes in constantly moving energy chain applications, even with high speeds, accelerations and demanding environmental conditions," says Justin Leonard, director at igus. "Our new chainflex M range is designed for less demanding applications where reliability is still important but the required cycle life is much lower."

Typical applications for the chainflex M range are in theatres, tools and jigs, packaging machines and some machine tools. Covering all types of cables from control, motor, servo and measuring cables through to data and bus cables, the chainflex M range is also UL/CSA certified. Additionally, chainflex M cables have undergone the same demanding in-house tests as standard chainflex for wear, chemical resistance, and flexing performance in energy chains.

"All cable families in the chainflex M range cost 20–30% less than the standard chainflex ranges we currently offer," adds Leonard. "Made from innovative iguPUR (a highly oil and bend-resistant PUR material) or PVC, chainflex M cables are guaranteed to last one million cycles of service life, which is unique at this price point."

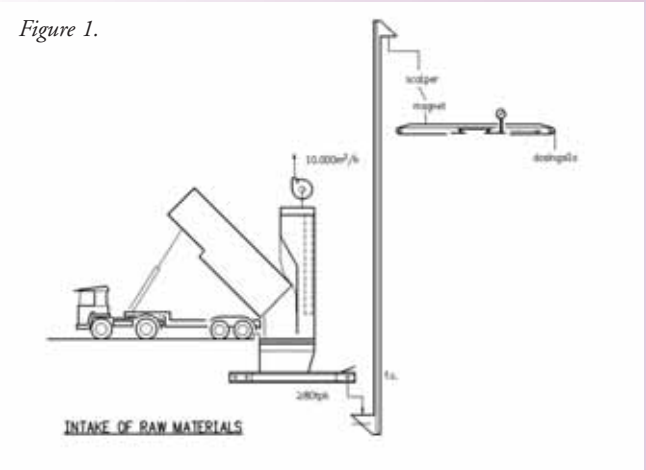
With no cutting costs and no minimum order quantities, the new chainflex M provides the most cost-efficient solution for energy chain applications that do not require a very high cycle rate.

Based in Northampton in the UK, and with global headquarters in Cologne, Germany, igus is the largest producer of injection moulded polymer bearings and reinforced plastic cable carriers in the world. Product lines include industry-leading e-chain cable carriers, chainflex continuous-flex cables, iglidur plastic plain bearings, igubal spherical bearings, drylin linear bearings and guide systems. The company has 26 subsidiaries across 31 countries and employs more than 2,150 people worldwide.

With plastic bearing experience since 1964, cable carrier experience since 1971 and continuous-flex cable since 1989, igus provides solutions based on 100,000 products available from stock with between 1,500 and 2,500 new products introduction each year.

Tebodin offers effective dust prevention in and around the production plant

Figure 1.



Introduction

In production plants that process dusty bulk products, it is necessary to take measures in and around the factory in order to reduce dust emissions to a minimum, *writes Harm Klein, project manager at Tebodin.*

Emissions is a nuisance to the environment, they are bad for health and result in a loss of product. Furthermore, they can lead to dust explosions.

With regard to this problem, one can distinguish between emissions in the factory and beyond the factory.

In the factory they lead to negative consequences for the operators, the working environment and the effort to keep the factory clean. Dust emissions outside the factory harm the environment and hinder the surrounding factories or residential areas.

Keep it simple

A lot of equipment is available to reduce dust emissions, and this equipment can be applied in many ways. The application of this equipment generally results in high investments. These can be significantly limited if the equipment and systems are applied effectively.

Keywords to do this are: keep it simple and catch the dust as close to the source of the emissions as possible. In other words: if the substance is already absorbed by the ambient air, then it becomes extremely complex and costly to catch the dust and to trace it back to its source.

In this article three situations where dust emission can take place will be described: during the unloading of the truck, in the conveying system and above the loading of a truck. Of course emissions can take place in many other situations, each with its own specific circumstances.

The right equipment also depends on the requirements that have been made by the authorities. The dust collection will usually be done with a cyclone or a dust filter. In some areas cyclones will be sufficient, however in many cases dust filters are necessary because the dust residue should not exceed the level of 5mg/m³ cleaned air.

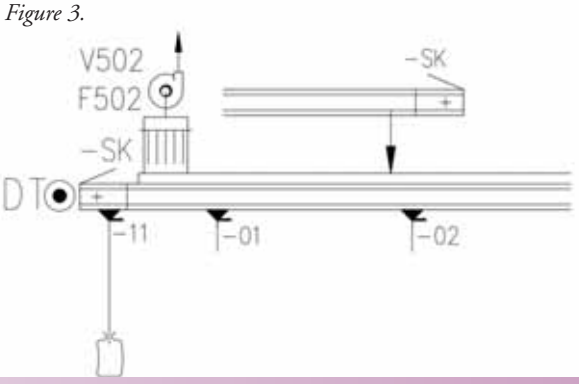
Truck unloading (see figures 1 and 2)

The design of the truck intake depends on the type of truck: rear unloader, side unloader or under unloader.

By catching the dust just after the raw materials have left the truck, the dust can be collected in a simple way, sucked by the fan and filtered by the filter hoses in the same room where the truck is unloading. By creating a direct airflow, a minimum of dust will escape and stay in the room. Often it is necessary to close the door at one or at two sides of the room. Because high speed closing doors are available, the time for the truck unloading can stay short. After cleaning the filter hoses, the collected dust will return to the product without the need for dust conveyors etc.

Figure 2.

Figure 3.

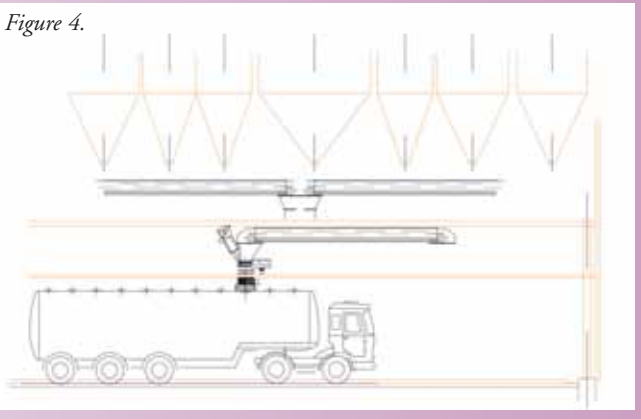


Aspiration of conveying systems (see figure 3)

In contrast to complex central aspiration systems nowadays 'compact filters' are more effective, simple and economical.

If one or a few compact filters are installed in a routing with several conveyors, there is a vacuum inside the equipment and the dust will not leave the equipment. The compact filter is a package, complete with filter, fan, silencer etc. The aspirated dust on the filters will return to the product flow; it is important to select the right compact filter and to choose the right position.

Figure 4.



Truck loading (see figures 4 and 5)

The type of the trucks plays a role in the design of the dust collecting system as well.

Often open trucks and closed trucks will be loaded successively. Because local situations will vary, the execution should be specifically. Sometimes it is necessary to close one or two doors as well. In existing situations the available height under the loading point is often restricted, however often solutions are available in this kind of situations without having to improve entire existing loading systems.

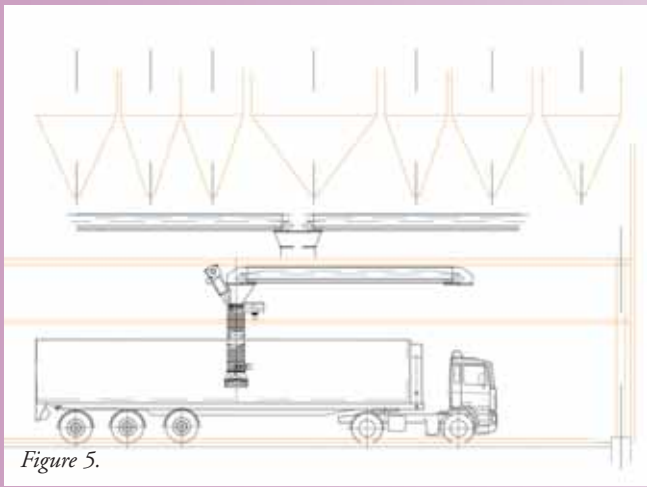


Figure 5.

Finally

With regard to the application of dust reduction systems, it is important that the knowledge and experience of the available equipment and systems in the suppliers' market is well known.

Generally the situation on the spot is unique with its own starting point in respect to product, situation and application. Tebodin is capable of designing the right solution for each situation. This has already been proven in many projects.

Tebodin has lots of experience with addressing substance problems and finding effective dust prevention solutions. The vendor choice for the solutions plays no role, because in this respect there aren't any commercial interests for Tebodin.

About Tebodin

Tebodin is a multidisciplinary consultancy and engineering firm. It offers its clients worldwide the knowledge and experience of approximately 4,900 experts in industry, health & nutrition, oil & gas, chemicals, infrastructure, property and energy & environment. The company has a network of around 50 offices in West, Central and Eastern Europe, the Middle East, Asia and Africa.

Tebodin is part of the international engineering and services company Bilfinger SE.

Flexco introduces new HV2 Precleaner

Flexco recently introduced its HV2 Precleaner with V-Tips to its complete line of cleaners. Designed to be positioned on the head pulley and to remove the bulk of carryback from the belt, the HV2 is an enhanced version of the proven H-Type® Precleaner.

The six-inch tungsten carbide V-tips work independently and conform to the belt as each wears, allowing for maximum cleaning efficiency on vulcanized belts. The new torsion element cushion design and adjustable mounting method ensures the tips maintain optimal blade to belt contact, requiring no shimming of the blades.

Available in sizes to fit belt widths of 18" to 72" (450 to 1,800mm), the HV2 Precleaner is made from heavy-duty steel with a corrosion-resistant powder coating.

The HV2 can be used as a stand-alone cleaner in light- and medium-duty applications, but can also be effectively combined with a secondary cleaner to remove carryback in heavy-duty applications.

"The HV2 is part of a complete cleaning system," said Ryan Grevenstuk, senior product manager at Flexco. "When teamed with a secondary cleaner, together they deliver maximum cleaning power for the most abusive conveyor applications."

The HV2 Precleaner is ideal for use in underground mining, hard rock and metal mining, aggregate, and bulk material handling. When installed at the head and tail pulleys, the HV2 is also an effective cleaner for reversing belts.

Bureau Veritas wins five-year contract

ArcelorMittal Liberia awards new five-year contract to Bureau Veritas

Bureau Veritas has been appointed by ArcelorMittal Liberia to provide iron ore shipment sampling and testing services in Liberia. These services include shipment sampling, on-site quality analysis, transportable moisture limit (TML) testing and weight determination by draft survey at the Port of Buchanan, Liberia.

The co-operation between ArcelorMittal (the world's leading integrated steel and mining company) and Bureau Veritas began in July 2014, and it is expected that Bureau Veritas will test some 5mt (million tonnes) of direct shipping iron ore (DSO) during the current Phase of ArcelorMittal's project.

This is a 24/7 sampling operation at the port initially involving 20 employees and five laboratory staff. The sampling and testing operation has required the establishment of in-port facilities, which Bureau Veritas and ArcelorMittal developed in a very short timeframe.

Phase Two of ArcelorMittal's Liberia project is expected to start in 2015 and is likely to include the installation of mechanical sampling systems.

Patrick Libihoul, Vice President of Bureau Veritas – North Africa Region informs that "Bureau Veritas's Commodities Division mobilized a team of international experts in sampling and testing, working alongside our local staff, to provide world class sampling and testing facilities for ArcelorMittal."

"We look forward to working as part of the ArcelorMittal Port Buchanan team in the years ahead to develop this important resource. It will help world trade and play a great part in the on-going development of Liberia."

About Bureau Veritas

Inspectorate was acquired by Bureau Veritas in 2010 as part of its successful global commodities strategy. The Inspectorate brand is currently in transition full integration to Bureau Veritas can be expected in 2015.

Bureau Veritas is a world leader in conformity assessment and certification services. Created in 1828, the Group now has 62,500 employees in some 1,330 offices and laboratories located in 140 countries and posted revenues of €3.9 billion in 2013. As a trusted partner, Bureau Veritas offers innovative solutions that go beyond simple compliance with regulations and standards, reducing risk, improving performance and promoting sustainable development. Bureau Veritas is recognized and accredited by major national and international organizations and works across a wide range of industries worldwide.

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High-speed coal handling at Port of Izmir

The SENNEBOGEN 880 EQ deployed at the Port of Izmir by the Turkish logistics service provider, IDC Liman Isletmeleri A.S., loads cargo at approximately 600 tonnes per hour. The machine is ideal for unloading ships and for loading trucks.

On a total harbour area of 191,000m², as a service provider, IDC daily handles tonnes of bulk goods and piece goods in the harbour of the Turkish city, Izmir. Here the firm relies on the largest hydraulic material handling machine, the proven SENNEBOGEN 880 EQ. The well-designed equilibrium concept of the SENNEBOGEN 880 EQ saves approximately one third of operating costs. The balanced counterweight keeps the main boom in balance and enables fast and fuel-saving work. Since 2008, daily 14,000 tonnes of coal have been unloaded from the arriving ships, and loaded onto trucks from the intermediate storage facility. A 470kW diesel engine ensures the power reserves necessary for the demanding continuous implementation.

At Izmir Harbor IDC loads up to 14,000 tonnes of coal a day with a SENNEBOGEN 880 EQ. The equilibrium concept saves as much as 33% of operating costs as compared to conventional material handling devices.

With a range of 33m and a maximum safe working load of 30 tonnes, even the largest ships and heavy piece goods can be comfortably unloaded. Thanks to the stable crawler undercarriage, the machine can be used flexibly on the harbour site. With the operator cab placed 5m forward, the floor window, and the excellent all-round view from the 1.5m-wide harbour cab, the operator always has the work area in view. The machine has been elevated an additional 7.2m via a pipe-pylon. A total of nine headlights safely illuminates the work area at night. Equipped with an 8m³ double shell grab the machine loads the arriving trucks in the shortest time possible. A complete cycle takes just one minute.

The logistics service provider has been handling goods of all types at Nemrut Bay since 1983. For this, the company has been relying on SENNEBOGEN material handling machines for some time. For the customer, the robust design, a simple machine concept, and the highest level of reliability are the key arguments for the green machines. Forsen handles the regular on-site service as the Turkish sales and service partner. Simple maintenance tasks can also be handled autonomously by the operator thanks to the easily accessible service space. The factory-provided special paint finish for maritime implementation protects against corrosion and preserves the components.

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Dust suppression units earn UL and CSA certification

A global innovator in open-area dust management has announced that the company's most established core products have been successfully certified as meeting Underwriters Laboratories (UL) and Canadian Standards Association (CSA) standards. After a lengthy testing phase, three direct-drive designs from Dust Control Technology™ (DCT) have been certified for the US and Canada: the DustBoss® DB-30, DB-45 and DB-60. They are believed to be the first atomized misting units for dust control to earn the coveted recognition, reinforcing the manufacturer's position as a world leader in safety for dust control equipment.

"UL certification affirms the safety of these three fan-driven designs," commented DCT general manager Laura Stiverson. "Their effectiveness has been proven through more than a decade of use in severe operating conditions, such as demolition, mining and coal handling. From the time of their introduction, product safety has always been a priority, but now customers have the added assurance of certification by an independent source."

Using standards developed by UL and CSA, the evaluation and certification process was conducted by SGS, a globally respected Nationally Recognized Testing Laboratory (NRTL) accredited by OSHA (Occupational Safety and Health Administration). The organization is an ISO Guide 65 Certification Body accredited by International Accounting Standards (IAS) to list products in the U.S. The NRTL program was created by OSHA in 1995 to standardize testing across multiple providers and has become the measure of safety testing for equipment manufactured around the world.

The certification process required DCT to submit equipment for rigorous testing under a specific set of criteria. In addition to equipment testing and quality assurance process review, the company must meet an ongoing series of benchmarks in order to maintain the certification, including factory inspection and quarterly product inspections.

The DustBoss series of oscillating atomizing sprayers is designed for safe and effective open-area dust and odour suppression, with a variety of safety features such as fans with heavy-duty guarding, atomizer rings with pressure output that's safe enough for bare fingers and industrial strength, steel-framed wheeled carriages or skid mounts. The

high-powered fans distribute the atomized mist at noise levels below OSHA approved decibel thresholds and low water usage allows safer control of runoff.

Underwriters Laboratories was established in 1894, and is the world's largest non-profit product safety certification organization, with global name recognition and acceptance. UL has participated in the safety analysis of many of the last century's new technologies, most notably the public adoption of electricity and the drafting of safety standards for electrical devices and components. The organization provides safety-related certification, validation, inspection, auditing, advice and training services to a wide range of clients, including manufacturers, retailers, policymakers, regulators, service companies and consumers.

The Canadian Standards Association is a not-for-profit organization which publishes standards in print and electronic form and provides training and advisory services. CSA is composed of representatives from industry, government and consumer groups, and is accredited by the Standards Council of Canada, a government-owned corporation which promotes efficient and effective standardization in Canada, as a standards development organization and as a certification body. This accreditation verifies that CSA is competent to carry out these functions, and is based on internationally recognized criteria and procedures. The CSA registered mark shows that a product has been independently tested and certified to meet recognized standards for safety or performance.

Dust Control Technology is a world leader in dust management solutions, with expertise in a wide variety of industries, including demolition, aggregate processing, scrap/recycling, mining, coal handling, steel/slag, ports and shipping. The company specializes in atomized mist technology, with its focus on equipment for dust suppression and odour control. Its staff helps customers analyse particle sizes and characteristics, working environments and other factors to ensure effective performance under real-world conditions. DustBoss units have been proven far more effective and efficient than manual spraying, with some customers realizing payback in less than six months. DCT has now served customers in 35 countries on six continents to date, and the company's equipment carries an industry-best warranty of 3 years/3,000 hours. Units can be purchased outright or rented from an extensive equipment fleet.

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Power station expansion calls for high-capacity Siwertell coal unloader

The Daelim order is similar to the Siwertell ship unloader installed in Taichung Port, Taiwan.

Siwertell, part of Cargotec, has secured an order for a rail-travelling unloader from South Korean company Daelim Industrial Co Ltd. The unloader has been ordered as part of an expansion programme at Pagbilao coal-fired power-generation plant in the Philippines. The order was booked into Cargotec's third quarter order intake 2014, with delivery scheduled for October 2016.

"To meet growing power demands, the Pagbilao plant is expanding and requires a high-efficiency, environmentally friendly coal unloader; these are some of the main attributes of a screw type Siwertell unloader," says Ola Jeppsson, Siwertell sales manager. "In addition, Siwertell unloaders offer very high levels of reliability, by virtue of their well proven technology."

Pagbilao Energy awarded the contract for the site's third coal-fired unit to a consortium comprising Mitsubishi Hitachi Power Systems Ltd, Japan and Daelim, responsible for the project's coal handling system.

"The ST 790-D unloader is designed to discharge coal from vessels of up to 92,500dwt at a rated capacity of 1,400tph (tonnes per hour). With its continuous operation, it will offer an unbeatable through-the-ship capacity while delivering environmentally friendly operations with minimal dust and no spillage," says Jeppsson.

The Pagbilao site currently has two non-continuous unloaders. "For this latest expansion, the owner wanted a more efficient type of unloader, and decided that a screw type unloader would meet all its needs," he explains. "We are the number one supplier of screw-type unloaders. Furthermore, Siwertell is a very well-known brand in the Philippines because of the many deliveries and references we have in the country. Consequently, we have a very good local reputation."

The unloader will be completely assembled before delivery at the premises of a Siwertell subcontractor in Nantong, China. It will then be shipped in one piece to the Philippines. Final testing, commissioning and training will be carried out by Siwertell engineers on site.

"There are plans for several new coal-fired power plants in the Philippines, along with more expansion projects for existing plants. Therefore, this market is very important for us now and over the coming years," Jeppsson adds.

Siwertell ship unloaders and loaders are based on unique screw conveyor technology, in combination with belt conveyors and aeroslides, and can handle virtually any dry bulk cargo, such as coal, cement, fertilizer, agribulk, clinker, sulphur and grain.

Siwertell plant and terminal design, ship unloaders, ship loaders, mobile ship unloaders, mechanical and pneumatic conveying systems, and storage solutions are all designed to ensure environmentally-friendly and efficient cargo operations.

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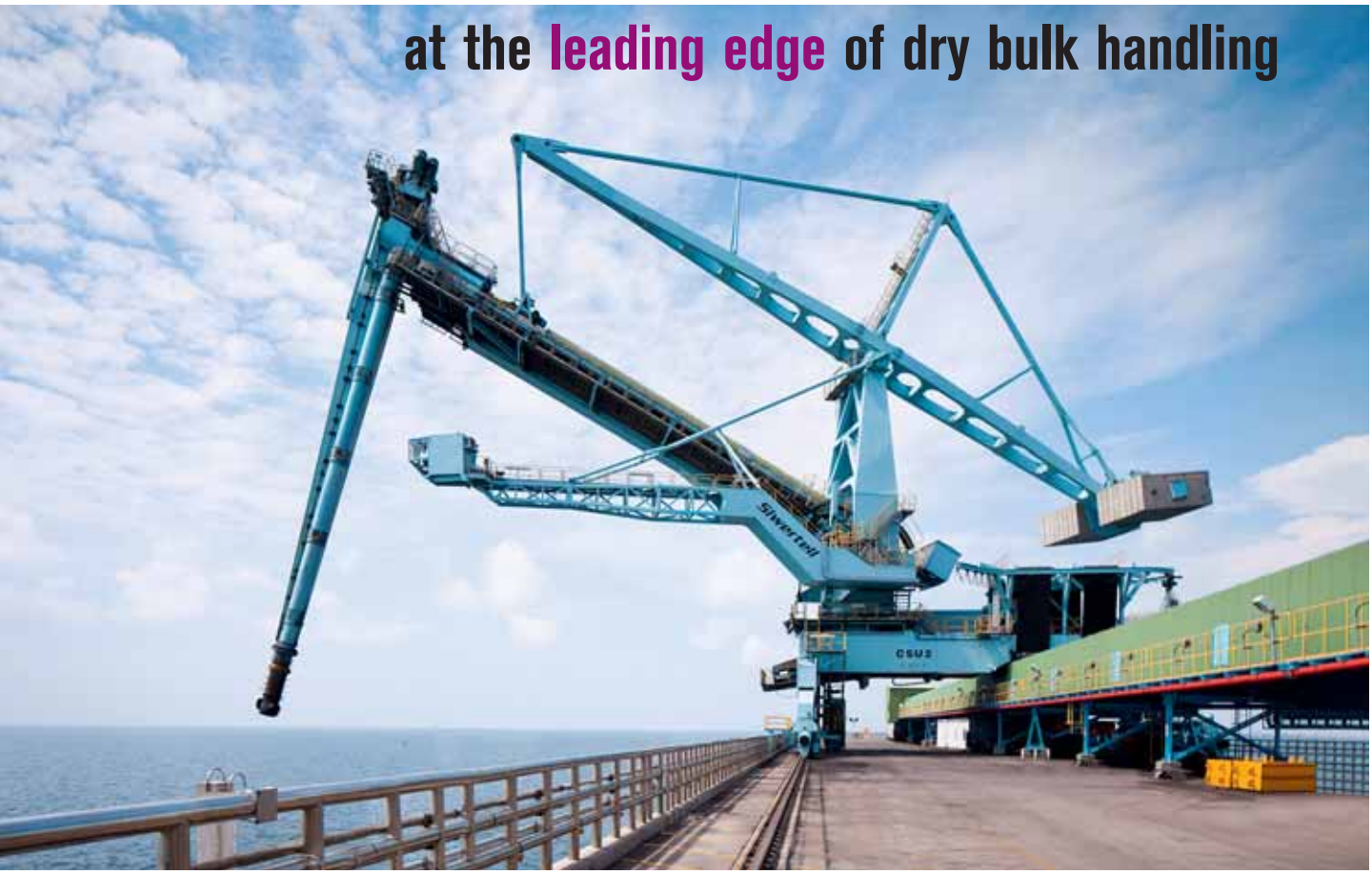
Four decades at the leading edge of dry bulk handling



Siwertell celebrates a rich history at the forefront of the bulk handling market

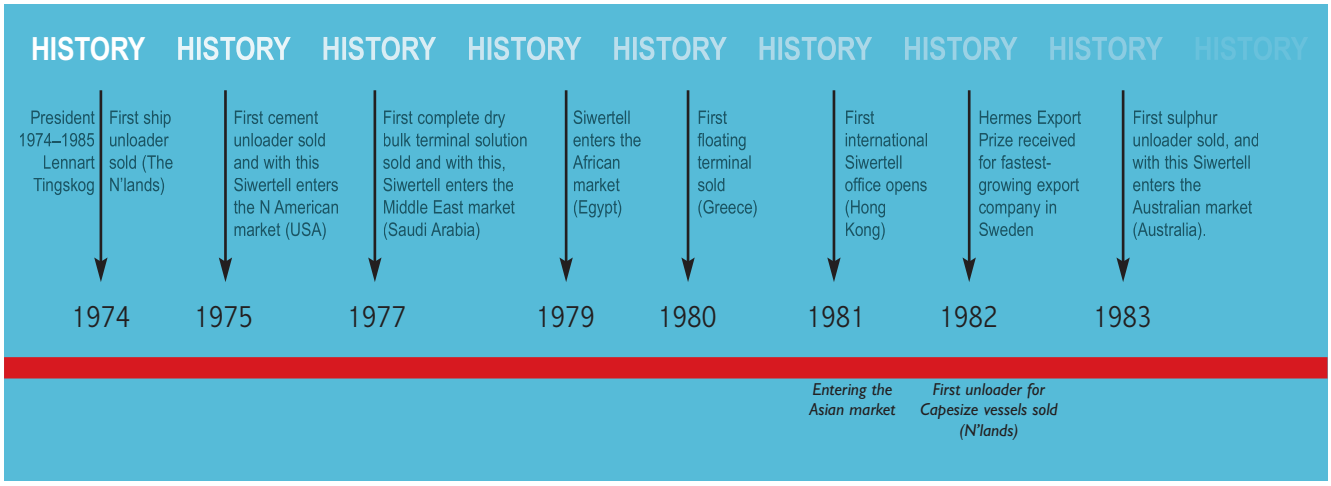
The year 2014 marks the 40th anniversary of the introduction of Cargotec's Siwertell screw-type unloaders to the dry bulk handling market; today Siwertell, part of Cargotec, continues to lead the way in clean, efficient, environmentally friendly unloaders and loaders of all sizes.

Forty years since Siwertell entered the marine dry bulk handling market, the Cargotec brand remains perfectly placed to respond to industry demands for high capacity machines endowed with exemplary environmental credentials, says Per Karlsson, Managing Director, Siwertell.

He cites the 2013 Review of Maritime Transport from the United Nations Conference on Trade and Development (UNCTAD) to demonstrate the market's current need for ever more efficient, clean, high capacity dry bulk handling technology.

"Over the past four decades the share of major dry bulks has been steadily expanding and it continues to increase despite ongoing uncertainties in the global economy. The volume of dry bulk cargo, including the five major bulk commodities (iron ore, coal, grain, bauxite/alumina and phosphate rock) and minor bulks (agribulks, fertilizers, metals, minerals, steel and forest products) increased by 6.7% in 2012 and together, major and minor dry bulks accounted for nearly two thirds of global dry cargo volumes."

Demand is mostly driven by Asia, and in particular China. However, the UNCTAD review also found that Indonesia, for



example, is emerging as an important player with respect to commodities such as coal, bauxite and metals. Coal remains the fastest-growing fossil fuel, accounting for 30% of global primary energy consumption in 2012.

"Growth in the various markets and ever stricter environmental rule-making increase the demand for advanced bulk handling systems, at the expense of more traditional systems that cannot offer clean operations," notes Karlsson.

"From the outset, due to its totally enclosed design, the Siwertell screw-type unloader has provided clean, dust and spillage free performance. A modern Siwertell ship unloader may not look very different to its predecessors; testament to the excellence of the overall concept and the initial design work. However, a lot of functional developments have been incorporated over the years, particularly relating to control and maintenance systems, which have undergone a revolution during the last decade, with further substantial developments expected.

Siwertell's first cement unloader (1975).

In 1974, Siwertell sold its first ship unloader.

"We have always been quick to respond to new market opportunities; and we have also been pro-active in developing products to meet anticipated demands," he says. "This is well demonstrated by the recent introduction of our largest unloader, which can handle some bulk commodities at capacities of up to 5,000tph [tonnes per hour]; more than doubling current capabilities."

The first Siwertell floating terminal in operation in Greece.

Karlsson says that Siwertell's screw-type unloaders were introduced to the market at a propitious time. In the mid-1970s, port operators were coming under increasing scrutiny regarding dust emissions and noise levels as a result growing residential occupancy of desirable waterfront locations. The Siwertell screw-type unloader came into its own, delivering quiet, dust-free bulk conveying; allowing commercial and residential communities to co-exist successfully.

"Nowadays, clean operations have become less a matter of choice and more of a regulation-driven issue, and this can only help

HISTORY **HISTORY** **HISTORY** **HISTORY** **HISTORY** **HISTORY** **HISTORY** **HISTORY** **HISTORY**

1984	1985	1986	1987	1989	1991	1992	1993
Record number of floating terminals sold worldwide (during the cement boom in the Middle East 1981–84)	First 2,000tph unloader sold (Japan)	President 1986–2000 Lars Jarskog	Nordströms (self-unloading systems) is incorporated in Consilium, and is marketed parallel with Siwertell	First shipping of a fully assembled Siwertell ship unloader completed (USA)	First Siwertell ship unloader sold to the Chinese market (China)	First 5 000 S mobile unloader sold (USA)	Babcock International (UK) becomes new owner of Siwertell	The 100th Siwertell ship-unloader sold (Germany)

Consilium AB (Sweden) becomes new owner of Siwertell

First land-based Siwertell screw conveyor delivered (New Zealand)

Siwertell ship unloader installed in central Frankfurt, Germany.

to secure Siwertell's place in the market for the foreseeable future."

Siwertell was the first company to enter the cement and coal handling industries with a screw-type unloader. Prior to this, these two materials had only been handled by grab cranes and pneumatic systems.

"It was revolutionary back then; no one had done it before," says Karlsson. "We entered the cement market in 1975 and the coal market in 1982. To this day, the Siwertell screw-type unloader offers the highest capacities available on the market for its kind, for cement, for coal and also for grain. We can guarantee 10,000 operational hours for screws and tubes with our coal unloaders; I do not think any of our competitors can offer the same. Our coal unloaders, spread across all the continents, together handle more than 100 million tonnes of coal each year. This is quite a success story, I would say."

Olle Siwersson, inventor

An important factor in this success is the screw conveyor's unique, patented inlet feeder, designed and developed by the two Swedish inventors, Olle Siwersson and Gunnar Tell, who combined their surnames to give the brand its famous name.

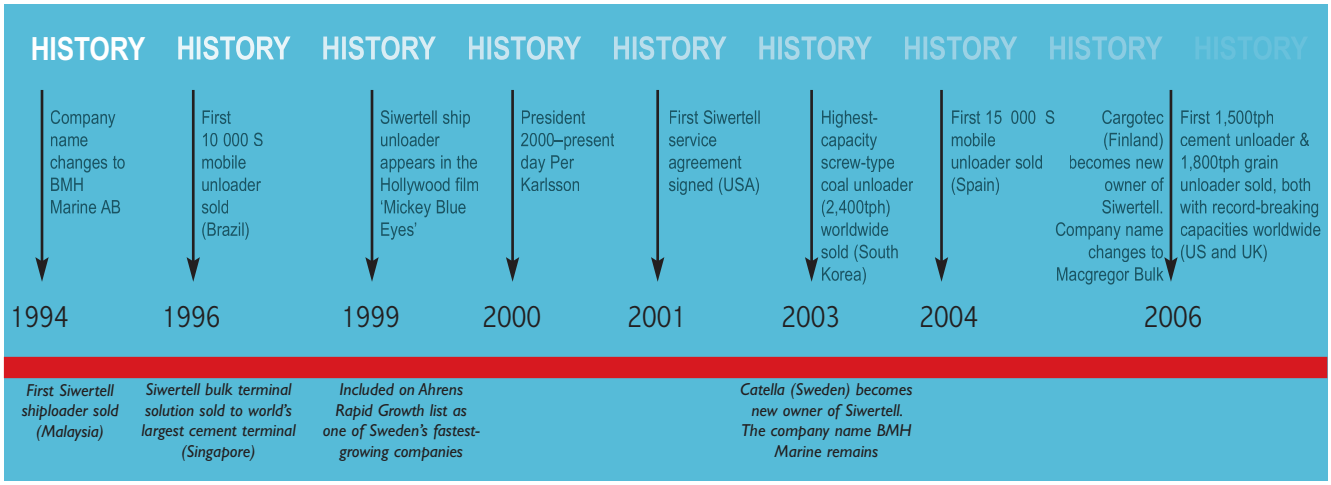
Some years ago, Siwersson explained how it all came about, beginning by recognizing that screw conveyors are not new in any way; in fact they have looked much the same since the days of Archimedes.

He said that although the traditional screw conveyor is simple and effective, it suffers from two serious related disadvantages; it requires a lot of energy related to the amount of material transported, and it is difficult to feed dry material into the tube. "So then I had this idea, what happens if you counter rotate the housing against the screw?"

By counter-rotating the inlet device the amount of material that could be transported in a vertical conveyor increased from about 20 per cent to about 80 per cent of the tube's internal volume, by preventing material from being thrown out of the screw during feeding, which massively improved the unit's efficiency.

The counter-rotating inlet device has other important functions including digging and loosening packed material in the ship's hold; gathering material from the hold and feeding it into the screw; and minimizing dust creation by taking material from below the cargo surface.

Although initial development work was aimed at the land based agricultural market, the potential for ship unloading



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applications was quickly recognized. Loading systems, road mobile unloaders and full terminal systems followed, all bearing the Siwertell hallmarks of efficiency, reliability, high capacity and minimal environmental impact.

"Our mobile unloaders are another significant success story; we started designing them in 1991. In just over 20 years we have sold more than 100 units," Karlsson says. "Many are returning customers."

Siwertell will shortly deliver the third road-mobile 10 000 S cement unloader to the Turkish construction services company, Mussa Insaat Dis Ticaret Ltd of Istanbul. The trailer-based, diesel-powered unit will have a rated discharge capacity of 300tph and will be equipped with a dual bellows system and dust filter.

Siwertell road-mobile unloaders can be used in more than one location.

The units will work at several sites along the Libyan coast, helping to meet the cement demands for the country's extensive rebuilding programmes. "Siwertell mobile unloaders are ideal in these circumstances, because they have the flexibility to unload cement at the most convenient port for the work in hand, cutting road transportation to a minimum," notes Karlsson. DCi

Two Siwertell ship unloaders in operation at Hsinta Power station, Taiwan.

HISTORY

2008	2009	2010	2011	2012	2013	2014	2015
Siwertell solutions installed in 70 countries worldwide	IBJ Award received for best shiploading/ unloading system	More than 50 international Siwertell sales representatives in total contracted	IBJ Award received for safety in bulk handling	First contract received from the steel industry	IBJ Award received for best shiploading/ unloading system	Siwertell celebrates 40 years of dry bulk handling	Ambition: to remain the No. 1 supplier of dry bulk handling solutions worldwide

Company name changes to Cargotec Sweden AB, Bulk Handling. Nordströms brand changes to Macgregor, and is marketed separately from Siwertell

Company name changes to Cargotec Sweden Bulk Handling AB

Launch of 3,000tph ship unloader for coal

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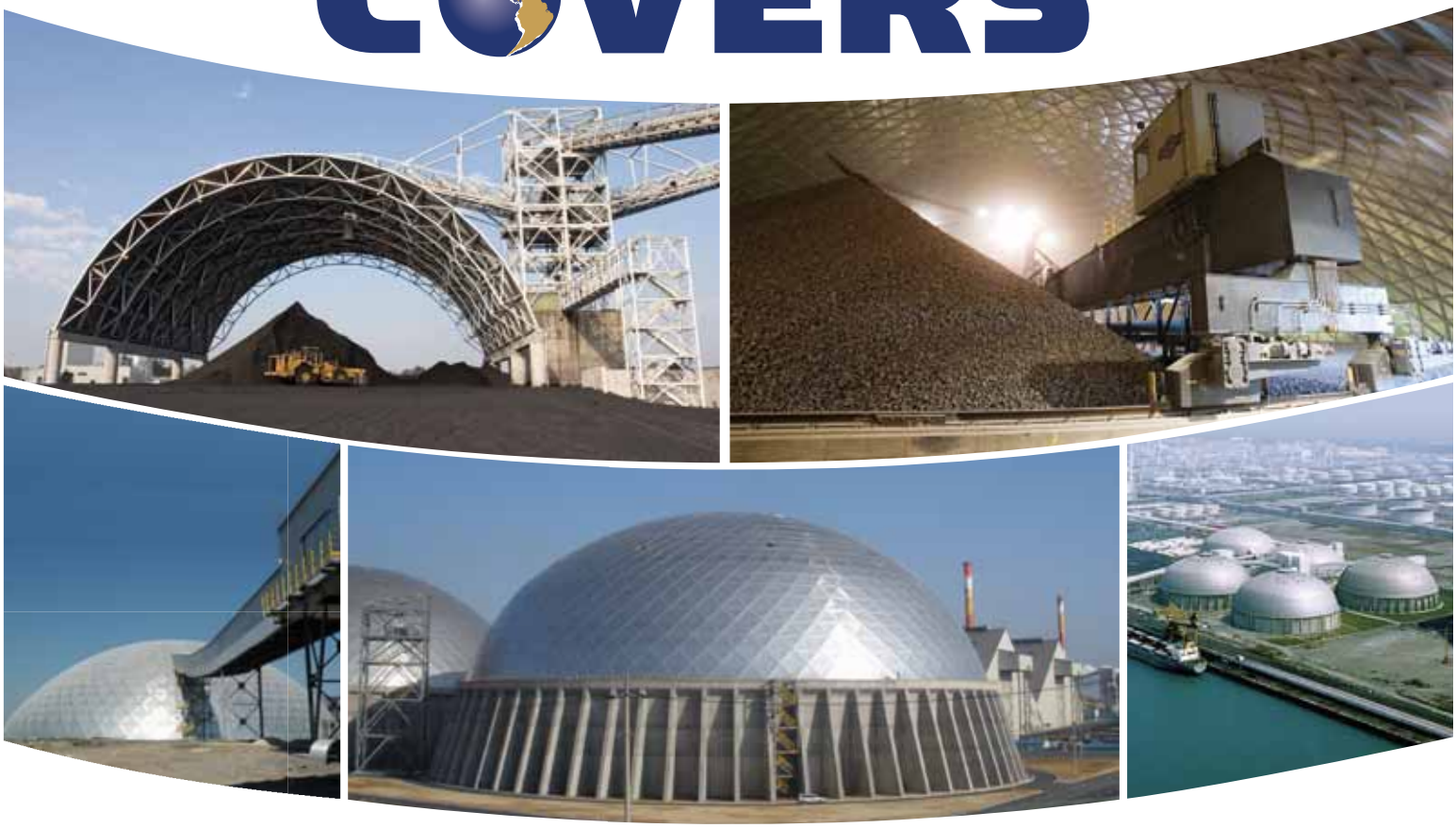

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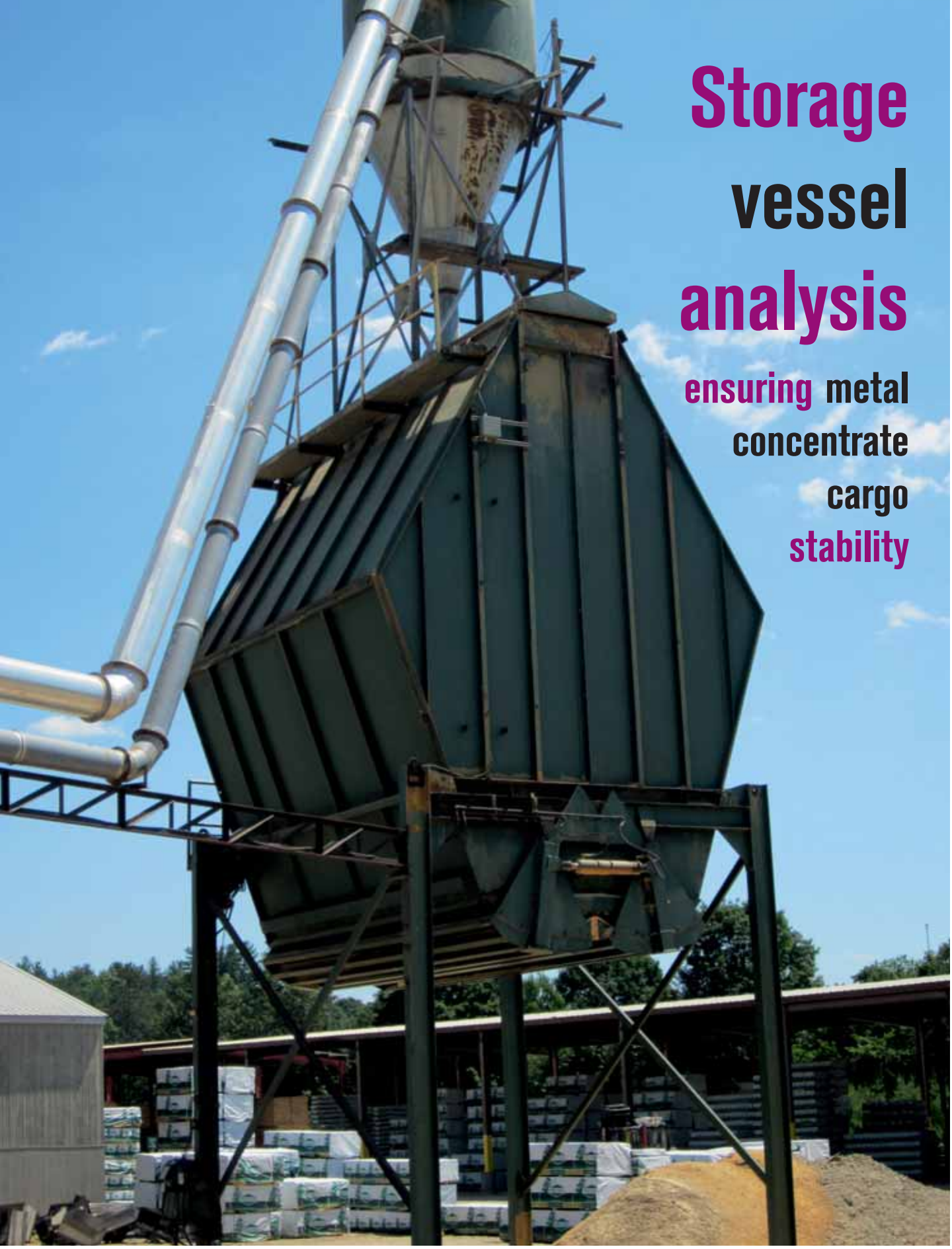

Storage vessel analysis

ensuring metal concentrate cargo stability

Bulk material storage vessels (e.g., silos, bins, hoppers, elevators, bunkers) are available in a variety of sizes, shapes, and materials of construction. Proper selection of a silo, bin, or hopper requires evaluation of many factors, and in cases where basic material characteristics have been ignored, undesired consequences such as structural failures, caked or segregated material, and erratic discharge have resulted.

Jenike & Johanson engineers excel at thoroughly reviewing your storage needs, measuring critical bulk material flow characteristics, selecting the appropriate hopper discharge pattern, and designing a storage vessel that will operate correctly from the start and provide a long service life.

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The company's designs consider:

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- hopper shape, angle, and internal surface required for bin flow pattern;
- outlet size and shape engineered to avoid poor flow and ensure discharge rate;
- feeder selection and design to maintain reliable discharge from hopper outlet; and
- unique design features for powder and bulk solids reliable handling, processing.

Jenike & Johanson's experience has included work with:

- converging/diverging mass flow silo for highly cohesive wet bran;
- mass flow purge column that efficiently strips polyolefin hydrocarbons;
- expanded flow silo retrofit for handling hot lime at 427°C (800°F);
- diverging silo and apron feeder that handles saturated gold ore tailings; and
- air-assisted discharge silo for feeding kaolin clay at high rates into railcar.

Storage vessels are necessary for handling bulk materials in any industry. While contained, bulk solids are exposed to a variety of external factors that can cause problems for the equipment as well as its cargo. Jenike & Johanson is constantly working on projects that involve analysing a material in order to engineer a handling process that minimizes wear on the equipment. On one specific occasion, Jenike & Johanson helped reduce the hazards of shipping a bulk material by first testing its flow properties.

The need

The *Code for Safe Practice for Solid Bulk Cargoes* provides rules of safe practice for the shipment of bulk cargos by ship. One of the rules is to ensure the materials in the holds have sufficient time to settle and are stable before proceeding out of port. Bulk cargo carriers have been known to list and even sink as a result of unstable cargo — especially in inclement weather.

The metal concentrate producer understood the risks and was aware of the concern. However the codes give no specific guidelines on how long to wait to ensure a fine, dry concentrate has properly settled and no longer presents a risk of being unstable. Waiting too long presents costly time lost at the port so there is substantial pressure to depart as quickly as possible. Therefore a thorough basis for determining a sufficient wait period was required.

The solution

Jenike & Johanson was commissioned to study the problem and provide a reliable method for setting the wait period. Its approach was to measure the relevant flow properties of the metal concentrate. It then used Jenike & Johanson's proprietary SETTLE software to predict how long the vessel must stay in the port before sailing to ensure the cargo is stable. This required an understanding of hold sizes, filling behaviour, and the flow properties of the material. For this client's ships and filling approach, Jenike & Johanson recommended that the vessel remain in port for at least 24 hours after the last hold was filled.

The result

According to the client, there have been no reports of cargo shifts since adopting Jenike & Johanson's recommendations. The project has eliminated the risk and provided an engineered approach for the required wait period before setting sail.

Jenike & Johanson has developed proven and practical ways to design powder and bulk solids storage, handling, and conveying equipment to promote reliable, uniform, and unrestricted bulk material flow. Its unique combination of science/engineering/design capabilities and its engineering team with years of hands-on experience is unmatched by any other bulk material handling organization.

When faced with unique bulk material handling challenges, Jenike & Johanson prides itself on its ability to provide innovative equipment designs engineered for its clients' challenging applications. DCi

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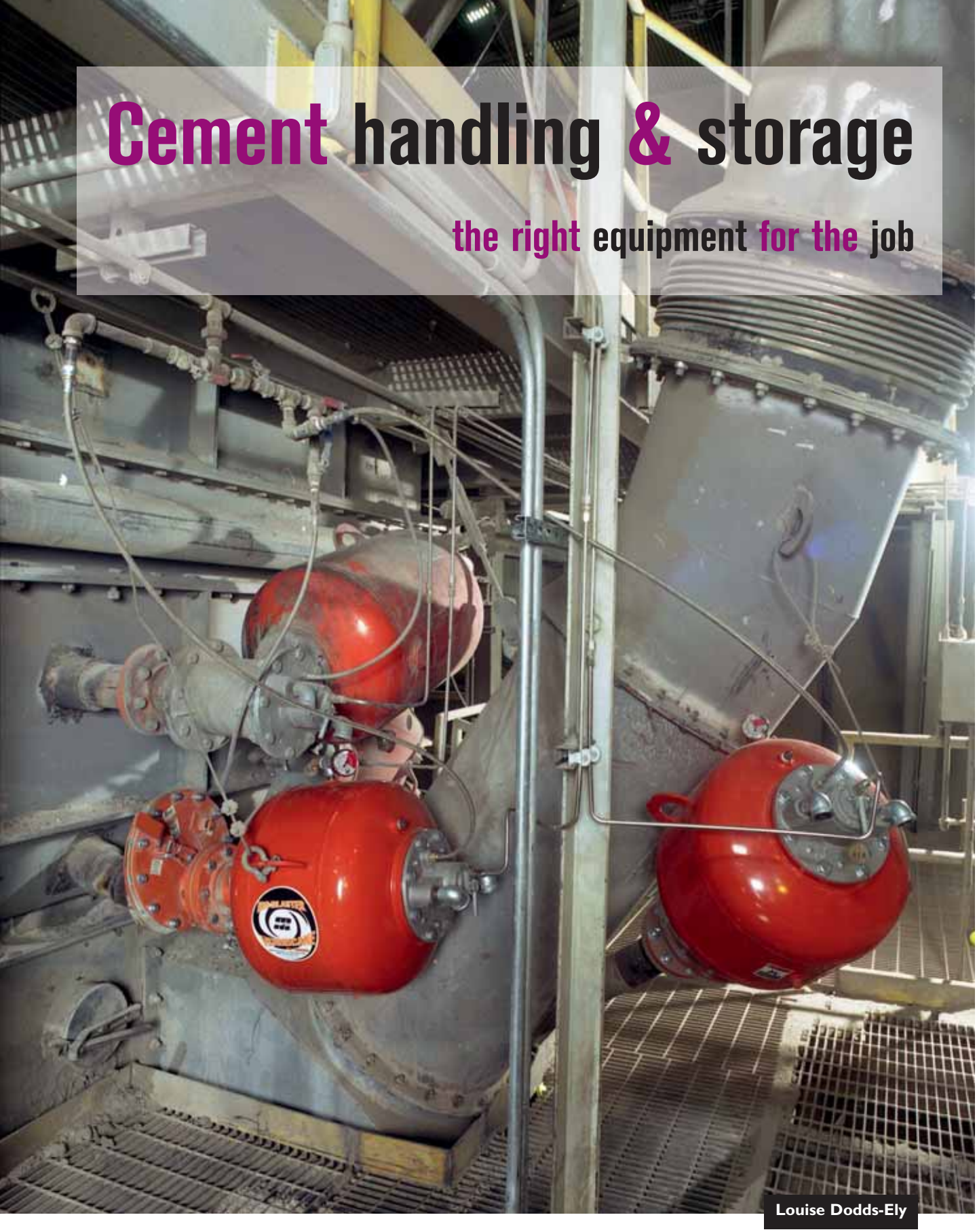


New air cannon valves produce about twice the blast force output of older designs, using approximately half the air volume.

Louise Dodds-Ely

Improving flow: nozzle research maximizes air cannon performance

Air cannon technology has proven itself as an effective flow aid over four decades of use in cement manufacturing, coal processing, ash handling, rock crushing and other applications, *write Martin Engineering's Oleg Meister, Product Development Engineer and Brad Pronschinske, Global Product Manager.* Also known as air blasters, air cannons help improve throughput and reduce build-up with an engineered air discharge, dislodging accumulation and preventing build-up that impacts process efficiency and raises maintenance expenses. Common uses include emptying bulk storage vessels, purging boiler ash, improving crusher throughput and cleaning high-temperature gas ducts.

There have been many advancements to the air cannon since it became a commercially viable technology in the early 1970s,

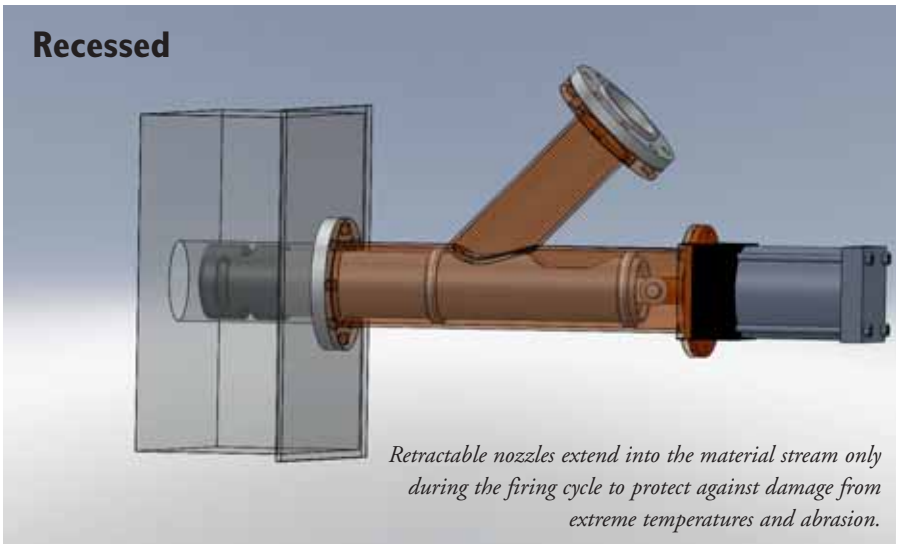
which have improved cleaning performance, energy efficiency and safety. Among the changes is a high-speed valve design that can be mounted on a smaller air reservoir, yet deliver higher discharge forces than less efficient valves on larger tanks. The new generation of valves produces about twice the blast force output of the designs introduced just a decade ago, saving energy by using about half the compressed air volume.

The piston return reservoir dramatically reduced air consumption, while peak force output remained the same.

Another energy-saving development is the piston return reservoir. During the air cannon's firing sequence, the return reservoir's canister pressure approaches that of the tank, but the fast-acting valve closes with about 50% of the tank's original pressure remaining. The peak force output remains the same, but air consumption is dramatically reduced, easing the demand on plant air supply and saving money.

Air cannons have also become safer in recent years, with new positive-firing valves that respond to an air pressure surge delivered by a solenoid valve. This improves air cannon safety, as discharge requires a positive signal. Unlike negative pressure-firing designs, a cannon equipped with this type of valve will not discharge accidentally in response to a drop in pressure, so an air supply failure or broken line cannot trigger it.

In fact, researchers now believe that recent innovations have pushed the performance of air cannon technology near its physical limits, with valve cycles measured in milliseconds and efficiency at an all-time high. For this reason, more R&D effort is now being directed at the nozzles themselves, which create the air pathway that actually contacts the accumulated material. Manufacturers are finding evidence to support the hypothesis that new nozzle designs still hold significant potential for improving overall effectiveness, particularly in applications with difficult materials or extreme operating conditions.

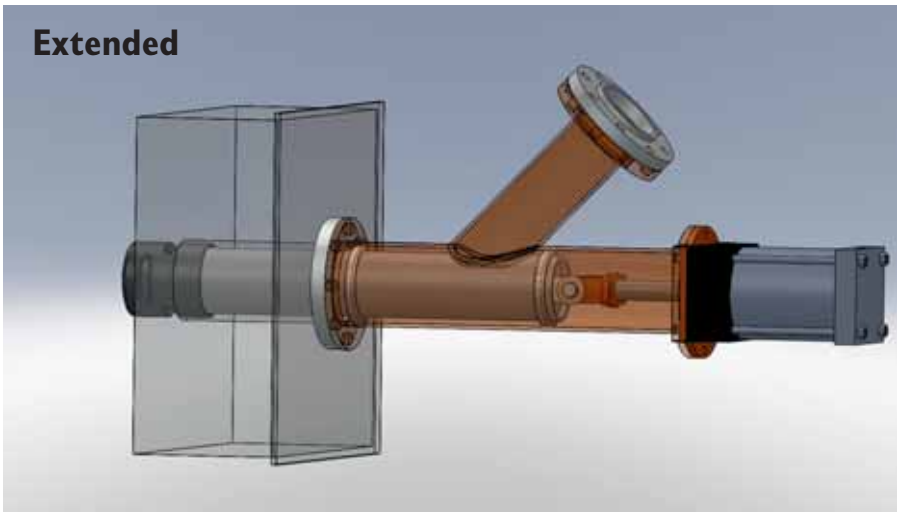


Retractable nozzles extend into the material stream only during the firing cycle to protect against damage from extreme temperatures and abrasion.

Nozzle development

The cement industry is an excellent proving ground for air cannon technology, as it presents such a demanding operating environment, including extreme temperatures and abrasive materials that affect nozzle wear and service life. It's also one of the industries in which air cannon technology is most widely used, helping to solve accumulation problems in preheater towers, furnaces, clinker coolers and storage vessels. Yet the air cannon itself is just one component of the solution.

A critical but often overlooked aspect of the system is the heat-resistant nozzle



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Cement import terminal for CEMEX, Mexico

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Flat storage hall, Golden Bay Cement, Auckland, New Zealand

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designed and manufactured to deliver the optimum force and blast pattern to suit the application. These nozzles are currently available in a variety of shapes, sizes and materials of construction. Over the last two decades, the most commonly used are cast alloy fan shapes and stainless steel pipes. While a pipe nozzle is reasonably light and easy to install, it has a limited area of influence on a flat vertical wall. In contrast, the fan nozzle typically has a wide area of influence and shorter range, but frequently weighs in at 70 pounds or more, making it hard to install and even more difficult to replace. Installing fan nozzles is especially problematic on an existing system, as it requires torch cutting of the vessel wall, drilling through the refractory, then holding the heavy component in proper position while it's welded in place.

As the evolution of cannon and valve technology nears its logical limits, researchers are beginning to focus more on nozzles as a way to improve system performance, better customizing blast patterns and forces to suit the materials and process conditions of individual operations. The nozzle is the component that takes the stored energy in the form of compressed air and directs it to do work, so it has a dramatic effect on the performance of any air cannon. The application dictates the type of performance needed, including the shape of the air blast, length of the plume, etc. In addition to dislodging accumulated material, a goal in every application is to use the stored energy as efficiently as possible.

There has been some advancement in nozzle technology for air cannons over the last few years, such as a 360° retractable design that extends into the material stream only during the firing cycle to protect itself from extreme temperatures and abrasion. This innovative design solves two common industry problems: effectively dislodging accumulations in hard-to-reach areas without shutdown or manual labour, while significantly extending nozzle life. Further, the retractable nozzle can be serviced from outside the vessel, reducing service time and risk of injury.

For the most part, however, air nozzles used in today's high-performance cannons are much like the designs used 20 years ago. Manufacturers offer a range of shapes, sizes and blast patterns to accommodate different materials and process conditions, but nozzle styles and performance have not changed significantly. Even after its long service history as a material flow technology, air cannon users still have a relatively small inventory of nozzle choices for high-temperature applications.

CFD MODELLING

Among the obstacles to new nozzle development has been the lack of precision in existing mathematical models for predicting the performance of new designs, particularly with respect to specific materials or conditions. While existing Computational Fluid Dynamics models could simulate nozzle performance in theoretical terms, the results often varied from the actual performance observed in a customer's process. In addition, prototype manufacturing has traditionally been time-consuming and expensive, further slowing the R&D process. Selecting the optimum nozzle for specific customer operating conditions often took multiple iterations, making subtle changes to obtain the most effective configuration for that operating environment.

With the recent advances in numerical flow simulation software and the advent of rapid prototyping techniques, Martin Engineering researchers felt the time was at hand to create a more accurate standardized model and focus on designing new and innovative nozzles to further enhance air cannon performance. The objectives included development of a

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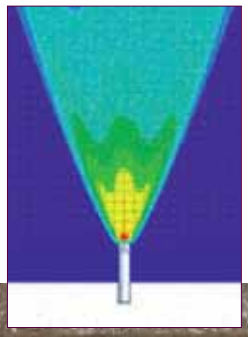
predictive theory that better reflects actual performance, accelerating the process from concept to prototype and drastically reducing trial-and-error tactics.

If successful, the result would be more effective cleaning performance from air cannon systems, with nozzle designs tailored to individual operating conditions. It was expected that engineers would also develop a deeper understanding of customer processes and foster product development that would be truly process-oriented. The benefits would include current product optimization, cost savings and faster development times, ultimately giving customers a virtually unlimited portfolio of nozzle options.

The investigation began with off-the-shelf software and CFD theory. Researchers plugged in the physical parameters of existing Martin Engineering nozzle designs and computed a projected blast pattern for each one. The nozzles were then taken to a test station known as a blast table, where they were mounted on a cannon and aimed at a horizontal surface covered with sand. By firing the cannon across the sand, investigators could obtain an accurate representation of the actual pattern for each nozzle design, which was then compared to the area of influence predicted by the software.

Following this series of tests, Martin researchers then revisited the CFD modelling program and made progressive adjustments, eventually resulting in a model that accurately reflected the blast patterns of the company's existing nozzle shapes and sizes.



Armed with this customized model, investigators then turned to the development of new nozzle designs which could be tailored for specific customer operations and process conditions.

By progressing beyond a standard range of nozzle configurations from which the best-available solution would be chosen for a given application, the objective was to develop the ability to efficiently design and test nozzles developed specifically to suit individual customer processes, thereby delivering more effective cleaning under virtually any circumstances. Further, the customized CFD model will allow the R&D staff to accurately predict the forces and blast patterns resulting from any new nozzle design, without resorting to the expensive and time-consuming process of prototyping and physically testing every one.

First development

The first nozzle development project using the new CFD modelling technique was initiated to address one of the most common problems shared by high-temperature air cannon users. Replacement of conventional fan-type air cannon nozzles is a difficult and laborious process that affects virtually all systems at some point. The least disruptive time to install a cannon network is during construction of a new system or assembly of a new vessel. When the air cannon system is designed-in from the beginning, technicians can cut the necessary access holes and weld the nozzles in place with relative ease. Refractory can then be fitted

The quick-change nozzle proved that fan jet performance could be achieved with the quick access previously available only from a pipe nozzle.

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around the nozzle opening. But when nozzles fail and require replacement, the process is much more complicated.

Replacing a conventional fan nozzle on existing equipment requires the removal of refractory brick from around the nozzle opening, typically with a pneumatic hammer. The process invariably weakens the surrounding refractory and renders it more susceptible to spider-webbing and subsequent cracking. The air cannon is disassembled from the air supply pipe from outside the vessel, and the failed nozzle is cut from the vessel or pipe, usually with a torch. The new nozzle is welded into place, and the damaged refractory is patched as well as possible, followed by the re-installation of the cannon outside the vessel. In addition to the potential refractory damage, the process is labour-intensive, requiring an extended system shutdown, and also introduces the risk of injury from working in a confined space. A key issue is the chance of misplacement, as even a pitch of just 1–2° can significantly affect a cannon's effectiveness.

In contrast, traditional pipe nozzles can typically be changed from outside the vessel, without a need to alter the refractory inside. The cannon is removed from the pipe, and the nozzle can be drawn out through the vessel wall. Unfortunately, pipe nozzles have a smaller area of influence and are generally unable to deliver the same cleaning action as a fan jet nozzle. So Martin Engineering researchers went to work on designing a type of hybrid, one that would deliver cleaning performance equal to standard fan jets, yet be as easy to remove and replace as a pipe nozzle.

Using the modified CFD model, the R&D staff conducted virtual testing on several different nozzle configurations, continually refining the size, shape and orifice to investigate the changes in blast pattern. By eliminating the need to prototype and physically observe each design, researchers were able to quickly narrow down the most likely candidates to a very small list. They were able to examine the predicted performance in detail and prototype only those which had shown the most promise in the CFD simulation, greatly increasing the likelihood of success during physical trials.

The patent-pending quick-change nozzle design that evolved from that investigation proved that the R&D team could achieve fan jet performance and combine it with the quick access which in the past had only been available from a pipe nozzle. The CFD model had been demonstrated in a real-world situation, helping the R&D team solve a problem that has confronted air cannon users (especially cement manufacturing operations) for years.

The benefits are expected to include significantly reduced damage to refractory brick and drastically shorter nozzle service times. By avoiding the need for confined space entry, the new design has eliminated much of the potential risk involved with the changeout process. It also allows system operators to add air cannons to an existing process during a brief shutdown, without completely cooling down the entire system to allow entry into the interior of a vessel.

In addition to helping researchers solve a specific problem, the process of developing the quick-change nozzle design and field-proving its effectiveness confirmed the utility and accuracy of the customized CFD model. The Martin R&D team now has confidence that they could approach any process experiencing particle accumulation issues and quickly design and manufacture a nozzle to deliver the optimum blast pattern for that specific application. No longer will air cannon users be limited to off-the-shelf choices or lengthy development times to test new designs. The customized software can be used to predict the blast pattern on an unlimited array of variations, and prototyping can be confined to the very limited number of configurations that best suit the individual process at hand.

Conclusions

The benefits of specifying high-efficiency air cannon systems networks for cement manufacturing can include lower energy costs, reduced maintenance, improved safety and greater total output. As the evolution of cannon and valve technology nears its logical limits, researchers have turned to the nozzles themselves as the next opportunity to enhance air cannon performance.

By customizing existing computational modelling software, Martin Engineering researchers have developed and confirmed an accurate method of predicting nozzle performance under specific operating conditions, allowing the company to develop nozzle designs for optimum effectiveness, while significantly reducing time-to-market. In fact, Martin Engineering researchers have already used the model to project the performance of hundreds of new nozzle designs.

Martin Engineering supplies bulk material handling equipment around the world for a wide variety of applications, including mining and coal handling, biomass, cement/clinker, rock/aggregate and other materials. Founded in 1944, the firm is headquartered in Neponset, IL, offering manufacturing, sales and service from factory-owned business units in Brazil, China, France, Germany, Indonesia, Mexico, South Africa, Turkey, India, the UK, Japan, Russia, Peru and under exclusive licence with ESS Australia.

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AUMUND India equips Wonder Cement

Mr. Patni (owner of Wonder Cement) shaking hands with Mr. Gupta (managing director AUMUND India) and concludes the contract.

A major contract was signed recently by AUMUND India to furnish all the necessary equipment for a second production line at the Wonder Cement plant at Nimbahera in India. The contract worth €5 million includes 32 individual machines from the AUMUND product portfolio.

Due to the ongoing very successful and reliable cooperation in servicing and supplying Line I at Nimbahera, AUMUND India was invited to tender for the installation of Line II. A convincing proposal was compiled within only five days. After short and intensive negotiations, Raju Gupta (managing director of AUMUND India) and Ibrahim Ali (director of Wonder Cement) signed a contract in June 2014 at Udaipur, India, permitting AUMUND to supply all machines needed for the construction of a second production line at Wonder Cement's plant located at Nimbahera, District Chittorgarh within the Indian state of Rajasthan. The second production line will increase the plant's capacity from 3.25mt (million tonnes) per year up to 7mt per year.

The scope of supply includes six chain bucket elevators, six belt bucket elevators, seven deep pan conveyors and 13 silo discharge gates. The chain bucket elevators included four double bucket elevators with two designed for a capacity of 1,775tph (tonnes per hour). Similarly, in the belt bucket elevators, the preheater feed elevators have a centre-to-centre distance of 150 metres, handling a capacity of 800tph. A reversible deep pan conveyor of a length of 162.3 metres is also part of the scope of supply. Beyond the delivery and installation of the machines, it includes supply and maintenance services for the future.

Wonder Cement is part of the RK Marble group which is one of the leading names in the marble industry. Its cement plant produces cement in line with international quality standards. The entire design of the plant is based on the latest environment norms, keeping emissions clearly below maximum permissible values.

About the AUMUND Group

The AUMUND Group is active worldwide. The conveying and storage specialist has special expertise at its disposal when dealing with bulk materials. With a high degree of individuality, both its technically sophisticated as well as innovative products have contributed to the AUMUND Group today being a market leader in many areas of conveying and storage technology. The manufacturing companies AUMUND Fördertechnik GmbH (Rheinberg, Germany), SCHADE Lagertechnik GmbH (Gelsenkirchen, Germany), SAMSON Materials Handling Ltd. (Ely, England), as well as AUMUND Logistic GmbH (Rheinberg, Germany) are consolidated under the umbrella of the AUMUND Group. In conjunction with the headquarters of the manufacturing companies, the global conveying and storage technology business is spearheaded through a total of eight locations in Asia, Europe, North and South America.

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Air cannons hammer preheater build-up at Nebraska cement plant

The largest American-owned cement manufacturer in the nation has solved a build-up problem in the precalciner of its Nebraska plant by installing a network of high-performance air cannons, improving material flow and drastically reducing the need to hydro-lance. The series of 25 air cannons from Martin Engineering fires a powerful discharge of compressed air in a prescribed pattern to remove material that becomes adhered to the vessel walls. The solution helps the plant avoid downtime and eliminate the potential for water blasting to cause lumps of material to fall into the kiln feed and interfere with production.

Ash Grove Cement is the sixth-largest producer in the US, with nine manufacturing plants, two deep water import terminals and a major quarry operation in Blubber Bay, British Columbia. In all, the company has a total annual capacity of nearly 9mst (million short tons) of cement, including a wide range of specialty products for difficult service environments. Located on the south bank of the Platte River between Omaha and Lincoln, the facility in Louisville, Nebraska has an annual output of about 1mst per year of Portland and blended cement.

When system operators began noticing material buildup in the precalciner, they found that it was impeding the flow through the preheater and into the kiln. The staff used the common technique of water lancing to remove blockages, particularly from the preheater tower's riser duct. But the time-consuming process had to be repeated twice daily, when maintenance personnel would open access doors into the tower and remove the accumulation with a high-pressure spray.

"Efficient material flow is a critical element of dry-process cement manufacturing, and accumulation or blockages can take a big bite out of a plant's profitability," explained Martin Engineering's Andy Marti. "Although many plants still use manual techniques to remove build-up, the cost of labour and periodic shutdowns has led many producers to investigate more effective methods for dealing with this type of maintenance," he said.

The air cannons were installed during a scheduled maintenance outage, starting below the riser orifice, as the duct reduces in size to increase velocity.

In order to prevent reduced flow and blockages at the Ash Grove Louisville plant, Martin Engineering installed a network of 25 air cannons to remove material that becomes adhered to vessel walls.

Air-powered solution

In order to prevent the loss of efficiency and clinker quality at Ash Grove Louisville, a group led by process engineer Mark Junkins investigated possible solutions. They met with material handling experts from Martin Engineering, and together the group designed a network of Martin® XHV air cannons for the main production line.

Martin Engineering technicians installed the air cannons during a scheduled maintenance outage, starting where the accumulation appeared most severe: below the riser orifice, where the duct is reduced in size to increase velocity. The unique cannon design requires no high-temperature discharge pipes or special mounting plates, and discharge nozzles are embedded directly in the refractory lining of the preheater tower.

All of the air cannons in the main production line network are equipped with the Martin Engineering XHV Valve, designed specifically to deliver premium performance and long service life in preheater towers, clinker coolers and other high-temperature applications. The negative pressure-firing valve was developed to provide reliable operation and long service life in challenging applications.

The cannons discharge in a timed sequence that moves in an upward spiral around the tower firing about 20 seconds apart, with the entire cycle taking just over eight minutes to complete. Control room operators can alter the schedule to accommodate a range of kiln pressures and operating conditions, extending the sequence to as much as 45 minutes.

A crew from Martin Services installed the entire system, including cannons, air lines and controls, as well as the company's Thermo Safety Shields on each unit. Operating like trap doors, the sliding shields bolt in between the air cannon valve and mounting flange, helping to protect workers from exposure to severe heat, gases and high-temperature materials.

Stage II

Based on its success with the initial air cannon system, Ash Grove started planning a similar system for the plant's second


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The air cannons in the main production line network are equipped with a negative pressure-firing valve design that delivers reliable operation and long service life in challenging applications.

A crew from Martin Services installed the entire system, including cannons, air lines and controls, as well as the company's Thermo Safety Shields™ on each unit.

production line. For that operation, engineers designed a network of 15 additional air cannons, equipped with Martin® Tornado exhaust valves. Described as the latest advancement in air cannon valve design, the patent-pending Tornado fires in response to a positive air pressure surge delivered by a solenoid valve, which can be located as far as 200 feet away.

The unique design improves air cannon safety, since the discharge sequence requires a positive signal. Unlike negative pressure-firing designs, a cannon equipped with the Tornado valve will not discharge accidentally in response to a pressure drop, so an air supply failure or broken line won't trigger its firing. In addition, this positive-acting valve amplifies the discharge force, delivering up to 20% greater force than a standard XHV-equipped air cannon of the same size.

Results

With the new air cannon network in place, the Louisville plant has been able to significantly reduce the need for water blasting. Material now flows more efficiently, and maintenance personnel have drastically reduced the man-hours that were spent on manual removal.

"We still hydro-lance occasionally, because of changes in raw material or fuel," Junkins explained. "But we don't have the issues we had before. We can see that the air cannon system has paid for itself, by allowing us to maintain production rates without many of the interruptions and issues that water blasting created."

Ash Grove Cement Company has established a long-standing tradition of service, reliability and quality that stretches back more than 125 years. A pioneer of the lime and cement industries, the company was incorporated in Missouri in 1882 as the Ash Grove White Lime Association.

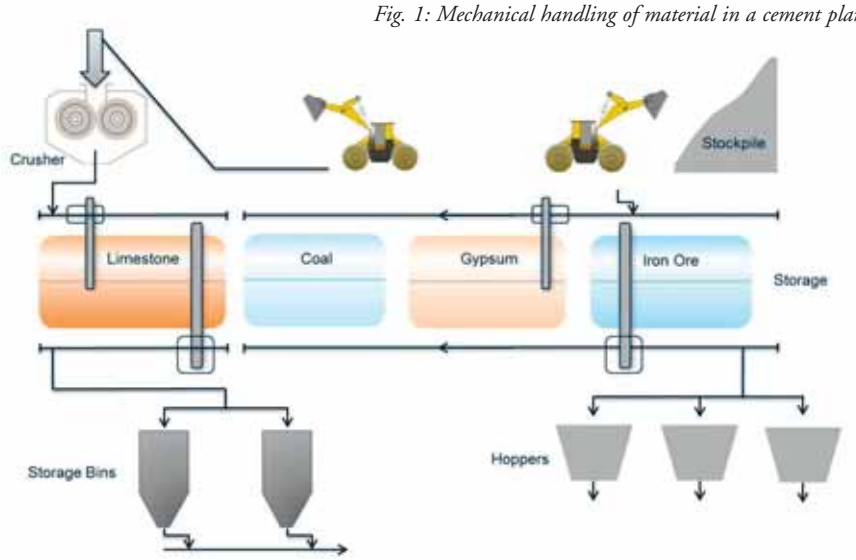
Raw materials handling, storage and homogenization in the cement industry

This article gives an insight for the criteria for the design of the plants for raw materials handling, storage and homogenization in the cement industry. The raw materials influence the investment in the plant due to the design and selection of the equipment. The important factor to note is that the cement process requires the raw materials to be prepared in a certain condition which could be in variance to the available materials.

For the cement process, the primary importance is the chemical composition of the raw materials, whereas the bulk handling facility designer is also interested in having the information on sieve analysis, repose angle, flow characteristic, abrasion, bulk density, moisture content and other relevant physical properties. The knowledge of variations in chemical and physical properties of the mined materials is critical to the optimally designed plant. It should also be recognized that the facility to handle and blend the raw materials should cater round the clock under different climatic conditions.

Tenova TAKRAF has engineered solutions for cement plants across India. For instance, a cement plant's most important raw material, limestone, may have vastly varying physical and chemical properties depending on the mine. In such cases the material needs to be blended together (often referred to as 'homogenization') over a time so that the variation of properties has minimal effect on production. It is imperative for the system designer to come up with tailor-made solutions for each and every application.

Fig. 1: Mechanical handling of material in a cement plant.



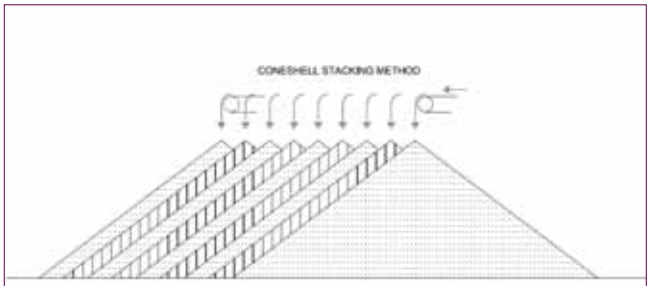


Fig. 2: Coneshell method of stacking

CASE 1: CHETTINAD CEMENT

Coal storage with stacker and side scraper

Material handled	**Coal**
Lump size	(–) 75mm 90%, max. 90mm
Bulk density of material	0.72 t/m³
Angle of repose	38°
Stockpile	
Pile base width	25m
Length of pile	70m
No. of piles	2
Capacity	5,000 tonnes (each)
Stacker type	Luffing stacker
Stacking rate	300tph
Reclaimer type	Side scraper reclaimer
Reclaiming rate	200tph

Handling and storage without homogenization

In a cement plant there are several raw materials, which require mechanical handling and storage (Fig. 1). In cases where homogenization is not an important factor, material storage may consist of a simple stacking arrangement either by overhead travelling tripper or stacker on rails. The simplest storage system envisages coneshell type stacking, where smaller cones are automatically formed over the first fully formed cone. (Fig. 2)

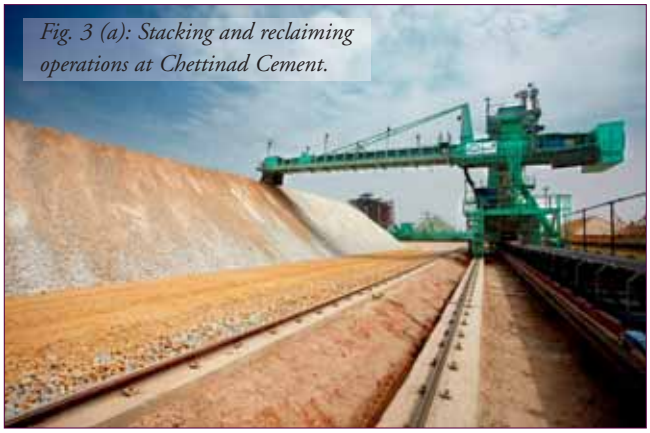


Fig. 3 (a): Stacking and reclaiming operations at Chettinad Cement.

Fig. 3 (b): Stacking and reclaiming operations at Chettinad Cement.

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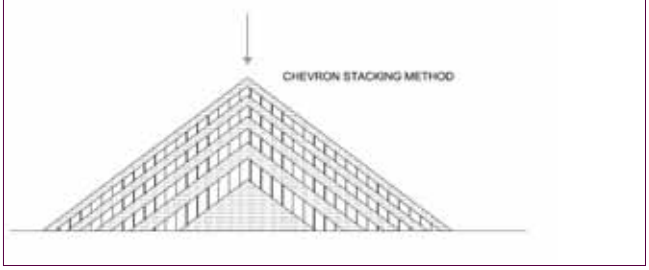

Fig. 4: Chevron stacking method.

CASE 2: BHARATHI CEMENT

Limestone handling

Material handled	**Limestone**
Lump size	75mm, max. 100mm
Bulk density of material	1.4t/m³
Angle of repose	38°
Stockpile	
Pile base width	32m
Length of pile	122m
No. of piles	4
Capacity	30,000 tonnes (each)
Stacker type	Luffing-cum-slewing stacker
Stacking rate	1,200tph
Reclaimer type	Bridge reclaimer
Reclaiming rate	850tph

Since blending is not a requirement, the scraper reclaimers operate on the principle of lateral reclaiming. The scraper arm makes a small cut on the sloping face of pile and the reclaimer travels over the length of the stockpile. This process can be fully automatic with active controls for depth of cut and travel speed to regulate the output from the equipment. The type of scraper can be either side (cantilever), half portal or full portal.

These scraper reclaimers do provide a minor blending effect since the cones are sliced uniformly during the travel. However, the greater benefit comes out of the flexibility of the equipment, since the travel of the machines in the store is not hindered by the presence of stockpile. This is useful for the cement plant when handling different materials from the same set of stacker and scraper reclaimer or when the process demands different grade of the same material.

CASE 3: QATRANA CEMENT

Limestone handling

Material handled	**Limestone**
Lump size	90mm
Bulk density of material	1.36t/m3
Angle of repose	36°
Stockpile	
Max. pile base width	46.5m
Radius of stockpile	100m
No. of piles	1, circular
Capacity	71,100 tonnes
Stacker type	Circular stacker — slewing & luffing type
Stacking rate	1,250tph
Reclaimer type	Bridge reclaimer
Reclaiming rate	600tph

Fig. 5: Bridge-type reclaimer for homogenization.

Fig. 6: Operations at Bharati Cement.

Handling and storage with homogenization

Good homogenization is provided by the chevron method (Fig. 4) of stacking enabled by a fully automatic control system. The linear stacker moves over the length of the stockpile forming several layers (may be hundreds) over one another. The end cones with predetermined stacking procedure give correction to the extent possible. To diminish the effect of end cones on the product, it is advisable to have a pile configuration having length to width of minimum 4:1. The end cone effect can be completely eliminated in case of continuous stockpile in the circular pre-blending system.

A good stacking procedure is a job half done for the purpose of homogenization. To ensure that the product coming out of the stockpile is fully blended, TAKRAF recommends its dependable workhorse, the bridge type scraper reclaimer. The TAKRAF bridge scraper has a large harrow (Fig.: 5) covers almost the entire width of the stockpile. The bridge moving into the pile and harrow travelling across gives a true representation of the cross section. Being large sized, the harrow also needs a short traverse across the pile by means of a hydraulic cylinder, which guarantees minimum wear and maintenance.

Fig. 7: Operations at Qatrana Cement..

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Rail-mounted Siwertell unloader ordered for new cement facility

Cargotec's Siwertell has received an order from CITIC Heavy Industries Co Ltd (CITIC) for a rail-travelling ship unloader. CITIC is one of China's largest conglomerates, headquartered in Luoyang, Henan province.

The ST-640 M-type unloader has been ordered to support the energy production requirements for a new cement production facility in Burma/ Myanmar and will unload coal from barges at a rate of 800tph. The facility is being built as part of a collaboration between CITIC and the Thailand-based Siam Cement Group subsidiary, Mawlamyine Cement Ltd (MCL). CITIC states that the new production plant will have a cement capacity of 5,000 tonnes per day.

"This order has special commercial significance for Siwertell as it will be the first delivery to Burma/Myanmar," says Ola Jeppsson, Siwertell sales manager. "MLC will benefit from all the excellent attributes of our Siwertell unloaders including efficiency and quiet, safe, environmentally-friendly operations without dust or spillage.

"A Siwertell screw-type unloader was the preferred solution for the new Mawlamyine cement plant. Siwertell screw-type unloaders lead the industry and have decades of operational experience and numerous favourable global references.

"The low weight of the unit when compared to alternative unloading systems minimizes loads on the jetty and so reduces jetty construction costs," Jeppsson adds.

The delivery is scheduled for mid-2015, and will include an enclosed discharge arrangement for transferring coal to the jetty conveyor. The unloader will be delivered in pre-assembled parts, with final assembly, testing and commissioning taking place on site at Mawlamyine.

Siwertell ship unloaders and loaders are based on unique screw conveyor technology, in combination with belt conveyors and aeroslides, and can handle virtually any dry bulk cargo, such as coal, cement, fertilizer, agribulk, clinker, sulphur and grain. Siwertell plant and terminal design, ship unloaders, ship loaders, mobile ship unloaders, mechanical and pneumatic conveying systems, and storage solutions are all designed to ensure environmentally-friendly and efficient cargo operations.

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Tanker loading facilitated by Cleveland Cascades systems

Cleveland Cascades tanker loader systems successfully commissioned at Titan Cement, Hull, UK

Titan Cement UK, based in Hull, recently invited Cleveland Cascades Limited to commission two tanker loader systems purchased earlier in 2014 at King George Dock.

The chutes load cement into tanker trucks with closed hatches at rates of up to 150tph (tonnes per hour). The cement is imported from around Europe on vessels, and is air-blown into

The tanker loading chute is used to load cement and is capable of loading at rates of up to 150tph. The chute is equipped with a rubber seal at the outlet which sits inside the hatch of the truck. This creates a perfect seal for dust-free loading.

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Titan Cement's storage silo for truck-loading thereafter.

The Cascade tanker units utilize a rubber seal at the outlet in order to create a perfect seal between the chute and the tanker hatch for much improved dust-free loading. The air displacement is controlled by an internal extraction system that works across both chutes and any product extracted is taken back into the silo for re-loading.

State-of-the-art conveying technology and silo design for the cement industry

"While cement is as vital a commodity to fast-growing economies as oil or steel with no other material being as versatile for building houses, roads and infrastructure, it is difficult to transport and potentially polluting if not stored and transported carefully," says Paul van de Vyver, general manager of DemcoTECH Engineering.

As a key supplier of bulk materials handling technologies and services to the cement manufacturing and related industries, South Africa-based materials handling specialist DemcoTECH Engineering offers the global industry a complete solution for the storage and transportation of cement.

Conveyor design

"As with all the commodity markets we serve, maintaining a clean environment is a priority in all the systems we design and supply to the cement industry," notes van de Vyver. "As a result, we offer specialized conveying systems, such as troughed AeroConveyors™, pipe conveyors and pneumatic conveying systems, which, by providing a totally enclosed conveying environment, assist the client in complying with environmental and safety regulations.

"What makes the AeroConveyor™ system unusual is the fact that it uses the air-supported belt principle to convey bulk materials, with air being used in much the same way as for a hovercraft, i.e. as an air cushion as a means of transport, eliminating the requirement for idlers."

Although similar to the conventional idler-supported conveyor system, a trough section is used as the structural support of the belt on an air cushion.

"Air, a natural resource is used successfully as a substitute for idlers, yielding substantial benefits, including an economical-to-construct-and-operate conveyor and one that has very few moving parts, thus requiring very little maintenance."

DemcoTECH Engineering offers specialist expertise in pipe conveyors, having supplied this technology to a number of cement producers around the world. Besides secure handling of the material, pipe conveyors offer many other benefits, such as being environmentally friendly without the spillage problems associated with troughed conveyors. Pipe conveyors are able to negotiate relatively tight horizontal and vertical curves, which affords the opportunity to eliminate transfer points, reduce the overall length of the conveyor system and improve the plant footprint, and save total costs.

"The potential conveying distances and carrying capacity of pipe conveyors have improved significantly in recent years due to improved conveyor analysis capabilities and advances in component design, to the extent that pipe conveyors today offer clients a realistic alternative to conventional troughed conveyors," highlights van de Vyver.

Pipe conveyors designed by DemcoTECH Engineering comprise both fabric and steel cord belting, have up to 2,250 tph conveying capacity and are up to 500 mm in diameter. "We have also engineered two-way pipe conveyors, multiple curve pipe conveyors and distributed drive pipe conveyors with excellent results," says van de Vyver.

"A particular benefit of the DemcoTECH pipe conveyor is

40,000-tonne multi-discharge clinker silo project for NPC Cimpor's Simuma Plant in KwaZulu-Natal, South Africa.

that these systems can be designed using a triangular tubular gantry fitted with a mobile maintenance trolley," adds van de Vyver.

Two such travelling maintenance trolleys were designed by DemcoTECH Engineering for a cement producer, each equipped with maintenance power sockets. These maintenance trolleys had to negotiate an incline of up to 15° while carrying four personnel together with spares and tools.

DemcoTECH Engineering's track record in supplying pneumatic systems for the cement industry includes a 150tph (tonnes per hour) pneumatic transport system to convey cement from a kiln to multiple storage silos, also at Nova Cimangola's cement plant in Luanda.

"Working in conjunction with Claudius Peters in Germany, we provided a system with a conveying distance of over 300m, following a tortuous route to fit into the existing plant and including seven discharge points into the existing silos."

Cement silo design

DemcoTECH Engineering offers the full suite of services and technologies for the design and construction of cement and clinker silos in partnership with Kantey & Templer Engineers. All equipment complies with environmental and safety requirements and typically includes airslides, flow-control gates, mobile road outloaders, fully-enclosed cement transport/conveying systems, and dust filters, which provide effective removal of dust from all the areas of dust generation.

DemcoTECH with Kantey & Templer completed the new 40,000-tonne capacity, multi-discharge clinker silo at NPC Cimpor's Simuma Plant in KwaZulu-Natal, South Africa on a turnkey basis.

"The Simuma Cement Plant is located in an environmentally sensitive area and the design ensures that dust emissions from the plant are controlled well below regulatory requirements," says van de Vyver. "Dust extraction filters are included on the silo and at all the transfer points to ensure the dust emissions comply with the safety and health regulatory limits."

About DemcoTECH Engineering

DemcoTECH Engineering is a specialist in the bulk materials handling field, offering its clients a range of services from concept to full, turnkey project completion.

DemcoTECH Engineering offers clients conveyor design through to turnkey supply and has completed the design and engineering of large import/export port facilities, gold plants, diamond tailings disposal systems, manganese storage and export facilities, sampling plants and a wide range of other projects including niche process plants. Services include concept design, feasibility studies, detail design, engineering, procurement, expediting, construction and commissioning for a wide range of industries, including the power generation, cement, mining, metallurgy and manufacturing industries, as well as port facilities.

DemcoTECH Engineering offer a full range of materials handling products and solutions including troughed conveyors, pipe conveyors, air assisted AeroConveyors™, rail-mounted slewing stackers, pivot-boom conveyors and mobile conveyors. DCi

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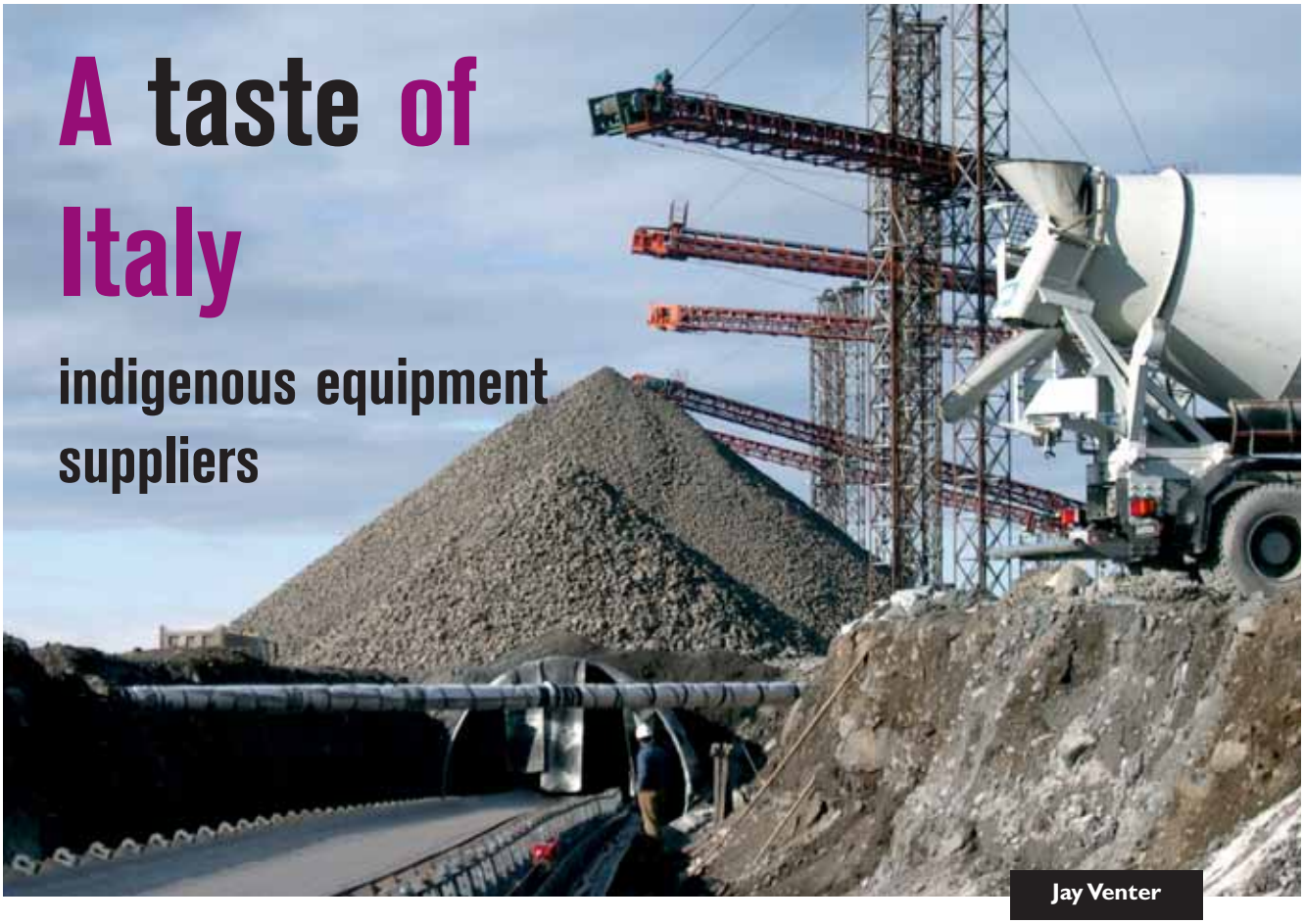


Jay Venter

Studio Tecnico Malnati: a reliable partner

Studio Tecnico Malnati S.a.s., based in Milan, Italy, was established 37 years ago by founder Giovanni Malnati.

The company represents several industrial manufacturers and develops basic engineering for the supply plants and equipment in the industrial process in two main markets:

- permanent installation in the cement, limestone, fertilizer, coal, petcoke, potash, etc. production, handling and storage up to delivery at ports (loading and unloading); and
- temporary installations in the building of big infrastructures like dams for material handling system from the stockpile to the batching plants, and tunnels for the mucking out of aggregates in the tunnel excavation phase.

The company's activities can be divided into a few categories, for each of which it represents different companies:

- aggregates crushing, screening and handling systems;
- conveyor belt components such as rollers and rubber belts;
- e-motors and inverters;
- concrete cooling and pre-cooling aggregates by new technology with cold air blowing;
- full systems for industrial process automation; and
- full packages for temporary electrical installation.

Studio Tecnico Malnati is able to support EPC engineering companies, manufacturers of machines and contractors during both stages — the tender preparation and the execution of the work.

For dams and tunnels, Studio Tecnico Malnati's most important customers are the Italian company Salini-Impregilo and Austria's Strabag.

For permanent installations, Studio Tecnico Malnati works with customers like Bedeschi, Tenova-TAKRAF, ENEL, Buzzi Unicem and Agudio-Leitner, all of which have shown complete satisfaction with Studio Tecnico Malnati's services.

Studio Tecnico Malnati is also a direct sales management consultant for Italian companies including:

- S.I.G. Società Italiana Gomma producer of conveyor rubber belts; and

❖ RULLI RULMECA manufacturer of rollers, belt scrapers, drum-motor.

Studio Tecnico Malnati is recognized as a strategic supplier to major companies which build the whole machine and material handling systems on site.

In the last five years, Studio Tecnico Malnati has worked closely with the managing director of Dutch company N.R. Koeling, which manufactures concrete cooling systems to cool concrete to the requisite temperature in the dam building sector.

Another company Studio Tecnico Malnati represents is Rockwell Automation, whose products include inverters, PLCs, control systems, which can be applied to many different kinds of project.

In order to remain competitive on the market, Studio Tecnico Malnati pays close attention to the relationships it has with all its partners and those it works with. Many of its professional relationships have grown through the years, and its wide reach enables it always to keep its customers and suppliers updated about ongoing and future work.

Studio Tecnico Malnati's representation of a wide range of companies means that it has been able to participate in many important projects all around the world. As its products are vital for the completion of many jobs, and because it keeps updated about the current market, Studio Tecnico Malnati has been very successful in the supply of dams and tunnels with several contractors.

Studio Tecnico Malnati has been closely involved in important projects around the world, enabling it to strengthen its reputation in the marketplace. This has been further reinforced by positive feedback from customers in relation to its involvement in projects such as the Tocoma Dam, Panama Third Locks , GIBE III and Grand Ethiopian Renaissance Dam where all the rollers and rubber belts were supplied by RULLI RULMECA and S.I.G. , weighing systems and belt protection devices by Thermo Fisher Ramsey, and the process automation by Rockwell Automation.

CTP SWAP technology for long filter bags
Last commissioned plants and projects in cement market

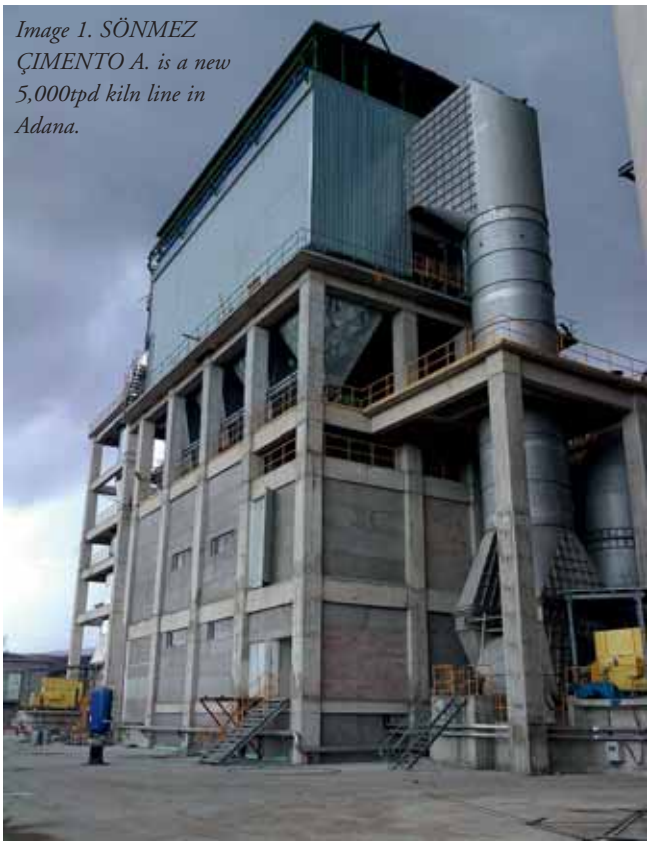


Image 1. SÖNMEZ ÇIMENTO A. is a new 5,000tpd kiln line in Adana.

Image 2.

Image 3.

Introduction

The continuous improvement in air filtration techniques and consequently enhanced bag cleaning efficiency has enabled CTP to progressively increase the length of bags used over the course of the past 30 years, a process that is still ongoing, *writes Roberto Binago, Sales & Projects Director, CTP Team Srl – Bedeschi Group.*

All CTP bag filters for process applications are equipped with the specific SWAP (Sonic Wave Acceleration Pulse) technology for bag cleaning, performing superior efficiency and increasing the lifetime of bags while reducing energy consumption, thanks to a new generation of high-performance components.

Either conversions of existing electrostatic precipitators into bag filters or completely new equipment, fully validate the excellent results of CTP technology which is highly powerful and very simple at the same time.

This article is related to recent commissioned plants as well as ongoing and new projects featuring long bag cleaning technique for different cement applications.

SWAP Bag Cleaning System

The SWAP (Sonic Wave Acceleration Pulse) technology developed by CTP Team is a unique bag cleaning system working at low air pressure, designed to remove dust from several bags of extended length at the same time, with one single shot of compressed air. This offers the highest efficiency and minimum stress on the filtering elements. In comparison with the traditional high pressure bag cleaning method, with SWAP technology the bag is not blown with primary air (from the tank), but with addition of much more secondary air (from the filter plenum) due to the Venturi effect. The special design of the cleaning valve, operating at very high speed and fast response, creates a travelling wave starting from the bag top line down to the bottom with the same profile and efficiency, independently from the bag length. With special powerful piston type valves, rather than the more traditional membrane type ones, installed directly onto the pulse header tank, the very fast action of the valve and the elimination of Venturi, normally located at the mouth of the bag, a short and very fast pulse acts as a wave and travels along the entire bag at sonic velocity regardless of its length.

The innovation is related to a much shorter valve opening time and reduced inertia of the valve elements, which lead to significant improvements in terms of cleaning efficiency, energy consumption and long-term reliability, thanks to a lower compressed air pressure but enhanced pressure induced inside the bag up to the very bottom area.

The final result is a shape of the pulse which is such that the required acceleration of the filter fabric is achieved over a much greater length of the filter bags than with any other cleaning system available today in the market. Besides, a highly reduced consumption of compressed air required from the compressor is able to clean an increased quantity of long bags at the same time, extending the expected lifetime even further.

SWAP technology is a well-proven bag cleaning system: to date, 28 plants have been commissioned whilst 18 other projects are under erection or during the engineering phase for a total number of 46 projects in different countries. Some of the latest realizations are described below.

Commissioned plants

Turkey

SÖNMEZ ÇIMENTO A. is a new 5,000tpd (tonnes per day) kiln line in Adana. In September 2014, CTP commissioned the kiln/raw mill bag filter with 8m bag length (capacity

900,000Am³/h) and the clinker cooler dedusting plant including the bag filter with same bag length and 600,000Am³/h capacity and related air/air heat exchanger (Images 1 & 2).

In ÇIMSA ÇIMENTO Mersin plant, the existing ESP (electrostatic precipitator) for raw mill dedusting of line 1 has been converted into bag filter with 8m bag length and increased capacity (750,000Am³/h) and put into operation in May this year (Image 3).

For ÇIMENTAS ÇIMENTO in Elazig plant, the old ESP for kiln and raw mill dedusting (500,000Am³/h) fitted with 10m bag length was started up in May. Recently in Kars another ESP was converted into baghouse, with 10m long bags (330,000Am³/h) together with a completely new 9m long bags filter (130,000Am³/h) and heat exchanger for clinker cooler dedusting have been successfully commissioned with good results (Image 4).


Image 4.

Egypt

During the second quarter of this year, in NATIONAL CEMENT CO. Tabbin site, the new gas cooling and dedusting system for kiln 6 bypass (664,000Am³/h) and clinker cooler gas (490,000Am³/h) process lines, started up after a kiln upgrade to 5,700tpd. Both filters are fitted with 8m bag length capacity. The identical dedusting system for kiln line 5 is expected to be commissioned in the next months (Image 6).


Image 5.

Oman

A new Alkali Bypass gas treatment plant has been commissioned for OMAN CEMENT CO. in its Muscat cement plant. The project includes a gas quenching system together with a new bag filter (6.5m bag length) for a total capacity of 250,000m³/h (Picture 5).

Ongoing Projects

Turkey

EREN HOLDING - Medcem plant in Silifke: No.2 New kiln/raw mill bag filters (8m bag length, capacity 2x785,000Am³/h) and dedicated GCTs for the new 10,000tpd kiln line — erection phase.

ÇIMSA ÇIMENTO — Eskisehir plant: kiln/raw mill ESP conversion into bag filter for kiln line 1 (8m bag length, capacity 443,000Am³/h) — commissioning in November this year.

ÇIMSA ÇIMENTO - Mersin plant: CTP bag filter for kiln/raw mill exhaust gas dedusting of line 3 (8m bag length, capacity 379,500Am³/h) — engineering phase.

GÖLTAS ÇIMENTO A. - Isparta Plant: new cement mill bag filter for 300tph (tonnes per hour) Loesche VRM (10m bag length, capacity 725,000Am³/h) — engineering phase.


Image 6.

KSA

SINOMA INTERNATIONAL ENGINEERING CO., LTD — SPCC Tahamah 5,000tpd new Plant (KSA): New kiln/raw mill bag filter (9m bag length, capacity 1,260,000Am³/h) and clinker cooler bag filter (9m bag length, capacity 600,000Am³/h & air/air heat exchanger — erection phase.

CNBM — SPCC Bisha 5,000tpd new plant (KSA): New kiln/raw mill bag filter (9m bag length, capacity 1,530,000 Am³/h), new clinker cooler bag filter and heat exchanger (9m bag length, capacity 672,000Am³/h) and No.2 new cement mill bag filters (9m bag length, capacity 735,000Am³/h) — construction phase.

Korea

LOESCHE GmbH - Taean Project: No.2 coal mill bag filters for 2x95tph VRM (6m bag length, total capacity 800,000Am³/h) — erection phase.

Vietnam

LOESCHE GmbH - Xuan Thanh Project: New cement mill bag filter for 250tph VRM (10m bag length, capacity 750,000Am³/h) — construction phase.

Indonesia

Client: LOESCHE GmbH - Rembang Project (Indonesia)
Project: No.2 cement mill bag filters for 250tph VRM — 8m bag length — (capacity 760,000Am³/h) — construction phase.

USA

THYSSENKRUPP INDUSTRIAL SOLUTIONS. INC. – Graymont plant in Pennsylvania: New bag filter for lime kiln #8 (capacity 132,000Am³/h) — construction phase.

Italy

ITALCEMENTI GROUP - Rezzato Cement plant: ESP conversion into bag filter for dryer (capacity 90,000Am³/h) — construction phase.

New Projects

Canada

THYSSENKRUPP INDUSTRIAL SOLUTIONS. INC. — McInnis Cement in Port-Daniel-Gascons: New kiln/raw mill bag filter (capacity 745,000Am³/h), new clinker cooler bag filter and heat exchanger (capacity 540,000Am³/h), No.2 new cement mill bag filters (capacity 576,000Am³/h), new coal mill bag filter (capacity115,000Am³/h) — engineering phase.

NEGRINI S.r.l. striving for customer satisfaction

NEGRINI S.r.l., from Modena, Italy, considers customer satisfaction to be its primary goal, one that it achieves through a continuous and effective process of study and collaboration with both its customers and its suppliers. The company's business philosophy is professionalism and versatility towards the different demands of customers.

Activity

NEGRINI S.r.l.'s reliability depends on the professional abilities and experience of its highly qualified staff.

NEGRINI's technical office is always available to deal with and resolve any technical problem, and the solutions that it offers are always fully explained to the end user. When necessary, the company uses its engineers to develop solutions to the most complex planning problems.

Today, the firm has 13 employees and uses, according to circumstances, a range of carefully selected external collaborators.

The company has three facilities of about 750m^2, equipped with four 6.3-tonne overhead cranes.

Production

Every enquiry is evaluated for feasibility. The elements of the enquiry, including the drawings, are studied and planned, in agreement with the head of department, in order to secure the established delivery time and the best use of resources.

All technical data, including the drawings, are entered into a CAD CAM electronic system and three-dimensional solid CAD, for a better management of the product and a rational organization of the machines.

Testing of the product is performed by skilled workers who are also sensitive to the customer's needs. Before shipment, a final check up is carried out in the production department with the supervision of the owner himself.

The business model means that customized products are supplied to companies involved earthmoving.

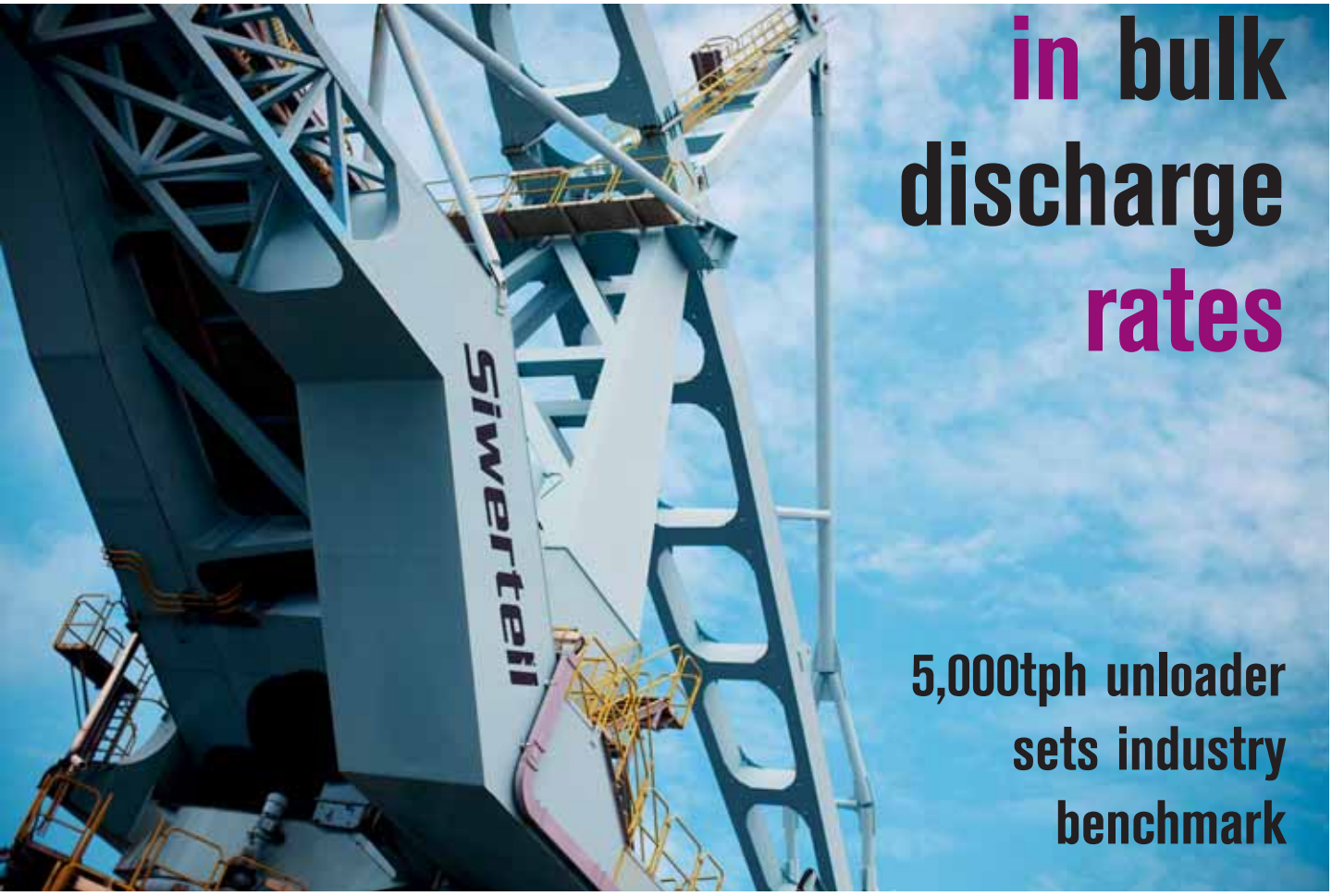
All materials comply strictly respectful with the technical specifications and drawings requested, using reliable and historically well-known suppliers. NEGRINI can supply single certificates and attestations.

Testing the product

All products are subjected to constant quality control procedures: both on arrival into the factory and during the production phase; before shipment, the finished product is submitted to further controls and testing, with the purpose of appraising the effectiveness of the applied manufacturing process and to guarantee a quality product to the client.

It is a well known that any good machine, be it cable crane or hydraulic excavator, will perform at its best only if the attachment used is well engineered and manufactured. In fact any good attachment will not only do a good job but will also reduce the machine stress, allow for safer working and save energy. DCi

Pushing the envelope in bulk discharge rates



5,000tph unloader sets industry benchmark

The new Siwertell unloader from Cargotec sets a new industry benchmark at 5,000tph (tonnes per hour); more than doubling current capabilities.

Commercial ships make their living by transporting cargoes from one place to another — time spent in port loading and discharging does not earn any money. Ports and terminals like to see vessels turned round quickly to make good returns on their investment. Therefore Cargotec's announcement of a new Siwertell high capacity screw type unloader rated at 5,000tph is very important news for the industry.

Technical director for Siwertell, Jonas Andersson, says the new Siwertell unloader Siwertell VST 1090 has been designed primarily for the high capacity discharge of coal, and it is initially aimed at providing efficient, reliable, economical and environmentally friendly coal intakes for newbuild power generation plants in the far East.

"When used for discharging coal, our new unloader is rated at 3,000tph, or, to put it another way, very nearly one tonne per second, a figure that makes it easier to visualize the performance of this high capacity machine."

However, Andersson notes that for some dry bulk commodities, the new machine offers even more spectacular performance. "For certain bulk cargoes the new unloader will offer a discharge rate of 5,000tph, setting a new industry benchmark.

"This is a very significant rate increase on previous models, but there is a lot more to this machine than a market leading performance figure. In common with all other Siwertell unloaders, it offers quiet, safe, environmentally friendly performance with little or no dust creation and no spillage.

"Furthermore, this is a continuous rating; it applies irrespective of the depth of cargo remaining in a ship's hold. In contrast, the high rates claimed for some grab crane systems are only valid at the start of discharge in each hold. As the level of the cargo falls, the grab must travel progressively further, incrementally reducing the actual discharge rate.

"The continuously sustainable high discharge rate means that the Siwertell machine can deliver 'through ship' unloading performance that is almost certainly unequalled by any other available solution; and with no spillage the cargo turn out is excellent and clean up requirements are minimal or non-existent."

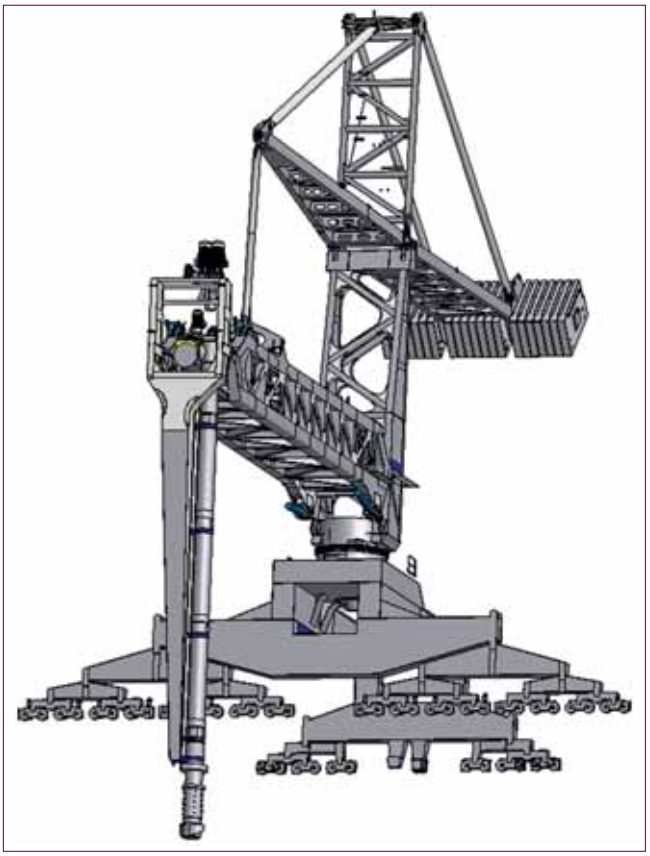
Sometimes a new product can be developed largely by scaling up an existing machine; but this was not the case with the 5,000tph unloader. While it was possible to scale up some of the parts in the conveyor chain, the existing steel supporting structure design could not be adapted and so Siwertell designers had to develop a completely new solution. Another major challenge was dealing with the huge amount of material that has to enter the inlet head in order to achieve the target capacity.

"Developing the new unloader was technically demanding," explains Andersson. "The entire conveyor chain is new and there has been little re-use of our existing designs.

"Because each delivery requires a bespoke approach to meet the customer's particular requirements, a detailed design for an unloader is not possible until we have the necessary criteria to hand. Therefore our development work for the new unloader focused on the essential new parts for the screw-type unloader and detailed calculations for the new supporting structure.

"No one is better placed to extend the boundaries of unloading performance in this way. We have unrivalled experience of screw-type bulk handling technology; for decades our systems have been in widespread use in import, export and transfer terminals, as well as in reclaiming systems for flat storage areas. This extensive experience, engineering expertise and comprehensive understanding of all the issues involved, ensures the success of this and every other new Siwertell product from Cargotec."

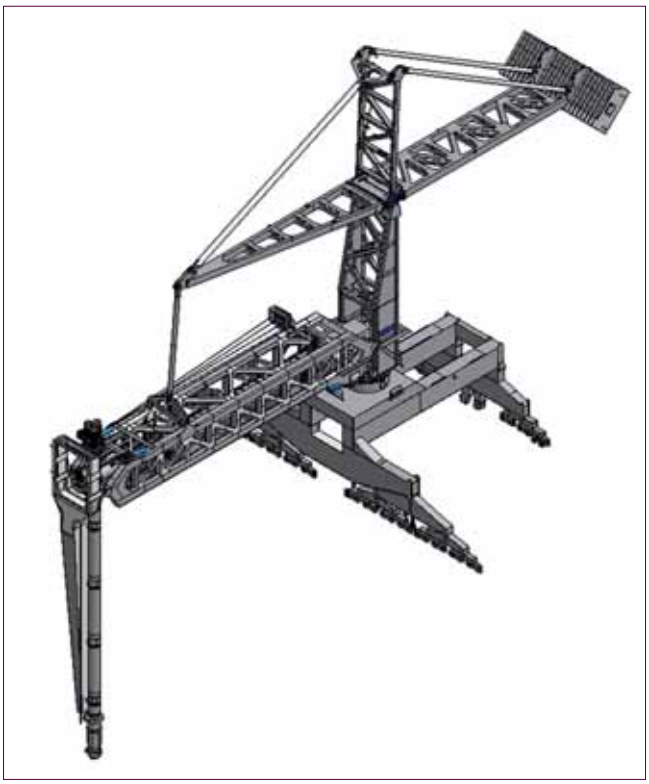
A high capacity unloader can only deliver its full potential when it is linked to adequate downstream infrastructure, and some existing terminal conveying systems may find it difficult or impossible to cope with the increased capacity. However, for new projects the quay conveyor and storage arrangements will



be designed with a capacity to suit the specification of the unloader. Consequently, the new unloader is likely to find its first applications in new terminals, particularly for coal intakes feeding new power plants in the Far East. However, the potential economies of scale will also make it very attractive for those considering terminal upgrades?

Economies of scale deliver major savings

Managing director for Siwertell, Per Karlsson provides some persuasive figures to demonstrate the benefits of the new unloader; in this case when used for discharging coal at 3,000tph.



"Cost savings can be achieved both in terms of initial investment and through-life operational costs, depending on the overall unloading performance required. Specifying two 3,000tph unloaders instead of three 2,000tph machines — to achieve a 6,000tph capacity — results in an investment saving of up to 25% in favour of the 3,000tph ship unloaders.

"Alternatively, if the maximum possible capacity is required from the outset, then three 3,000tph unloaders will provide an unloading capacity of 9,000tph, as opposed to 6,000tph from three 2,000tph units.

"Considering a Capesize vessel of 200,000dwt and a through-the-ship capacity of 65% the unloading time using three 2,000tph unloaders would be 51 hours. This would be reduced to 34 hours using three of the new 3,000tph unloaders.

"With an annual intake of 6,000,000 tonnes per year, a vessel cost of US$60,000 per day and a working time of 22 hours/day, the annual cost saving should be in the region of US$1.4 million," explains Karlsson. "Over the lifetime of the investment, say 25 years, the total saving should be around US$35 million, which more than justifies the higher investment costs for the unloading equipment, the conveyor belt and stacker. Additional cost savings will also be achieved in operation as there will be fewer operating hours for each unloader.

"The new unloader will be heavier than its predecessors and this will naturally be reflected in the price. However, based on these figures, payback time should be less than three years, and that is without considering the additional savings in operation and maintenance costs.

"It is also worth noting that despite the increase in weight, the new unloader will have more or less the same overall dimensions as the current largest Siwertell unloaders, and will still weigh less than a 2,000tph bucket chain unloader. This means that some customers will be able to take advantage of the increased unloading capacity without having to invest in civil engineering work associated with upgrading their jetty specification," adds Karlsson. "Those investing in new terminals will be able to save considerable sums in jetty construction costs in view of the relatively light weight of the new machines." DCi

Corrosion-resistant fertilizer and sulphur storage

Grupo CICE 120m length urea storage, Veracruz, Mexico with internal cladding.

In 2012, world urea supply surpassed 161mt (million tonnes), while the volume of worldwide urea production is projected to exceed 202mt in 2016, *writes Melanie Saxton of Geometrica*. This, according to Merchant Research Consulting, indicates the ongoing demand for nitrogen and fertilizer globally.

As industries seek efficient and eco-friendly ways to cover organic or synthetic stockpiles (which may include nitrogen, phosphorus, potassium, sulphur, manure and other sensitive raw materials), they must address the usual culprits: seepage, bogging, exposure to moisture, overflow, and contamination of groundwater, estuaries and oceans. 'Green' storage initiatives must protect ecosystems, landscapes, crops and communities. One of the most common ways to store raw fertilizer materials is by stacking it in long prismatic piles, all the while defying the corrosive nature of the raw material, itself. Finding long span storage solutions can be a challenge, as elements relentlessly attack the internal structures of a facility.

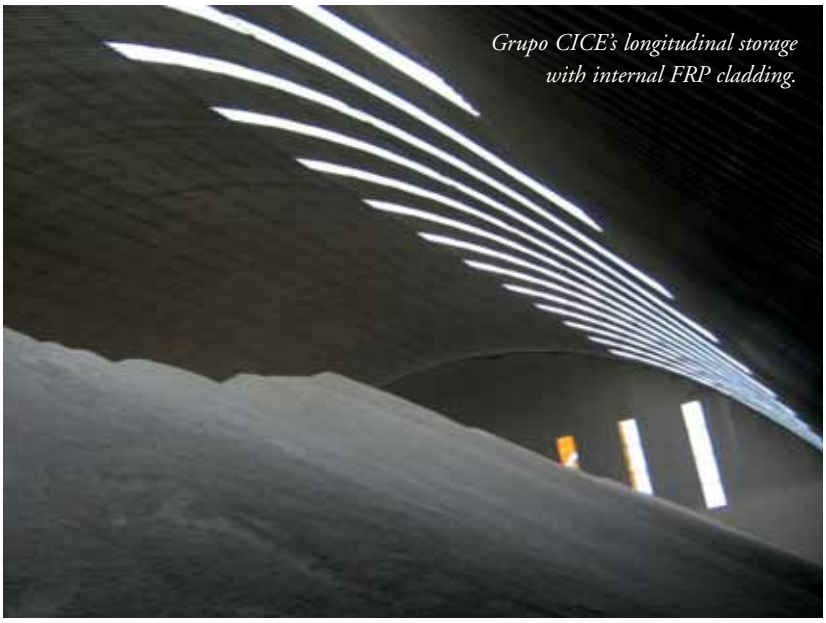
Some fertilizer and sulphur suppliers face another obstacle. The seaside environments in which they operate add an external complication — a very real 'double threat' from exposure to caustic bulk combined with the corrosive nature of salt water. This is a huge concern for port side urea warehouses, including Grupo CICE in Veracruz, Mexico.

Defying corrosion along the Gulf of Mexico

When exposed to humidity, urea attacks both aluminium and galvanized steel. But industries along the coast of the Gulf of Mexico also face production hurdles in one of the most brutal saltwater atmospheres anywhere on earth. Grupo CICE, a diversified logistics and transportation company, needed to store up to 15,000 tonnes of urea awaiting transport and contacted Geometrica to design a building that would withstand challenging conditions at the Port of Veracruz.

Geometrica delivered a multi-faceted warehouse solution. Knowing that industrial urea storage and saltwater exposure combine to torture metal, Geometrica suggested a Freedome® barrel vault with a revolutionary longitudinal and vertical span. Using a trademarked Freedome® system, Geometrica 'put a lid' on Grupo CICE's highly corrosive longitudinal stockpile in the form of completely prefabricated, self-scaffolding structure that aggressively protects interior and exterior environments.

Corrosion-resistant technology includes a variety of options, such as waterproof internal FRP (fibreglass reinforced plastic) cladding with special coatings for enclosing highly corrosive materials. Cladding may be made of steel, aluminium, fibreglass, fibre-reinforced plastic, polycarbonate or a combination of all. For severe exterior conditions, structural tubes of galvanized



Grupo CICE's longitudinal storage with internal FRP cladding.

steel or aluminium are specifically manufactured with a finish of highly resistant thermoset epoxy or polyester coatings, with cross sections suited to project conditions. And because internal cladding provides a sealed, gap-free surface, it minimizes potential hazards.

Generally, no welding or special tools are required. Structures can be assembled in a short amount of time by local unskilled personnel who are trained on site, which has the additional benefit of bolstering regional economies.

Geometrica has built many domes for combustible and corrosive materials, including a range of fertilizers, urea or ammonia. These applications come in every stockpile shape — ring, conical, longitudinal and free-form. In the case of Grupo CICE, the lightweight skeleton was built of high-strength aluminium alloy (which was left exposed). Half-arches were assembled on the ground and lifted onto place with two light cranes. The application required a minimum of space and equipment and permitted other subcontractors to work side-by-side on site. The structure was protected by applying FRP cladding to its underside.

Defying terrain, wind, weather and maritime conditions, Geometrica delivered a unique building of 52m internal clearance width, 18m clear height at the centre, and 120m length that provided maximized useable space. The entire construction process took four months, and CICE's general manager on site, Cesar Zamora, said of Geometrica, "Excellent quality, service, and products. 100% recommendable."

Customized containment in Indonesia

When a fertilizer processing facility owns and operates its own port, its stockpiles must be covered under difficult circumstances. PT Pupuk Kalimantan Timur (Pupuk-Kaltim), Indonesia's largest fertilizer producer, had very specific logistical and environmental needs. As part of its 'green' initiative, it chose to use only clean-coal technologies, including a circulating fluidized-bed boiler, a Geometrica coal-storage dome and a continuous barge unloader.

Fortunately, Geometrica was experienced in these technologies from previous applications at the JEA Northside power plant in Jacksonville, Florida. "This project was very similar to domed bulk-storage facilities we have built worldwide," said Jorge Parada, Geometrica's site consultant. "Our galvanized-steel dome technology has proved itself in many environments and applications. This one, along the coast of a tropical rainforest, is another great example."

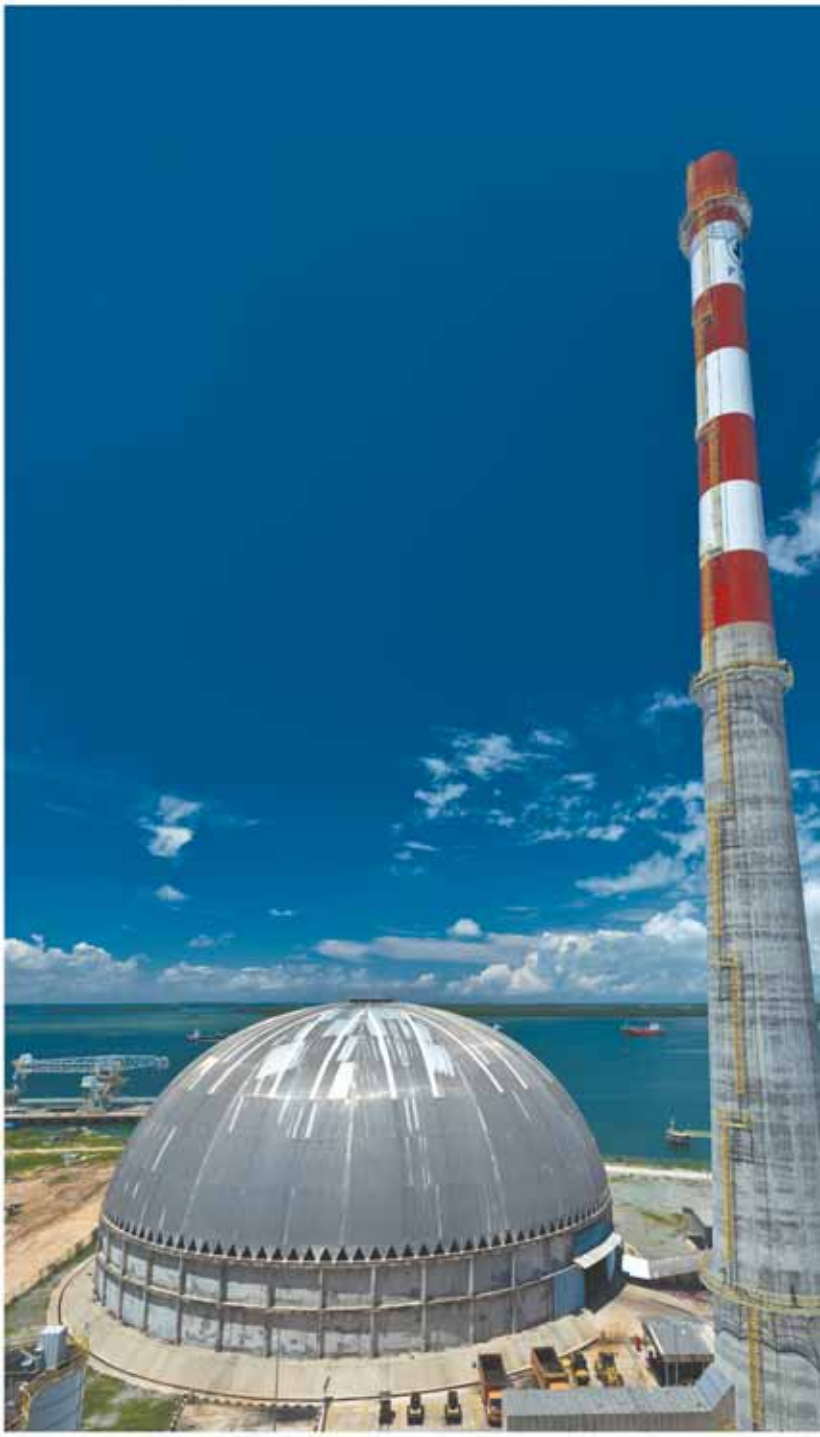
The galvanized-steel dome structure is clad with aluminium sheeting, combining the strength of steel with the corrosion resistance of aluminium. It also meets National Fire Protection Association guidelines for control of confined dust. As for Indonesia's typhoon-force conditions, Geometrica was also experienced in the design and installation of industrial storage solutions in a variety of wind loads. Pupuk Kaltim's circular dome was to be supported by a 10-metre-high, reinforced-concrete, perimeter-ring wall and would cover 40,000 tonnes of coal, plus a coal stacker and a portal reclaimer. It would ultimately span 81m.

Geometrica labelled, pre-sorted, and packaged the components in the order required for assembly. Crates of these materials were then loaded into containers for shipment to the Port of Jakarta, Indonesia. From there, IKPT transported the containers to the job site in Tanjung Harapan. "Experienced Geometrica technical-support staff came to Bontang to train our local labourers and supervise their work," said Ahmad Mardiani, Pupuk-Kaltim construction manager. "Because of their contributions and co-operation, our local labourers were successful and proceeded without delays."

The Ruwais sulphur dome in Abu Dhabi

Geometrica designed an immense sulphur dome spanning 134m in Abu Dhabi, the capital and the second most populated city in the United Arab Emirates. The area is home to a sulphur

Pupuk Kaltim fertilizer manufacturer, 81m diameter coal boiler dome.



DEFEAT DUST WITH A DOME.

Tread softly around Mother Nature. If your stockpile produces dust, tame it with a freestyle dome or barrel vault. Whether quayside or on a mountain, protect the surrounding environment while preserving your own stockpile from erosion and loss of fines. We'll build right over your live operations and eliminate downtime. Corrosive saltwater? No problem. Typhoon-force winds? No worries. Torturous snow loads? Never fear, we've got you covered. Build a Geometrica dome for your raw materials and the dust is history.

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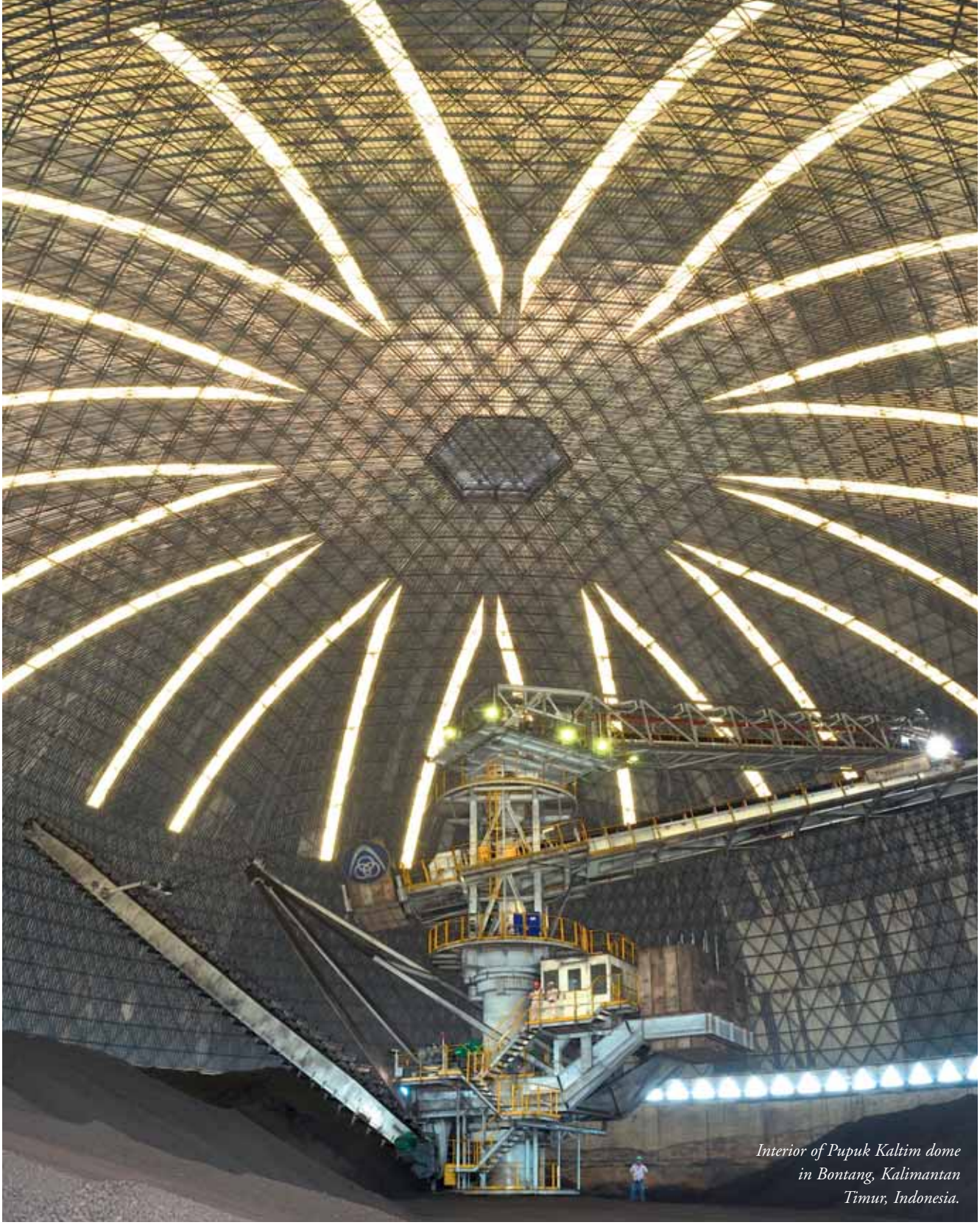

Interior of Pupuk Kaltim dome in Bontang, Kalimantan Timur, Indonesia.

handling terminal for the oil & gas industry.

Sulphur is a raw material with specific storage requirements. It is known to explode on contact with oxidizing agents and can react violently when exposed to finely divided metals, alkalis, and mineral acids. It also corrodes damp steel and attacks the storage structure's metallic components. As with any hazardous stockpile, Geometrica designed a well-ventilated circular structure with a framework that would defy corrosion and minimize safety hazards. The Ruwais dome was engineered for flexibility and customized to suit the project's specific storage requirements, handling equipment, site requirements and design preferences.

In any application, conveyor openings may be placed at the apex or side as a practical solution for natural ventilation. Penthouse enclosures can be used to protect top loading conveyors, while flashing can be used for side penetrations. When necessary, domes can be engineered to partially support the conveyor, or allow independent conveyor movement. Access openings for equipment, vehicles and personnel can be designed in any shape or size. Customized doors, frames, canopies and hatches are available for all openings. Translucent panels contribute natural lighting, energy cost savings and additional beauty to Geometrica's structures. The company's galvanized steel ladders are built for safety, using non-slip threads. Galvanized steel walkways are provided with OSHA-approved guide rails and nonslip grating. Ladders and walkways provide access to electrical systems, ventilation systems, mechanical penthouses, conveyors, galleries and safety exits.

Ruwais Dome, Abu Dhabi, UAE.

Storage engineering and assembly

Whether facing typhoon-force wind loads or other brutal weather conditions, Geometrica's space-frame applications take advantage of three-dimensional structural behaviour to achieve the highest calibre of strength.

Geometrica buildings can span up to a remarkable 300m (1,000ft). They provide unique solutions for manufacturers requiring a structure be built over existing stockpiles — with no downtime. Three different assembly methods are utilized, determined by the specific requirements of the site and application:

With a 'Lift in Place' method, sections are assembled at ground level and lifted into place with a standard construction crane. As sections are added, the dome takes shape. Cladding can be installed after the shell is assembled, or on individual sections as they're put in place. This method works well when the dome is to cover a high structure and for longitudinal structures, as in the case of the Grupo Cice facility. Most assembly can be done at ground level, and other subcontractors can work simultaneously inside the storage dome.

'Perimeter Self-Supporting' is another technique in which workers assemble a ring at a time, from the perimeter ring beam up. Successive sections are attached until closure at the apex. Self-supporting is an extremely practical assembly method, with no ground level equipment to interfere with plant operations. Structures can be built while the pile is in use, or while adjacent construction is going on, providing great savings in time and cost.

The 'Center-Out' option is constructed around a tower, and the dome is assembled one ring at a time. As each progressively larger concentric ring is formed, the tower lifts the structure to accommodate its new height. The dome grows outward and upward, gradually forming the shell. DCi

Ruwais dome interior.

stevedoring & warehousing rotterdam

- PROJECT CARGO
- INDUSTRIAL BREAKBULK
- 730 METRES QUAY LENGTH
- HEAVY LIFT STORAGE AREA
- HEAVY LIFT UP TO 1800 TONS

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ArcelorMittal South Africa seeks duties on Chinese steel imports

ArcelorMittal South Africa Ltd. (ACL) is seeking duties on steel imports from China as the continent's largest producer tries to return to profitability after posting three straight years of losses.

AMSA, as the Johannesburg-based unit of the world's biggest maker of steel is known, applied for import tariffs on flat-steel products and may consider a similar request for long-steel items, Chief executive officer Paul O'Flaherty said in an interview. Flat steel, which includes hot- and cold-rolled coils, is used in vehicles, pipes and appliances while long products is used for buildings and large infrastructure projects.

"The applications have gone in and we'll see where that goes," he said. "In today's economy, it's a real challenge to fight a product that is subsidized."

O'Flaherty, who was appointed 1 July to replace Nonkululeko Nyembezi-Heita as the permanent CEO of AMSA, is seeking to achieve AMSA's first annual profit since 2010 as the company battles increases in electricity costs that exceed inflation, plant outages and weak demand in its domestic market. Steel prices in China and Europe have fallen more than 10% this year amid overcapacity, while the price of iron-ore, a key steelmaking ingredient, touched a five-year low last month.

AMSA is holding talks with the Industrial Development Corp. over the state-owned development financier's plans to build a new steel plant in South Africa with China's Hebei Iron & Steel Co. (000709), O'Flaherty said. The IDC, which has a 7.9% stake in AMSA, last month said the proposed $4.5 billion facility would produce 5mt (million tonnes) annually and would supplement AMSA's capacity of 6mt a year.

Hebei will partner with the IDC to conduct a detailed feasibility study for a new steel plant, the lender said in a statement. South Africa "is not an 11mt steel country," O'Flaherty said. "It is a threat obviously to us, but again we have to get our costs low, we have to be competitive and we have to take on competition."

India's Anrak Aluminium seeks approval for bauxite project

India's Anrak Aluminium is optimistic of securing government approval to mine bauxite in three to four months, a company official has said, possibly ending a three-year wait.

"We are hopeful of getting approval in three to four months," Hariharan Mahadevan, president of projects at Anrak, told an industry conference in Singapore.

The mine, located in the southeastern state of Andhra Pradesh, will have an annual capacity to produce 1.5mt (million tonnes) of bauxite, used to make alumina which then goes into producing aluminium.

Its alumina refinery should be in place by April 2015, while the second phase will include a smelter, Mahadevan said. Anrak is a joint venture between Penna group of industries and Ras Al Khaimah Investment Authority.

Vedanta Aluminium, which has been struggling to source sufficient bauxite to feed its 1mt per year alumina refinery in Odisha state, is also hopeful of an improvement in the supply of bauxite.

Billionaire Anil Agarwal, the founder of London-listed Vedanta Resources that controls Vedanta Aluminium, has told reporters that the government of Odisha has assured him of adequate supplies in the next three to four months.

Boom Booster from Terex significantly enhances project cargo capacities

The new Terex® Boom Booster kit for the Terex CC 8800-1 crawler crane boosts performance to new heights particularly when working with steep and long boom configurations. The kit is a must-have for heavy lifting applications with long-boom configurations such as petrochemical, wind turbine erection and power plant installation. The new Boom Booster increases the CC 8800-1 crane's lift capacity by up to 90%, enabling it to outlift any crane within the 1,000- to 2000-tonne (1,100 to 2,200-ton) capacity range and 3,000-tonne (3,300 ton) capacity range cranes under certain conditions. The Terex Boom Booster is available with new crane purchases or is easily retrofitted to existing models.

The available Boom Booster kit offers up to 72m (236ft) of lift-enhancing boom structure for the CC 8800-1 crawler crane. The wedge-shaped, 11m-long (36ft) lower and upper adapters flare out to a 10m (32.8ft) width, nearly three times the standard 3.5m (11.5ft) boom width, to enhance the system's structural integrity. Five 10m-long (32.8ft) intermediate segments offer the ability to meet up to 50m (164ft) length needs.

Designed for quick, cost-effective transportation, the new Terex Boom Booster can be disassembled and shipped in standard 12.2m (40ft) open-top containers. In markets that limit container gross weight to 28 tonnes (30.9 tons), each intermediate section fits into one container, while the upper/lower adapters ship in two containers, for a total of nine truckloads to transport the entire 72m (236ft) boom length. Where up to 40 tonne (44.1 ton) containers

can be used, only seven truckloads are required to transport the full Boom Booster kit to a jobsite.

"No other lift enhancing equipment on the market offers the balance of increased lifting capacity and low economical transport costs than the new Terex Boom Booster," says Guntram R. Jakobs, Manager Product Marketing, Terex Cranes. "This new Terex boom configuration option will give a big boost to the customers' results in the field."

The Terex Boom Booster kit features a pin connection design that eliminates bolts and facilitates faster and simpler boom assembly in the field. Boom sections can be shipped to the jobsite partially assembled to further advance assembly speed. Both intermediate and adapter sections incorporate the award-winning Terex Fall Protection System and walkway to enhance safety when working at height during assembly.

About Terex

Terex Corporation is a diversified global manufacturer operating in four business segments: Terex Aerial Work Platforms, Terex Construction, Terex Cranes, and Terex Materials Processing. Terex manufactures a broad range of equipment for use in various industries, including the construction, infrastructure, quarrying, mining, shipping, transportation, energy, refining and utility industries. Terex offers financial products and services to assist in the acquisition of Terex equipment through Terex Financial Services.

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Getting the buzz on bagging

With its ADAMS® technology for filling powder-type products into watertight PE bags, HAVER & BOECKER was able to win LAFARGE Global Supplier Award 2014 in the category of 'sustainability'.

HAVER & BOECKER wins LAFARGE Global Supplier Award 2014

LAFARGE, a world leader in building materials, held a global supplier competition for the first time in its history. A total of seven categories were distinguished in a ceremony at the headquarters in Paris.

With its ADAMS® technology for filling powder-type products into watertight PE (polyethylene) bags, HAVER & BOECKER was able to win in the category of 'sustainability'. The jury's reasoning: the technology showed "an ability to operate in a sustainable manner, including the deployment of appropriate corrective actions".

"Suppliers play an important role in our operations, delivering value year after year and pushing the boundaries in terms of innovation and cost competitiveness," said Thierry Metro, Senior Vice President Energy & Strategic Sourcing at LAFARGE, while expressing his appreciation for suppliers. He explained the motivation for the award: "We want to recognize and celebrate our work together. The Global Supplier Awards represents a victory for our suppliers, for Lafarge and for our customers."

The now prize-winning HAVER ADAMS® technology for filling powder-type products into watertight PE bags was developed together by both companies in a mutual co-operation project. Lafarge Tarmac had identified a significant customer issue: the wastage of cement from damaged paper packed cement for which PE bags were an excellent solution.

The combination of Lafarge Tarmac's customer and solutions led focus with H&B's technical expertise has resulted in PE bags being a very successful innovation in the UK packed cement market. Since 2005 HAVER & BOECKER OHG has equipped six Lafarge Tarmac plants in the UK with 12 HAVER ADAMS® filling systems. Lafarge Tarmac is a 50:50 joint venture between Lafarge SA and Anglo American plc. Over the past years the HAVER ADAMS® technology has been upgraded so that an increase in speed from 1,200 bags per hour to 2,000 bags per hour could be reached.

The following chain of argumentation was the basis for the prize: HAVER & BOECKER OHG developed a new filling machine called HAVER ADAMS® technology for PE bags, which was installed in UK. The PE bags used are characterized by their impermeability and resistance to tearing. When compared to paper bags, bag rupture and breakage can be reduced by 80% to 90% during normal handling. In addition it provides:

- less product loss (during filling and transport);
- cost savings from transport (reduced volume, no additional protective packaging);

Since 2005 HAVER & BOECKER OHG has equipped six LAFARGE plants in the UK with 12 HAVER ADAMS® filling systems.

- fewer customers complaints (better weight accuracy, less bag breakage);
- better employee health protection (dust free); and
- reduction of CO_2 (PE 100% recyclable, less product loss)

Drop tests conducted at the HAVER & BOECKER Research and Development Centre have shown that PE bags are 500% more resistant to tearing than paper bags. The number of bags damaged by normal handling over the course of the entire logistics chain is well below one per cent while for paper bags the figure is 5% to 7%. Product loss after filling and during transport is thus prevented.

Compared to paper bags, filling takes place with 50% better weight accuracy. All these characteristics result in reduced product use. Because the production of cement consumes resources and emits CO_2, the use of PE bags can be viewed as a significant step in reducing environmental impact.

The emptying of residue is considerably higher with PE bags. While up to 120 grams of product remain in a paper bag, the value for a PE bag is only 20 grams. This means product use is reduced, and this means CO_2 savings.

The manufacture of paper bags is energy intensive and requires large quantities of water, which in turn subsequently needs to be treated. PE bags also offer benefits when it comes to disposal: while paper bags are burned or thrown away, and

The PE bags are clean, tightly closed and weatherproof. Reduced material loss is equally easy on environment and budget.

thus burden the environment, PE bags are 100% recyclable. And in the event paper bags should be indeed recycled, the need for energy is ten times greater than what is required for PE bag recycling.

In addition to the advantages of sustainability, the ADAMS technology is convincing in other areas. Because cement is a product that can put health at risk, trigger skin irritation, allergic reactions, or even lung ailments, inhaling it or contact with skin or eyes must be avoided.

So that the surrounding areas can remain free of dust or product residue, the packaging needs to be air-tight. Using PE bags means the packaging is hermetically sealed. Neither the machine operators in the plant nor the workers involved in transport, stocking, or even the end-customer, become subjected to danger when handling the cement. The bags are absolutely air-tight and a contamination of the environment is excluded as long as the bags are not damaged.

The PE bag's impermeability results in extended shelf-life. This makes production more independent of temporal and seasonal fluctuations. The plant can be continuously operated at full capacity with the production flow having less variation. This creates a logistical advantage.

Also because of the PE packaging's impermeability, filled bags can even be stored outdoors without adversely impacting product quality. This kind of stocking is considerably less expensive than stocking in a warehouse. It is possible to stock and display the product outside directly next to complementary products such as paving stones, which acts to boost sales.

Because of the impermeability and tear-resistance of PE bags, the downstream system components such as the discharge belt, palletiser, etc. are subjected to less contamination and thus less wear and tear. Cleaning costs and maintenance intensity along with the associated necessary downtime are reduced.

As a world premiere, HAVER & BOECKER introduced the ROTO-PACKER® ADAMS® MINI at Powtech 2014 in Nuremberg. It is based on the proven ADAMS® technology and for the first time fills powder products into compact PE bags, reaching speeds of up to 600 bags/hour at steplessly selectable weights from 1kg to 10kg. The technology will be ready for the market by the end of the year. Meanwhile the experts at HAVER s Innovation Management are already concentrating on increasing the speed to 1,200 bags/hour.

About HAVER & BOECKER

HAVER & BOECKER is a tradition-conscious, family-run, mid-sized company with headquarters in Oelde, Westphalia, Germany. Under the umbrella of HAVER & BOECKER OHG, one finds the Wire Weaving and Machinery Divisions. Together with over 50 subsidiary companies on all five continents, they make up the HAVER Group which has 2,870 employees and 150 representatives. In 2013 the HAVER Group posted a sales turnover of €470 million.

The Wire Weaving Division produces woven wire mesh and processes it into engineered woven wire products. They are used for screening and filtration by the chemical, plastics, automotive, aviation, aerospace, electronics, foodstuffs and feed industries, as well as for architectural applications and analysis sieves.

The Machinery Division specializes in packing and weighing technology. It develops, produces and markets systems and plants for filling and processing loose, bulk materials of every type. The product range includes packing and loading systems for powder-type and granulated materials, packing machines for filling food and animal feed, as well as filling stations and complete filling lines for liquid and pasty products. The product range is supplemented by screening machines, machines for washing, pelletizing plates, agitators, mixers, palletizing and loading systems, silos, ship loading and unloading equipment.

The new HAVER& BOECKER ROTO-PACKER® ADAMS® MINI, introduced at Powtech 2014 in Nuremberg, is based on the proven ADAMS® technology and fills powder-type bulk products into compact PE bags for the first time, reaching a speed of up to 600 bags per hour and featuring a stepless bag weight selection of 1–10kg.

Weighing and weight checking systems from HAVER & BOECKER save money

With an intelligent filling system from HAVER & BOECKER, customers optimize their filling process for cement. Here weigher and weight checking systems communicate with other machine components, control the process, and thus provide for more efficient and flexible production.

Optimizing the filling process for cement by using intelligent production systems as an element of Industry 4.0

Industry 4.0 is the fourth industrial revolution and is characterized by the networking of intelligent machines that exchange information on their own, activate actions, and control each other. The production processes are horizontally integrated, which means the various components of the value-adding chain interact with each other and ensure efficient and flexible work processes.

In the networked filling system of HAVER & BOECKER, weighing and weight checking systems communicate with other machine components and control the filling process of cement. The weight checking scale immediately delivers feedback to the filling spout and thus ensures the prescribed weight range is adhered to. This guarantees minimal deviations from the precise target weight and results in money savings for customers. The documentation of the process provides extensive possibilities for analyses and allows further optimization.

The machine control system regulates the filling operation of the bulk good at the packer where the filled product is weighed continuously. The weight checking scale continuously transmits the actual bag weight and precise-to-the-gram suggestions for achieving a precise correction of the filling amount. Weight optimization takes place without loss of time.

The bag's actual final-weight is recorded by the discharge conveyor's weight checking scale only after the filled bag is discharged from the bag chair. A possible minimal product loss arising from the bag's discharge cannot influence the measured actual value. At the same time the transfer of determining the actual filling weight over to the discharge line leads to an increase in filling performance because the process ends more quickly without weight checks.

Incorrect weight bags are detected and diverted. Here the check-weigher communicates with the diverting unit. Because the remaining bags are within the prescribed range, the system fulfils the legal requirements. If the plant operator specifies a larger weight deviation, then the range can be adjusted accordingly.

Also vertical integration of a productions system is an important aspect of Industry 4.0. Here the entire system interacts with other company hierarchal levels and thus influence can be made from outside the production.

With the systems from HAVER & BOECKER, collected data may be transmitted to the HAVER DPS® data processing system, saved, and statistically evaluated. With data such as line number, weigher number, type number, type name, specified weight, actual weight, tare weight, under-weight and overweight limits, type changeovers, error messages, weigher status and text messages the following values are computed: mean weight, standard deviation, total weight, total bag count, number of good, under-weight and overweight bags, hourly bagging speed and information on batch start and batch stop time. As a result flexible reports such as machine reports, daily, weekly, monthly and annual reports, error reports and single weight reports may be generated.

This documentation and analysis tool allows customers to further optimise machine settings and thus boost productivity. When processing customer complaints, it is possible to narrow them down to single sources because the goods in question can be traced back to a certain production date, batch number or machine operator.

By using performance assessments as to individual filling spouts, the plant operator can specifically target maintenance work. Spouts with less performance can systematically undergo maintenance.

Especially the evaluation of fault reports offers the possibility of identifying fault sources more frequently or regularly. An analysis of fault sources provides information on possible improvement potential for the filling process.

Integrating FIBCs in the global commodity flow

Flexible intermediate bulk containers (FIBCs), also known as bulk bags, are highly valued for the storage and transportation of dry commodities ranging from coffee to cement, *writes Greg Bedford, Technical Sales Engineer*. Typically around one cubic metre in size, giving a nominal weight of approximately a tonne, they offer benefits to supplier and customer alike. For a supplier FIBCs are low cost, light, strong and easy to handle, features which act to reduce transportation costs. Ease of handling, relative to smaller sacks, is also an important benefit for customers, and in certain industries one-tonne bulk bags are also a more economic scale at which to purchase. Reducing manual handling by switching from 25kg manually manipulated sacks to the use of FIBCs, in combination with mechanized material transport, is an ongoing trend that has prompted a rise in FIBC use over the last five to ten years.

Portside discharger for the transfer of cement from FIBCs to a tanker.

Fitting FIBCs efficiently into the supply chain requires the right equipment at both the packaging and discharge end, as well as for intermediate handling. These requirements can vary considerably depending on the scale of production of the material being handled and on how it is being used, once emptied from the FIBC. For example, if product is made on a small scale it may be delivered to a central depot in 25kg or 50kg sacks. Such practice creates a requirement to efficiently fill bulk bags from smaller sacks, ahead of transport or delivery to the customer. In contrast, commodities such as cement may be shipped in FIBCs but bought and used in larger volumes. Here, efficient unloading into a tanker becomes the challenge.

Solutions for FIBC handling

Guttridge specializes in all aspects of mechanical bulk materials handling. This expertise is usefully transferred and exploited to design and supply integrated solutions for FIBC use. A particular strength is bespoke discharge systems that couple bulk bag dischargers with mechanical conveyors tailored to an individual plant or process. These deliver efficient material transfer from the FIBC to the point of use and may incorporate integrated weighing systems, with load cells and weigh controllers to provide sophisticated batch control. There are also options for highly effective dust control.

Favoured discharger/conveyor combinations include those that utilise tubular screw conveyors. These can be configured with multiple screws, or for horizontal discharge, or with integral agitators to aid discharge. The tubular design provides complete material containment which is critical for dusty and/or hazardous materials and help to maintain a clean and healthy work environment. Screw elevators for FIBC unloading include the Sieveflo which, as the name suggests, incorporates an integral sieve to catch any foreign objects before they enter the process. This machine can also be configured for emptying 25kg bags, boxes or drum offering substantial flexibility within the factory. The following examples illustrate the application of Guttridge technology.

Transferring cement from FIBCs to a road tanker

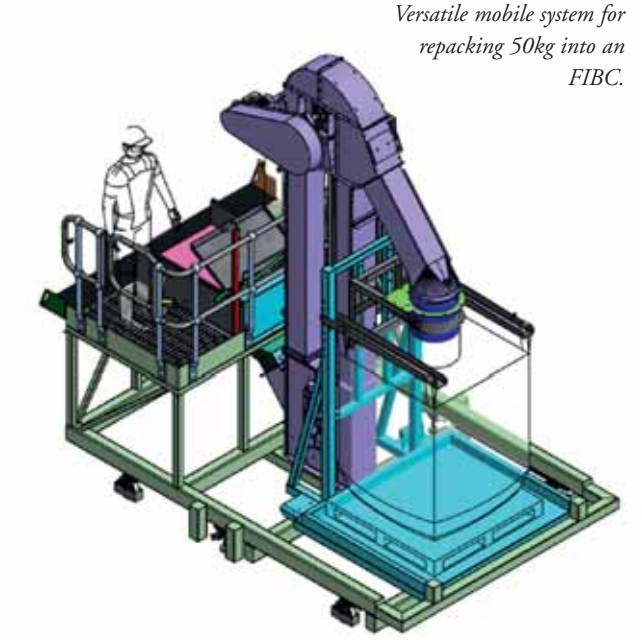
At a port, a requirement was identified to empty FIBCs filled with cement, a fine powder, into road tankers for delivery to the end user. FIBCs usually have an outlet spigot which is tied off for transportation. These ties are subsequently cut to allow the product to discharge. However in this case the FIBCs did not have an outlet and so the bottom of the bag needed to be cut to release the product.

The equipment supplied included a discharger with integral bag splitter and screw conveyors to elevate the product from the FIBC to the top of the tanker. Loading bellows were specified to aid product containment during transfer. An integrated dust extraction system prevents any escape of cement dust while a level sensor detects when the tanker is full and stops the conveyor. The net result is safe, fully contained, efficient cement transfer at the portside.

Improving the logistics of product distribution

In a project that illustrates the opposite problem, filling FIBCs, the aim was to repack product from 50kg bags. 50kg bags are too heavy to be manually handled in UK factories and so the preference was to receive the product in FIBCs which could then be mechanically discharged.

In this instance Guttridge designed and supplied a mobile system that could be wheeled directly up to the container holding the sacks. The operator could then offload the 50kg sacks on to the discharger systems, sliding them into position to feed a belt and bucket elevator. This machine lifts the product into the FIBC. This versatile system reduces manual handling safeguarding the health of the operator while at the same time maintaining efficient material transfer.



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Nectar mobile bagging systems: revolutionizing the bulk logistics chain

Whether you are a port agent, commodity trader or cargo receiver — and regardless of your responsibility dictated by Incoterms [International Commercial Terms] or the level of involvement from a commercial perspective — the way a cargo is handled downstream plays a vital role in shaping the way you operate upstream within the shipping logistics chain. End users' requirements will affect a number of variants including the volatility of freight rates specific to a market segment as well as capital investment requirements for equipment to handle commodities. There are a number of examples of where such requirements affect aspects such as the available infrastructure for delivery of key commodities to landlocked countries, traceability of a commodity for quality control or even the ability for a local farmer to carry a 50kg bag on the back of his moped to his smallholding. These examples are part of a longer list of logistics chain service components, which collectively have implications on the overall cost of the commodity delivered to the end user and the value added along the shipping supply chain. In essence, there are a number of value-added services along the supply chain continuum that are linked to the added value for the receiver and, as such, may play an important role in shaping decisions upstream.

A prime example of this was introduced into the industry by Nectar Group in the 1970s allowing clients to save money on vessel chartering, on lost or damaged cargo and by giving them increased flexibility in choosing both load and discharge ports. The first mobile bagging system revolutionized the logistics chain opening up trade routes that were previously restricted to only handling pre-bagged cargoes. The system, which has been refined to what is seen in today's Nectar Compac™ range, efficiently and accurately weighs bulk cargo and feeds it into bags at the exact desired weight ready to be stitched shut and loaded on waiting transport. Traditionally, the markets that benefit most from this revolutionary provision have been those with more developing economies; insufficient bulk handling equipment or space at ports, little or no railway connectivity for bulk product or a simple lack of infrastructure investment. Containerization of consumer goods has enabled a certain amount of conformity across the market with consistent and increasing demand — anywhere in the world, standard container handling equipment can be found meaning that Nectar's containerized bagging systems can be shipped to where they are demanded easily and quickly. On the flip-side, bulk handling infrastructure has not developed at the same speed — partly due to the sporadic changes in demand for bulk commodities — famine, disease, war, economic turmoil, government subsidy programmes and climate change have all made bulk imports erratic and investment in the corresponding equipment can logically been deemed uneconomical.

An example of a location that has benefited substantially from this 'plug-and-play' style system is Mogadishu in Somalia — a country which is emerging with challenges in infrastructure and the wider commercial economy. With sugar being one of the staple food products imported into the country, the challenges of moving large amounts of product and processing it into a form suitable for delivering to the local population is still not carried out without immense difficulty. Consequently, this means that the cost of every service component along the supply chain is prudently scrutinized to ensure that the difficulties do not correspond to poor value for money for the end users. The process of shipping the sugar in bulk with destination bagging reduces the overall costs through a number of varied reasons which are often not at first obvious.

- From the start of the process we can see the implications — the speed that a ship can be loaded and discharged at port will of course have a repercussion on the chartering costs. It is well known that bulk product can be loaded at much higher speeds than the equivalent pre-bagged product. Nectar provides a speed guarantee to ensure that deadlines are met and costs for keeping the vessel in port are kept to a minimum. The guarantee ensures that there is no extra cost to the client should the cargo handling operation not complete within the allocated timeframe.
- When loading a ship with bagged products, there is guaranteed to be a certain amount of split or broken bags which results in lost cargo. The same can be said for the discharge. The traders of the commodity normally factor in an average amount of loss in the price therefore increasing the cost of the commodity for the end user. With destination bagging, the cargo is loaded into new clean bags in a good condition.
- Pre-bagged cargo will have been put through bagging systems often at the mills or processing plants far upstream of the direct end users and this often results in a lack of quality controls due to their lack of accountability to the end consumer. The absence of an accurate bagging process in this scenario means that the bag weights may show significant fluctuations from the desired weight. With the destination bagging service that Nectar provides to the clients, who are often present in the markets they are selling into, a weight guarantee of a very small tolerance thus giving them peace of mind that they are not being undersold or provided with inaccurate volumes of the commodity.

The result is a cheaper bag of sugar for the end user with savings achieved within a number of aspects of the logistics chain. In the example of Somalia, the versatility of Nectar equipment has ensured that the first bulk shipment of sugar in Somalia in many years was discharged and bagged successfully despite some challenging port conditions. The wealth of knowledge and experience within Nectar ensures that all projects, no matter how big or small, are undertaken with the same professionalism and efficiency giving added credibility to its motto — 'Driven by Innovation, Performance Guaranteed'.

Interjute: bagging for the bulk industry

Interjute B.V., based in Hulst in the Netherlands, was founded in 1958. As the name suggests, Interjute was initially dedicated to the trade in jute bags before an expanding demand for polypropylene 50kg bags and later FIBCs made the company the partner of choice for many customers in a variety of industries.

The fertilizer sector has been, and remains, a significant part of the total business of Interjute, although the company remains responsive to the needs of many other industries (i.e. cement, minerals, animal feed, sugar, flour and food ingredients) and can meet just-in-time demand for bags with the help of a huge printing capacity, experienced workforce and substantial quantities of bags held in-store.

Initially, the company supplied bags largely to service bagged exports of dry bulk commodities produced in Europe; today, changing market conditions have meant that Interjute has developed a worldwide network of competent and dedicated local representatives, through which the company supplies bags to all corners of the globe and complying with often challenging customs regulations and trade finance norms as required.

FIBCs now form an increasingly important part of Interjute's business; as with 50kg bags, these now tend to be filled close to final user rather than at/near production site so blenders/packagers associated with local markets are increasingly important outlets for the company's packaging products.

Mobile bagging: just one of the dry bulk services offered by IMGS

For dry bulk materials, IMGS offers a wide range of logistical support, project design and implementation for unique and specialty shipments, marine self-unloading solutions to shipbuilders, ship-owners and ship operators worldwide. The services offered by the company include mobile bagging systems.

The scope of supply includes systems for dry bulk carriers, transloading systems and bulk handling systems for offshore supply vessels–all designed to ensure efficient, flexible and

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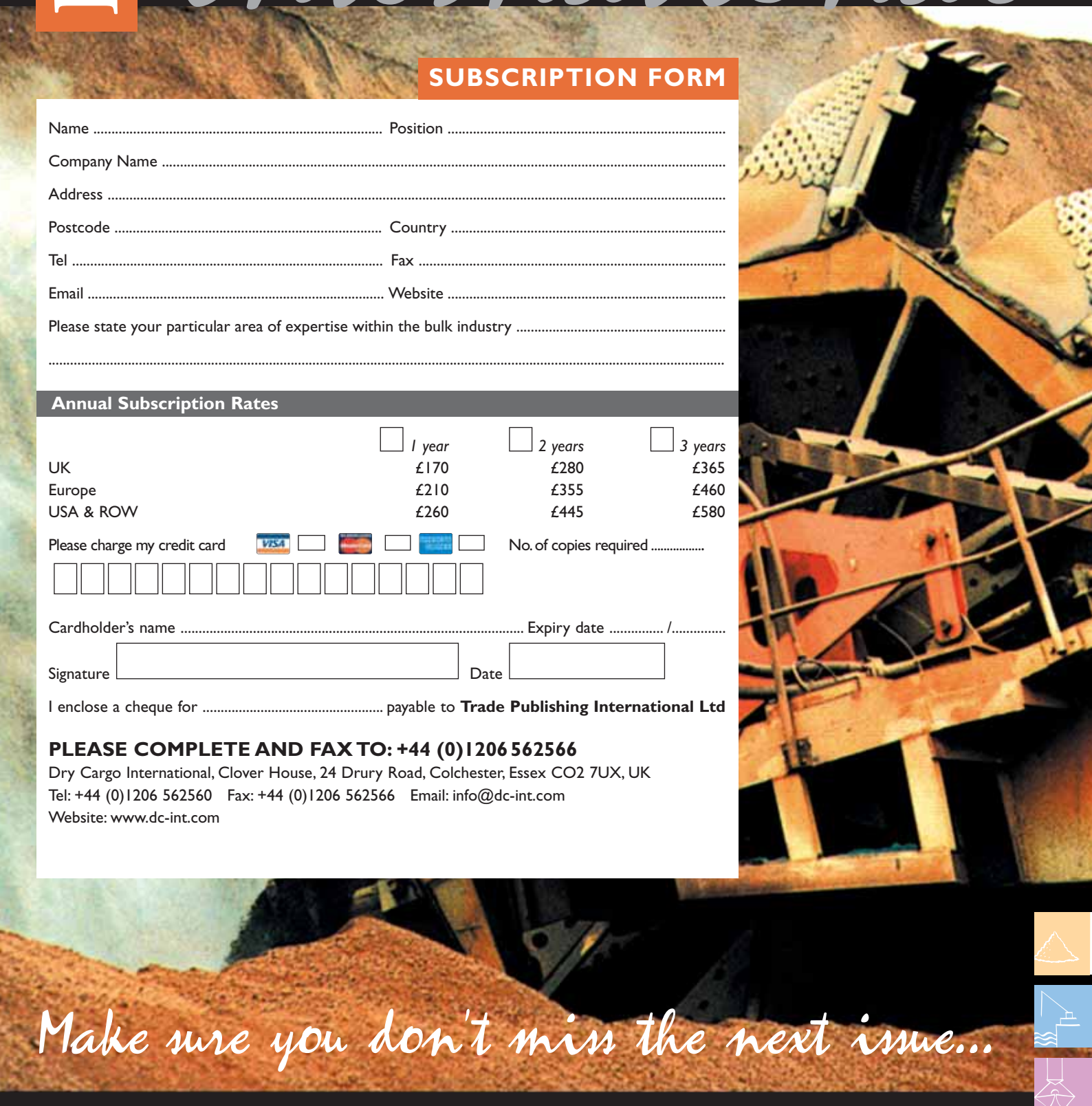

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- IMGS on site supervisors will be present for the duration of the project, gathering information and preparing daily reports.

Dry bulk shipping companies rallied strongly at the end of last year which reflects the daily charter rate for vessels carrying cargoes such as iron ore, coal and grain, surged to its highest level in two years. But while dry bulk rates are under pressure at present, there are some indications to suggest that the market is in the process of staging a full recovery. A chronic oversupply of ships has been one of the reasons that the shipping industry has remained so depressed during the past few years. Hundreds of new ships were purchased with cheap credit in the run up to the financial crisis when the industry was booming, and this overhang has kept the market depressed. However, now it appears that these order books are starting to run dry. In particular, the tanker and bulk carrier fleet grew 4.3% during 2013, roughly in line with the growth of global trade. In comparison, during 2009, 2010, 2011, and 2012, the four years when global trade remained depressed, the fleet expanded 8.4%, 10.7%, 10.4%, and 7.3% respectively.

The dry bulk market is starting to find its feet again, but as of yet the recovery is not fully under way. The volume of cargo being shipped around the world has returned to growth, and the number of new builds hitting the market has declined to a multiyear low. IMGS aims to keep its customers' operations up and running, wherever they are in the world, throughout the lifetime of their ships or fleets. In the shipping world, speed and compliance are essential. The speed with which a cargo is loaded, transported and discharged, will equate into the net profit of the operation. DCi

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