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■ Global Fertilizer Trades

■ Belgium & France

■ Cement Storage

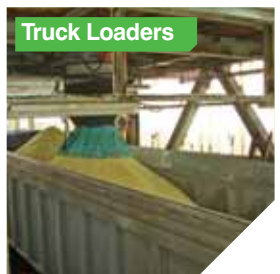
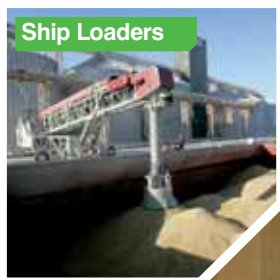
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NOVEMBER 2019 issue

featuring...



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international

Support for coal trade persisting

Indications of commodity import demand in countries around the world point to enough positive momentum to ensure overall growth, although headwinds are restraining the pace of advance. Signs suggest that global seaborne dry bulk trade will continue expanding at a modest rate over the next twelve months.

Sluggish economic activity has been acting as one of those restraints. Last month the International Monetary Fund revised downwards its estimate for world GDP growth in 2019 to 3%, a "serious climbdown" from almost 4% two years ago. This synchronized slowdown may be followed by the beginning of a revival next year, to 3.4%, but the outlook is described as "precarious" and is based on only fragile expectations.

COAL

Prospects for coal trade suggest a continuation of the mixed influences which are resulting in slow growth. World seaborne coal trade still seems likely to grow by 1-2% this year, a rate of increase possibly extending through 2020. The outlook for several major elements, especially China, is very hazy.

One major element is steam coal imports into Asian countries. Estimates for the biggest individual importers in Asia are shown in table 1. While some forecasters suggest that South Korea's imports in 2019 will be lower, reflecting environmental influences, increases may be seen elsewhere. India and China

may see higher volumes, and a number of smaller importing countries are likely to raise their volumes substantially, resulting in the region's upwards trend persisting.

IRON ORE

A recent update by Australian Government commodity forecasters indicated a 3% fall in global iron ore trade (including land movements, but mostly seaborne) this year, to 1,550mt (million tonnes), followed by a 2% pick up in 2020. Weakness in China's imports is viewed as contributing to this year's reduction, accompanied by lower volumes among some other buyers.

Expectations of a reduced 2019 annual iron ore volume into China have been reinforced by data emerging, despite signs that steel production remains buoyant. During the first nine months of this year, imports were 2% lower at 784mt, compared with the same period a year ago. Lower supplies from Brazil, and destocking in Chinese ports were evident. In the months ahead, larger supplies and restocking may support imports.

GRAIN & SOYA

A more positive outlook for grain trade is unfolding. Several importing countries now seem likely to buy more supplies during the current crop year than previously expected. Prospects for purchases by a number of importers are becoming clearer following completion of their domestic harvests.

The latest International Grains Council monthly update predicts world trade in wheat plus corn and other coarse grains increasing by almost 10mt or 3% in 2019/20 ending June, reaching a record high 374mt. Substantially higher imports are forecast in Egypt, Morocco, Iran, Saudi Arabia, South Korea and Mexico. Although European Union imports could decline sharply by 18% to 26mt after a better harvest recently, solid expansion of overall global movements appears set to resume.

MINOR BULKS

Within the minor bulks sector, several agricultural and related bulk commodity trades are prominent, especially sugar, oilseeds and meals, and fertilizers. Reports point to weakening sugar trade this year, while many other elements apparently are seeing increases. Consequently this group, which is estimated to have totalled just over 400mt in 2018, may be growing firmly.

BULK CARRIER FLEET

About two-fifths of the entire world bulk carrier fleet is classified as Capesize vessels in a broad size group from 100,000 deadweight tonnes up to 400,000dwt, including ore carriers. As shown by table 2, this fleet is expected to could expand by over 3% in 2019, reaching 346m dwt at end-year, a similar growth rate to that seen last year. Newbuilding deliveries are rising, accompanied by a higher annual scrapping total.

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

	2014	2015	2016	2017	2018	2019*
Japan	114.2	120.1	115.8	121.0	119.8	119.0
South Korea	100.8	102.6	102.5	116.0	117.5	110.0
Taiwan	57.0	56.3	55.0	58.2	58.4	58.0
China	165.5	107.9	124.2	118.7	122.4	130.0
India	176.0	170.2	148.3	152.7	172.1	186.0
Total of above	613.5	557.1	545.8	566.6	590.2	603.0

source: various & BSA estimates

*BSA forecast

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

	2014	2015	2016	2017	2018	2019*
Newbuilding deliveries	18.5	16.9	20.0	15.3	14.3	16.0
Scrapping (sales)	4.2	15.4	13.3	6.4	3.1	5.0
Losses	0.0	0.0	0.2	0.3	0.0	0.0
Plus/minus adjustments	0.0	-0.4	-0.5	0.0	0.0	0.0
Fleet at end of year	308.1	309.2	315.2	323.8	335.0	346.0
% change from previous year-end	+4.9	+0.5	+1.9	+2.8	+3.4	+3.3

source: Clarksons (historical data) & BSA 2019 forecasts

*BSA forecast

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ELECTROMAGNETIC PARKING BRAKE	2x200 Nm
ELECTRIC STEERING MOTOR	2x4 kW 400V AC
STEERING GEARBOX RATIO	1 : 178
PINION/CROWN RATIO	1:8.57
TOTAL STEERING RATIO	1 : 1526
MAX STEERING OUTPUT PEAK TORQUE	2x5.000 Nm
TIRE	Pneumatic 16.00-25
TILTING ANGLE	±6°
LIFTING CYLINDER	Bore Ø140mm. Rod Ø90mm
STROKE OF LIFTING CYLINDER	400mm
LIFTING WHEEL STROKE	Total 200mm (±100mm)
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Maria Cappuccio

The International Monetary Fund (IMF) has again sharply downgraded its forecast for global economic growth to 3% this year, the slowest pace in a decade mainly due to a downturn in global manufacturing, the China/US trade dispute and other trade and geopolitical tensions. Growth in major economies — including the US, Europe and India — have been marked-down, with a similar outlook for emerging markets, from China to Turkey, South Africa to major economies in Latin America. Global growth is expected to remain weak well into 2020 despite policy easing, as banks around the world, led by the US Federal Reserve and the European Central Bank, cut rates to avoid a global recession.

Overall cereal and oilseed supply prospects remain positive, larger crops of wheat and coarse grains and slightly smaller rice and oilseeds crops, with outturn, despite expected cuts in production and stock levels forecast to rise to a record 3.23bn/t in 2019/20. New challenges to

demand include the rapid spread of diseases such as African Swine Fever (ASF) especially in China and in other Asian countries, extreme weather events, changes in diets and trade disputes. Large supplies further pressured values, already at low levels, across the grain and oilseed complex, with a modest deficit in global grain/oilseed stocks forecast by the end of the season.

OPPORTUNITIES AND CHALLENGES

Fertilizer industry fundamentals remain attractive as long as, long-term population growth and dietary improvement trends drive food demand. The Organisation for Economic Co-operation and Development (OECD) recent report, anticipates global food demand to grow more gradually over the next decade; while population expansion remains the driving force, *per capita* food consumption is expected to increase more slowly as it approaches saturation levels in some markets especially

for cereals, vegetable oil, roots and tubers, meat and fish, while dairy foods and sugar are expected to expand supported by rising incomes in developing countries. Global crop production in the next decade, is expected to follow a similar trend as demand for agricultural commodities, the gains in output to come mostly from higher yields

CHANGING DIETS LINKED TO RISING OBESITY

The UN's Food and Agricultural Organization (FAO) theme for World Food Day 'Our Actions Are Our Future' focused on the dramatic change in global diets, resulting from urbanization, income growth and moving from seasonal, mainly plant-based fibre-rich dishes, to diets that are high in refined starches, sugar, fats, meat and other animal products. Unhealthy diets and sedentary lifestyles have sent obesity rates soaring — 670m adults, 120m girls and boys (5–9) are obese and over 40m



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children under five are overweight, even in low-income countries where hunger and obesity co-exist. It is also a leading risk factor for deaths in cardiovascular diseases, diabetes and some cancers, costing national health budgets almost US\$2 trillion per year. Obesity and other forms of malnutrition are expected to affect one in two people by 2025. UN Secretary-General António Guterres called for far greater commitment and action to tackle the problems of obesity in a world that wastes 1bn/t of food every year, while 820m people suffer from hunger.

FERTILIZER MODEST DEMAND GROWTH TO 2023/24

The International Fertilizer Association (IFA) forecast global fertilizer capacity as being more than adequate to meet robust demand in Africa (especially Sub-Saharan Africa), EECA, South Asia and Latin America over the next five years; growth is expected to be modest rising to 203.5mt (million tonnes) nutrients in 2023/24, mainly due to contracting demand in China.

Potash is expected to grow faster by 1.4%, phosphates by 1.2% and nitrogen by 1% each year as a result of steady improvements in N management

GLOBAL FERTILIZER USE

1961-2023/24 mt 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	108.6	41.4	29.2	179.1
2013/14	109.9	40.5	30.4	180.7
2014/15e	110.3	41.1	32.0	183.4
2015/16	108.0	41.0	32.0	181.0
2016/17	107.7	46.0	35.3	189.1
2017/18	107.9	46.7	36.9	191.5
2018/19	107.4	45.6	36.5	189.5
2019/20	110.0	47.0	37.5	194.5
2023/24	114.6	49.6	39.4	203.5

Source: FAO, IFA

FERTILIZER PRICES \$ PER TONNE FOB 2015–2019

	2015	2016	2017	2018	2019
	Oct Wk2	Oct Wk2	Oct Wk2	Oct Wk2	Oct Wk2
	\$	\$	\$	\$	\$
Urea					
Baltic	259	201	270	260	237.8
Persian Gulf	—	—	215-275	320	255-257
US Gulf	—	201	265	350-296	230.5
Ammonia					
Yuzhny	248	189	210-215	320-322	225-230
Tampa CFR	440	220	245	330	255
Middle East	—	—	—	359-369	—
Ammonium sulphate					
FSU	—	—	—	118	—
Asia	142	114	—	142.50	114
Di-ammonium phosphate					
North Africa	—	—	360—365	409	—
US Gulf	460	306	345	421.50	271-280
China	—	—	360	414	310-316
Baltic	—	—	—	426	304
Triple Super phosphate					
North Africa	380	—	—	358	313
US Gulf	—	277	—	346	270
Muriate of potash					
Baltic	—	221	—	290	—
Vancouver	300	215	—	215.5	265.5
US Gulf	—	—	220-228	268	280

Source: Bloomberg, Farm Futures, Fertilizer Week, Fertilizer Market Bulletin, Profercy/I Monthly average — Sept

practices and more balanced fertilizer application.

WEAK DEMAND PRESSURES NUTRIENT VALUES

Large global cereal and oilseed supplies, low prices across the grain/soybean complex have slowed global fertilizer demand, especially in the US, where heavy flooding has reduced spring and latterly fall fertilizer applications. The prospect of increased fertilizer supply, weak demand, falling revenue, comes at a time when fertilizer producers are tasked with improving efficiency and reducing the environmental footprint of fertilizers, outlined by recent changes in legislation, including the UN's Environment Assembly (UNEA) global resolution on nitrogen, FAO's International Code of Conduct for the Sustainable Use and Management of Fertilizers and the EU's Fertilizer Regulation 2019/1009.

FERTILIZER PRICES TO RISE IN 2020

With fertilizer prices significantly lower in recent months, phosphate prices declined in the third quarter of 2019 due to weak demand and increased supply. Urea prices increased on strong demand in Brazil, India and the US, while robust shipments to China continued to support potash prices.

CEREALS AND OILSEEDS – PRODUCTION, USE & STOCKS 2017–2018/19 MT

	Prod 18/19	Prod 19/20	Use 18/19	Use 19/20	Trade 18/19	Trade 19/20	Stocks 18/19	Stocks 19/20
Wheat	731	765	736	755	174	179	278	288
Coarse grains	1396	1397	1416	1414	203	205	351	334
Total wheat and coarse grains	2127	2162	2152	2169	377	383	629	622
Rice	499	498	489	495	46	46	172	175
Total Cereals	2626	2662	2641	2664	423	429	801	797
Oilseeds	597	575	330	335	171	172	128	110

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

Fertilizer prices are projected to rise 2.2% in 2020, on continued acreage expansions after an expected loss in 2019.

INCREASED CORN ACREAGE TO IMPROVE UAN DEMAND

The international ammonia market was helped by emerging spot requirements particularly in Europe and China — Tampa and Baltic prices for October were settled with significant increases. Yara and Mosaic agreed an increase in the contract price to \$255mt CFR. Before the settlement, there was a reported sale of 15,000mt from CF to Nutrien at \$260mt FOB US Gulf — to cover shipments to northwest Europe, following a plant outage at Nutrien's site in Trinidad. Demand for UAN is expected to improve if US farmers decide to plant a 94–96m/acre corn crop.

INDIAN AND FRENCH DEMAND SUPPORT UREA

Urea trades for Oct/Nov shipment agreed at \$255–257/t FOB Egypt — values supported by the India tender for c.1mt, as well as an increase in European buying. With ideal weather conditions, India is expected to buy a further 1.3–1.5mt for December shipment. France has yet to cover 70–75% of its urea requirements for Oct-Feb c.750,000/t; while US growers coping with a late harvest, wet fields and lack-lustre corn prices, may postpone nitrogen choices until the spring.

PHOSPHATE VALUES PLUNGE

With increased phosphate supply in Morocco, Saudi Arabia, and falling demand in China and Brazil, values at the US Gulf for DAP \$271.50 mid-October, fell to their lowest level in nearly ten years. Demand in China fell due to the zero growth policy on fertilizer use; while the Brazilian market remained slow with heavy inventories and delays in planting soybeans. Pakistan and India continue to buy only at lower prices. Mosaic's cutbacks help to balance supply with demand, but in the case of another

poor fall application season, further cutbacks will be needed to sustain price levels. DAP prices are forecast to increase in 2020 by over 3% driven by moderate recovery in demand and reduced supply in China.

POTASH PRICES IMPROVE FOLLOWING SHUT-DOWNS

Low potash prices improved following maintenance shut-downs by key producers with trades at \$250/t. In October, Uralkali concluded a contract with India with prices at 280/t for delivery between October and March 2020. Prior to this contract, unusually there were no contracts in place with India or China this year, because of low prices. Strong demand from Brazil and China, cutbacks of high cost capacity and production delays at new projects in Canada, Russia, and Turkmenistan, underpinned prices.

BUMPER GRAINS HARVEST IN 2019/20

The large global harvest for wheat and coarse grains is forecast at over 3.2bn/t in 2019/20 and includes a record wheat harvest of 765mt, with large coarse grain crop 1,397mt including a significant increase in barley output 156mt with corn lower at 1.104mt. Further downward revisions are expected for Australia's wheat 15.5mt and the delayed US corn harvest. Demand for wheat and coarse grains for all uses increased by 17mt to 2,169mt outstripping supply by 7mt. Increased feed use for wheat and barley, less corn fed due to the outbreak of ASF, especially in China and in other Asian countries and a switch to feed wheat more available/competitive than corn in the EU and US. Global stocks have declined by 7mt to 622mt, excluding China's stockpile 342mt (W.146mt CG.196mt), reduces global stocks to 280mt.

CEREAL EXPORT PRICES US \$ FOB PER TONNE 2015–2019

	2015 Oct Wk2 \$	2016 Oct Wk2 \$	2017 Oct Wk2 \$	2018 Oct Wk2 \$	2019 Oct Wk3 \$
US					
Wheat No 2 HRW	221	194	217	237	213
Corn No 3 Yellow (Gulf)	175	163	157	167	174
Sorghum (Nola)	198	175	191	191	188
Soybean No 2 (Gulf)	369	378	375	324	364
Brazil (Paranagua)					
Soybean	—	411	386	416	380
Argentina (up river)					
Wheat	223*	—	—	232	228
Corn	161*	174	148	164	174
Soybean	360	381	372	397	356
Thailand					
Rice White 5% broken	375	350	383	390	397
Vietnam					
Rice White 5% broken	—	331	400	407	353
India					
Rice White 25% broken	—	331	366	340	330

Source: FAO IGC USDA-*Monthly average — Sept; Rice prices based on indicative quote.

**GLOBAL NITROGEN SUPPLY/DEMAND
2018-2023/24 MT N**

Fertilizer	2018/19	2019/20	2023/24
Nitrogen capacity	186.3	187.4	190.7
Nitrogen supply*	153.8	154.6	163.7
Nitrogen demand	145.2	147.3	155.5
Fertilizer use	112.6	114.2	115.6
Other	37.4	38.1	38.0
Nitrogen balance	8.6	7.3	8.2

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

**GLOBAL POTASH SUPPLY/DEMAND
2018–2023 MT K₂O**

Fertilizer	2018/19	2019/20	2023/24
Potash capacity	59.9	-	67.8
Potash supply	48.6	50.1	55.0
Potash demand	43.0	43.1	45.7
Fertilizer	36.5	37.5	39.4
Potash balance	5.7	7.0	9.4

Source: IFA-Data K₂O basis

**GLOBAL UREA SUPPLY/DEMAND
2018-2023/24 MT UREA PRODUCT**

Fertilizer	2018/19	2019/20	2023/24
Urea capacity	214.0	-	226.0
Urea supply	182.6	182.2	199.5
Urea demand all uses	172.2	174.8	183.3
Urea balance	10.4	7.4	16.3

Source: FAO/ IFA-Data mt Urea basis

**GLOBAL PHOSPHORIC ACID SUPPLY/DEMAND
2018–2023/24 MT P₂O₅**

Fertilizer	2018/19	2019/20	2023/24
Phosphoric acid capacity	59.8	61.0	64.8
Phosphoric acid supply	49.1	49.8	52.8
Phosphoric acid demand	46.8	47.1	50.4
Fertilizer	45.6	47.0	49.6
Phosphoric acid balance	2.3	2.7	2.4

Source: FAO/IFA-Data P205 tonnes basis

Global oilseed production is forecast at 575mt, 22mt lower than the previous year; smaller crops for groundnut and rapeseed but mostly due to lower US soybean output down by 24mt to 97mt as a consequence of the China/US trade dispute. Although, prospects for South American soy producers remain tentative — recent rainfall has increased soil moisture levels, boosting fieldwork in Brazil's Mato Grosso and Parana states that previously had a slow start. Tied to modest gains in local use in Asia and the three majors in particular, world soybean output is projected at 339mt some 20mt below last year. Consequently, global stocks of soybeans are expected to contract by 15mt to 95mt-with US stocks falling to 12.5mt.

**CORN FOR FEED USE LOWER IN
2019/20**

Feed use of corn in 2019/20, is lower than the previous year due to plentiful supplies of wheat and barley, especially in the EU and elsewhere. USDA forecasts a significant drop of 22mt in global corn stocks, mostly in China; outside China global stocks are expected to fall by 5mt to c.107mt — and possibly lower depending on US crop outturn; the election and new regime in Argentina, may signal higher export taxes for corn with more acres being switched to beans.

WHEAT AREA UNCHANGED IN 2020/21

The International Grains Council (IGC) forecast the all-wheat harvested area to be

little-changed in 2020/21. Seeding of the wheat crop in the northern hemisphere has been hindered by overly dry soils in some parts of Russia, Ukraine and the EU — with more rain needed for planting and crop establishment; by contrast, fieldwork in the UK is being hindered by wet-weather. Conditions have also been challenging for rapeseed sowing in the EU and while 2020/21 acreage may expand, it is still expected to remain below average.

**US CORN ACREAGE FORECAST TO RISE IN
2020/21**

Fertilizer prices could be capped or even rise in the future, if the US plants more corn acres in 2020/21 or cuts-back fertilizer production. Sam Taylor, vice president/farm inputs analyst for Rabobank's RaboResearch Food & Agribusiness estimates US farmers could plant 92-94m/acres of corn compared to 90m/acres this season; and in line with a recent Farm Futures survey — 94.1m/acres corn and 83.6m/acres soybeans.

This season US exports are below trend due to the slow harvest and large competitive supplies out of Brazil luring buyers. Whether US sales improve, depends on the size of the corn harvest in Brazil and Argentina in 2020 — a slow start to soybean planting in Brazil may impact corn acreage, while Argentina's ability to export, depends on the approach to be taken by the Peronist government when they take power in December. CBOT Corn Futures Dec '19 closed lower \$3.826

(Oct 29) as the market continues to soften ahead of the US corn harvest — Corn 3YC FOB US Gulf \$174/t (Oct 29).

**PRICE CAPPED BY LARGE SUPPLIES AND
WEAK DEMAND**

Most agricultural commodity prices appear to have stabilized recently, the factors that exerted downward pressure on them are still in place. These pressures include multi-year-high stock levels for some grains, notably rice and wheat, favourable weather conditions in most key producing regions, ongoing trade tensions, low energy costs, and weakening demand for some commodities.

USDA forecasts another modest global grain deficit for 2019/20 season, reflecting grain prices that are below levels that could trigger significant demand rationing or stronger production.

FERTILIZER DEMAND IN 2019/20

Earlier in the year the IFA forecast global fertilizer demand to rise to 195mt in 2019/20-underpinned by a rebound in North America with strong growth in Africa, Eastern Europe & Central Asia (EECA), South Asia and West Asia, assuming favourable weather conditions, larger acreage and no major geopolitical or economic shocks.

**STRONG INDUSTRIAL GROWTH DRIVES
NITROGEN DEMAND**

Global nitrogen supply is forecast to grow to 190.7mt N by 2023/24. Demand is expected to grow to 155.5mt N, driven by higher industrial demand especially in South



Asia, Latin America and Southeast Asia-representing half of all growth with marginal increases in Europe, North America and Oceania.

SIGNIFICANT DEMAND FOR INDUSTRIAL USE

Global urea capacity is projected to rise by 12mt to 226mt in 2023, with large additions in South Asia, Africa and EECA, while declining in China with half of the planned expansions to be commissioned in 2021. The IFA projected urea supply to grow to 199.5mt with demand for all uses increasing to 183.3mt in 2023; significant demand anticipated in Latin America, East Asia and China for industrial purposes.

STRONG DEMAND SUPPORTS UREA PRICES

Due to strong demand in Brazil, India and the US, urea prices increased by almost 3% in Q3 after large declines in the first half of 2019. Brazilian demand has been robust supported by expanded corn and soybean acreage and increased animal protein exports to China due to the AFS outbreak. A more favourable monsoon supported demand in India, while in the US demand improved after heavy rains and floods delayed crop plantings.

The re-imposition of sanctions on Iran by the US resulted in uncertainty over Iranian urea supply (6% of global urea exports). Urea prices are projected to increase by 1.7% in 2020, on robust demand and limited new capacity. With limited supply growth, the global urea balance (excluding China) was tighter than a year ago, triggering an increase in Chinese urea



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exports — to date China has exported 2.7mt up on last year — and partly supported by a weak renminbi.

GROWING POTASH SURPLUS BY 2023/24

Potash capacity is forecast to increase to 67.8mt K₂O in 2023/24. Most of the new projects will be commissioned in Russia, Belarus, as well as increases in North America and West Asia. Previously, new plants commissioned in Latin America (Bolivia) and Central Asia (Turkmenistan) will augment supply projected to increase to 55mt K₂O in 2023. Global demand for potash for all uses forecast to grow to 45.7mt K₂O in 2023, leading to a rising surplus of 9.4mt K₂O. Growth in the EU is unlikely as large-scale polyhalite capacity is nearing completion in the UK, which may bring new supply to the market.

Potash prices have been relatively stable in key spot markets supported by strong demand especially in Brazil and China and delays for new potash projects. While demand in India remains subdued. In 2020, a modest price increase is expected over 2% on robust demand in Brazil (for corn and soybeans), China (fruits and vegetables) and Southeast Asia (palm oil), subject to supply additions coming on stream.

BHP's JANSEN POTASH MINE

Australian-based mining giant BHP Billiton Ltd will decide by February 2021 whether

to go ahead with plans to build Jansen, a giant \$17bn potash mine east of Saskatoon. The company recently committed an additional U\$345m, on top of c. \$3bn already spent, to de-risk Jansen, despite some investors expressing doubts and questioning the logic of adding more supply to an already saturated global fertilizer market, recent bearish sentiment and weak global demand for potash, has led major producers to announce shut-downs for maintenance and to curtail output.

SLOW DEMAND PROMPTS SHUT-DOWNS

In Germany, K&S is to reduce production of potash up to c.300,000/t by the end of 2019; Belarus BPC's to consider reducing output up to 30% for three/four months. Nutrien plans shutdowns of up to two months in Q4 at its Allan, Lanigan and Vanscoy potash mines in Saskatchewan — potentially cutting potash output by 700,000/t; while Mosaic is to temporarily curtail production at Esterhazy mine in Saskatchewan, bringing accumulated curtailments to 600,000/t — the latest is a result of a short-term slowdown in global potash markets and increased risks of a delay in Chinese contract settlement. However, the challenging market environment persisted longer than had been anticipated. But with products beginning to move in North America should lead to improved prices. President and CEO, Joc O'Rourke said, "...We believe

that the bottom of the market is in and that 2020 will be a much stronger year for Mosaic..."

GLOBAL PHOSPHORIC ACID CAPACITY TO INCREASE

Global capacity is seen as increasing in Morocco, Saudi Arabia, Turkey, Russia, Kazakhstan, Egypt and Algeria to 64.8 mt P₂O₅ in 2023.

In South Asia, North America and Central Europe some restructuring of phosphoric acid capacity is expected, with large addition also planned for 2023. Supply and demand are expected to grow slowly, with a modest surplus by 2023.

Mosaic has been hit by a number of issues in 2019, including significant downturn in phosphate values, which have remained under pressure on limited demand and plentiful supply. Mosaic's cutbacks reduced phosphate production by approximately 500,000/t in 2019, by idling operations in Louisiana, to help balance supply with demand, after a weak spring application season in the US.

All three facilities are available to resume production when demand improves. But in the case of another poor fall application season in the US, further cutbacks may be needed to sustain price levels. DAP prices are forecast to rise in 2020 by over 3% driven by moderate recovery in demand and reduced supply in China.

Delivery of coal carrier 'Corona Citrus' for Electric Power Development

Kawasaki Kisen Kaisha, Ltd., Tokyo ("K" Line) delivered the *Corona Citrus*, an 88,000dwt-type special coal carrier at Marugame Headquarters of Imabari Shipbuilding Co., Ltd. on 11 September 2019. The *Corona*-series consists of epoch-making coal carriers equipped with wide beam and shallow draught, which are the most suitable type to enter ports of Japanese Thermal Power Stations to discharge cargo.

The *Corona Citrus* is equipped with WAD (Weather Adapted Duct) in front of the propeller which promotes her propeller efficiency and a Hybrid Fin behind the propeller which accelerates energy savings. She also has the latest ecological technology such as ballast water management system which protects marine ecosystems, and SO_x scrubber which eliminates sulphur oxides from exhaust gas of engine and enables her to comply with the Global regulation of SO_x starting from January, 2020.

Corona Citrus will be principally involved in carrying thermal coal to thermal power plants for Electric Power Development Co., Ltd.



VESSEL SPECIFICATIONS

LOA	229.98m	Deadweight tonnes	88,703 tonnes
Beam	38.00m	Gross tonnes	49,888 tonnes
Depth	19.90m	Net tonnes	28,505 tonnes
Full draught	13.904m	Hold/hatch	5/5

BIMCO points to ships' power as a mean to curb emissions

BIMCO has submitted a proposal to the International Maritime Organization (IMO) to regulate propulsion power of ships in order to sustain the GHG savings already achieved through slower steaming.

While it remains a fact that ships' speed is the single most important variable influencing their CO₂ emissions, there are different views as to which regulatory measure is best when it

comes to enforcement and achieving the objective of curbing emissions.

Measuring a ship's speed is not an accurate exercise, therefore, other avenues have been investigated. It has been concluded that limiting ships' propulsion power can be controlled accurately and at the same time, it has a close correlation to speed.

"While it is imperative to ensure the GHG emissions savings through slower

steaming are sustained, it is also important that owners are incentivized to innovate," says Lars Robert Pedersen, BIMCO Deputy Secretary General.

Setting a limit for ships' power has already been suggested by Japan. BIMCO recommends the power limit should be derived for each shipping sector from an assumed performance of an average ship sailing at current average trading speed within each sector.

The proposal was introduced at the Intersessional meeting of the working group on reduction of greenhouse gas emissions from ships at the IMO in London on 11–15 October.

ABOUT BIMCO

BIMCO is the world's largest international shipping association, with around 1,900 members in more than 120 countries, representing 56% of the world's tonnage.

Its global membership includes shipowners, operators, managers, brokers and agents. BIMCO is a non-profit organization.



PGT welcomes second wave of scrubber adopters



Pacific Green Technologies (PGT) CEO, Scott Poulter says the company is now scaling up for the second wave of scrubber adopters as 1 January 2020, the date that the IMO's global sulphur cap comes into force, gets closer.

An estimated 4,000 vessels will have installed exhaust gas cleaning systems — known as scrubbers — by the beginning of 2020, with many more expected to follow.

With more than a decade of designing, planning, manufacturing and implementing scrubbers on vessels many of which have been retro-fitted, PGT is increasingly working with ship owners to include scrubber installation in the new build construction phase.

The global sulphur cap, which limits the sulphur content in fuel burned by ships represents a dramatic change for both the shipping and fuel industries with far reaching implications as ship owners and operators act to ensure regulatory compliance.

Installing a scrubber requires a significant level of investment but it also offers real benefits and the expected saving on fuel (using cheaper HSFO instead of the new higher priced LSFO — expected to be

between US\$100–300 per tonne more expensive) should quickly offset the investment cost.

Scrubbers are designed to remove the pollutants that contribute most to a wide range of serious health problems. This includes removing most of the sulphur oxides from the exhaust gases of ships' engines and boilers, but also up to 94% of the particulate matter, up to 60% of the black carbon, and a significant amount of the polycyclic aromatic hydrocarbons.

According to Independent research organization SINTEF Chief scientist Dr Elizabeth Lindstad, the energy required in the global production of LSFO produces far more GHG than in the production of HSFO. As a result, she concluded that a scrubber using HSFO offered the most environmentally beneficial and cost-effective option for compliance.

Scrubbers have been accepted as an approved method of compliance by the IMO, EU and US Environmental Protection Agency, following considerable scientific analysis and scrutiny. But some ports around the world have banned open loop scrubber technology, in effect undermining the rules that they are trying to enforce.

Pacific Green Technologies recommends its ENVI-Marine™ system, which can be supplied as open-loop, open-loop hybrid-ready or fully hybrid system capable of both open or closed mode operation, depending on the sea's alkalinity and the effluent emission regulations wherever the ship is located.

The ENVI-Marine™ system has been widely fitted into tankers, bulkers and container vessels, the company is now introducing in-line scrubbers for passenger ships too. Offering all the scrubber benefits — the cost differential between low sulphur fuel oil and high sulphur fuel oil, the environmental benefits, the security of supply when the new regulations come into effect, the ENVI-Marine™ is also more efficient, cheaper to install and costs less to run than the competition.

A fact reflected in recent industry buying decisions, such as Scorpio bulkers which ordered 37 systems for its bulkers while Scorpio tankers ordered 66 systems for its tankers. In both cases the ENVI-Marine™ system is being fitted as a 'hybrid ready' design, allowing them to be adapted to a closed loop configuration when needed.



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Cavotec automated mooring system for Port of Helsinki

PORT OF HELSINKI AGAIN SELECTS CAVOTEC AUTOMATED MOORING FOR FASTER, SAFER AND CLEANER OPERATIONS

Finland's Port of Helsinki has placed a repeat order for Cavotec's MoorMaster™ automated mooring system as part of wider efforts to optimize safety and efficiency and reduce environmental impact.

This is the second MoorMaster™ order at Port of Helsinki and follows similar orders from the Port of Turku and Port of Tallinn in recent months.

"An auto-mooring system decreases the time taken for vessel mooring and release. The time saved amounts to significant reductions in fuel consumption, improved local air quality and reduced noise pollution," says Sari Nevanlinna, Vice President Passenger Services, Port of Helsinki.

"The Port of Helsinki is committed to reducing the carbon footprint of harbour operations through its Carbon Neutral programme. Auto-mooring systems at the busiest berths play a vital part in the successful reduction of vessels' carbon emissions. As our passenger terminal is centrally located, nearby residential areas, reducing the impact of harbour operations is of the utmost importance to us," Nevanlinna adds.

"MoorMaster™ enables the improvements in mooring times and thereby reduced environmental impact and operational efficiency that our customer is looking for," says Patrick Mares, President



The existing MoorMaster system was installed at Helsinki back in 2016.

Cavotec Ports & Maritime.

"We're delighted that the Port of Helsinki has decided to order a second MoorMaster™ system. This demonstrates once again why MoorMaster™ is still the only proven and widely used automated mooring system available today," adds Mares.

Cavotec will supply a multi-unit MoorMaster™ automated mooring system for berth LJ8 at Port of Helsinki's Western Terminal. The 180m-long ROPAX ferry *Finlandia* will use the system two to three times a day.

The *Finlandia* is operated on a service to the Estonian capital Tallinn, where another MoorMaster™ system is currently being installed. A similar MoorMaster™ system was introduced at the Port of Helsinki in

2016, which has carried out more than 5,000 moorings to date.

MoorMaster™ eliminates the need for conventional mooring lines with automated vacuum pads that moor and release vessels in seconds.

More than 80 MoorMaster™ systems have performed some 500,000 moorings at ferry, bulk and container handling ports, as well as lock and ship-to-ship applications worldwide.

Twenty years after the first system entered service, MoorMaster™ is still the only widely used automated mooring technology on the market. With its key patents and optimized hydraulics, the system offers superior performance to that claimed by any other system on the market, while maintaining low energy consumption.

Langh Ship focuses on environmental friendliness

The Langh companies take environmental matters into account in their day-to-day operations, and efforts to improve the state of the world's seas are important to all Langh companies. The environmental perspective has been at the core of the Langh companies' operations for some time now, and the companies are a partner of the John Nurminen Foundation and a supporter of the Foundation's Clean Baltic Sea projects.

Langh Tech's closed loop scrubbers were installed in Langh Ship's five cargo vessels back in 2013 and 2014. In the closed cycle, the water used to clean exhaust gases can be cleaned in a water-processing unit on board the vessel, and the resulting waste is delivered ashore in

solid form. In addition to this waste, wastewater, such as latrine wastewater from Langh Ship's vessels *Linda* and *Aila*, which sail to Helsinki, is voluntarily collected and delivered to the waste reception point at the Vuosaari harbour.

The shipping company actively seeks new ways of taking the environment better into account, and one important action is that, from now on, *Linda* and *Aila* will voluntarily use the closed-loop scrubber during all piloted journeys, even if the open-loop system is permitted in the area. This will help minimize the emissions released to sensitive coastal waters.

"*Linda* and *Aila* sail on the Baltic Sea and the North Sea, stopping at major

northern European harbours. Using the closed-loop scrubber system during piloted journeys helps us do our part to positively influence the state of the seas surrounding major harbours," says Langh Ship's Managing Director, Laura Langh-Lagerlöf.

ABOUT LANGH SHIP

The Langh group of companies includes scrubber manufacturer Langh Tech, shipping company Langh Ship, Industrial and Ship Cleaning Services Hans Langh, and Langh Group, which owns special containers. The Langh companies' head office is located in Piikkiö and their operations are strongly focussed on maritime shipping.

Launch of 200,000dwt bulk carrier 'Cape Discovery'

On 25 October, at the business headquarters of Imabari Shipbuilding Co., Ltd. in Marugame in Japan, the 200,000dwt ton Capesize bulk carrier *Cape Discovery* was completed for "K" Line.

The ship is compliant with the Common Structural Rules for Bulk Carrier (CSR-BC) for bulk cargo ships, and the main vessel is equipped with an electronically controlled engine with enhanced anti-corrosion measures. In order to save energy, a WAD (Weather Adapted Duct) has been installed in front of the propeller and hybrid fin behind the propeller.

Furthermore, for complying with the regulation of SO_x Global Cap that will be enforced in all sea areas from January 2020, the vessel is equipped with a scrubber on the funnel to remove sulphur oxides from

VESSEL PARTICULARS	
LOA:	299.95m
Width:	50.00m
Depth:	24.70m
Draught:	18.32m
Deadweight:	208,603dwt
Gross tonne:	107,919 tonnes
Main engine:	MES MAN-B&W 6G70ME-C9.5
Speed:	14.6 knots
Class:	NK
Flag:	Liberia
Builder:	Imabari Shipbuilding Co., Ltd.

the gas discharged from the engine. The vessel is state-of-the-art, which includes world-class technology among Capesize bulkers. She will be engaged in iron ore and coal transport for JFE Steel Corporation under a long-term consecutive voyage charter contract.

With a large number of vessels from various types with various sizes — from very large to small — "K" Line offers its customers a unique range of transport

services. "K" Line will remain committed to flexibly and actively responding diversifying needs for shipments of ore and other iron-bearing raw materials.

"K" Line is a current integrated logistics company based in marine transport with over 500 vessels. It offers transport services for raw materials such as coal, iron ore, grain (wheat, soybeans, corn, etc.), woodchips and pulp. In addition to cargo bound for Japan, the company actively transports cargo bound for China, India and other developing countries, and engages in trilateral transport in the Atlantic region.



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Efficiency is the name of the game



The International Maritime Organization's (IMO) new sulphur regulation is just around the corner and for shipowners and operators this has brought to the surface, now more than ever, the importance of operating as efficiently as possible, writes *Davide Ippolito, Head of Marine Group Product Management, Hempel A/S.*

The IMO has mandated that from 1 January 2020, the sulphur in fuel oil used on board ships cannot exceed 0.50% m/m (mass by mass). This will significantly reduce the amount of sulphur oxide released into the atmosphere from ships and will have considerable health and environmental benefits for the world.

For many operators, however, this will increase their fuel bill — one of the largest operating expenses — anywhere from 30–40% when the new rule comes into force. Vessels will either have to burn more expensive fuel or invest in new engines with different fuel or exhaust gas cleaning systems to meet this requirement. It is in managing operating expenses that applying the right coating solution can play

an important role. In response to this challenge, Hempel, the worldwide coatings manufacturer, recently launched a new hull coating system that delivers fuel savings and return on investment within just three months¹ — Hempaguard MaX.

PEAK EFFICIENCY

Hempaguard MaX is a coating solution that is suitable for all vessels, in all trading areas and for all trading speeds. The large fuel savings are owed to the unrivalled level of hull smoothness and extraordinary antifouling performance. This innovative system reduces drag and results in significantly lower fuel requirements for a vessel and delivers a guaranteed maximum speed loss² of 1.2% over five years, providing up to 14% savings compared to a market average antifouling (according to ISO 19030).

What sets this system apart is that it also delivers maintenance savings — another significant expense that burns a hole in the owner's pockets — by saving the vessel owner up to two days in dry

dock. The reason behind this is that Hempaguard MaX is comprised of three separate but complementary coats that have a unique synergy between them: Hempaprime Immerse 900, Nexus II and Hempaguard X8.

THE SYSTEM ITSELF

Anticorrosive primer Hempaprime Immerse 900 is the first coating in the system and can be applied in just one coat, while Nexus II is a tie-coat technology with improved anticorrosive capabilities. Together, they provide the same protection delivered by two standard maintenance epoxy coats, reducing time in the dock for faster return to service and ultimately saving money for the shipowner and operators.

The power behind the unrivalled antifouling performance is the topcoat Hempaguard X8 that is built on the success of Hempel's leading hull coating Hempaguard X7. It incorporates Hempel's enhanced patented Actiguard® technology that combines the smoothness of a silicone coating with an improved hydrogel microlayer and active ingredient. The new Hempaguard MaX system is applied in just three coats (as opposed to the five coats conventionally used), meaning it can be applied much faster, and reduces time in dry dock saving on yard fees.

The dry cargo sector has certainly seen its ups and downs these past few years and it makes sound business sense to rely on solutions that not only offer operational savings and flexibility against a competitive backdrop, but also deliver fast return on investment. The IMO sulphur cap is just one month away and with it lies an uncertainty in rising costs. Adopting a coating system such as Hempaguard MaX can make a significant difference to a shipowner's operational success.

1. Based on a VLCC with activity level of 70% and burning low sulphur fuel costing 35% more than standard bunker fuel over a five-year life cycle. Hempaguard MaX system delivers an annual saving of around US\$1.8 million compared to a market average antifouling. This equates to a ROI (return on investment) of three months.

2. Speed loss: If a vessel's main engine is set at a certain power output, it will propel the ship through the water at a certain speed. Over time, fouling accumulation will increase drag and cause the speed of the ship to reduce even if the main engine power output remains constant. This reduction in speed is termed "speed loss".

Ebb and flow in the Handymax bulk carrier market



Richard Scott, Bulk Shipping Analysis

Turbulence has been occurring in the Handymax bulk carrier sector of the global freight market. During the past twelve months freight rates fell steeply to depressed levels before eventually regaining and exceeding the relatively high level reached just over a year ago. Market optimists are looking for further strengthening in the year ahead, but the global outlook for some of the key influences on both demand for and supply of these vessels is not altogether clear.

The market for Handymax bulk carriers — medium-size dry cargo vessels with a carrying capacity ranging from 40,000 deadweight tonnes up to 65,000dwt — embraces a wide variety of commodity trades. This feature ensures varied as well as extensive employment potential. In the past two years fleet expansion has been slower and seems likely to remain restrained. However, some of the principal trades in which Handymaxes are employed are exhibiting only limited growth.

Waves of what proved to be over-investment in the sector during the current decade seem to have finally dissipated. The popularity of Handymax vessels, including Supramax and Ultramax sizes, reflected their adaptability coupled with trade growth optimism. Rapid fleet expansion amid surging newbuilding deliveries eventually resulted in shipowners being less enthusiastic about placing further orders. During 2019 ordering has been especially muted.

VERSATILITY ATTRIBUTES

Bulk carriers in the Handymax size group are among the most versatile ship types for operating globally, providing flexibility within a very broad range of dry bulk commodity trades. Positive ideas about employment growth potential over the years ahead have underpinned investment interest. These perceptions remain valid and therefore the sector retains its attractions.

Various design features explain the inherent appeal of Handymaxes. A typical ship is a 'geared' vessel (cargo-handling gear installed on board), equipped with cranes and grabs for loading and discharging cargo. This feature is also incorporated in the distinctive sub-categories of larger ships within the group, the Supramax and Ultramax vessels.

An advantage of this configuration is that the installed cargo-handling gear allows efficient operation in trades where shore-based equipment is either unavailable, or is inadequate for the purpose required. The Handymax's equipment also facilitates handling cargo from or into barges moored alongside, at an offshore anchorage or river berth. Bigger bulk carriers in the Panamax and Capesize groups, by contrast, usually are 'gearless' and therefore are totally dependent on cargo-handling by port equipment.

Handymax dimensions are acceptable at a wide range of ports around the world, on

TABLE 1: HANDYMAX (40–64,999DWT) BULK CARRIER FLEET (MILLION DEADWEIGHT TONNES)

	2014	2015	2016	2017	2018	2019
Newbuilding deliveries	11.4	15.9	13.2	10.8	5.6	7.0
Scrapping (sales)	3.2	3.1	4.3	3.1	0.7	1.0
Losses	0.0	0.1	0.0	0.1	0.1	0.1
Plus/minus adjustments	0.0	0.0	0.1	0.0	0.1	0.0
Fleet at end of year	166.8	179.5	188.4	196.0	200.9	206.8
% change from previous year-end	+5.2	+7.6	+4.9	+4.0	+2.5	+2.9

source: Clarksons (historical data) & BSA 2019 forecasts

*forecast

most trade routes, while the sizeable carrying capacity offers economies of scale. Consequently, varied employment patterns often result. Involvement in the coal, and grain and soya, trades frequently occurs and there is sometimes involvement in the more limited parts of the iron ore trade. Numerous cargoes in the minor bulk commodity trades are available: steel products, ores and minerals such as nickel ore, other industrial cargoes, fertilizers and various agricultural commodities including oilseeds and meals, all featuring prominently.

Interest in newbuilding vessels for employment in these trades firmly shifted towards higher capacity 60–65,000dwt vessels in recent years, 'Ultramax' bulk carrier designs at the top end of the

Handymax size range. The 'Supramax', typically 52-57,000dwt, previously was the preferred unit and became ubiquitous, taking over from smaller Handymaxes below 50,000dwt.

RESTRAINED FLEET GROWTH

Enlargement of the world fleet of Handymax bulk carriers has moderated over the past two years. Deadweight capacity expansion slowed for the third consecutive year to 2.5% in 2018, as shown in table 1 (above), after averaging almost 6% annually in the 2014–2016 period. A similarly restrained rate of around 2.9% in 2019 as a whole seems likely, possibly continuing through next year.

Handymax fleet capacity reached 200.9 million deadweight tonnes at the end of

2018, according to figures compiled by Clarksons Research. Vessels in the size group numbered 3,628. Within the entire 845.6m dwt world fleet of all sizes of bulk carrier, this total comprised just under one-quarter. Capacity had more than doubled, increasing by 139% over a ten years' period.

Fleet deadweight capacity was further augmented by over 2.5% during the 2019 first nine months, boosting the total to 3,710 ships amounting to 206.2m dwt at end September. The newbuilding deliveries trend has strengthened, but scrapping has remained low.

After completing about 11–16m dwt of new Handymaxes annually in the 2013–2017 period (preceded by higher volumes), including 10.8m dwt in 2017, the



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total delivered by shipbuilding yards around the world fell to 5.6m dwt in 2018. Scrapping of older vessels partly offset these volumes. Last year scrapping diminished to below 1m dwt, having been within a range of 3–4m dwt annually in the previous five years.

A notable aspect of changing fleet characteristics within the Handymax segment, in recent years, has been the large difference between the average newbuilding vessel size delivered into the fleet, and the average size of those sold for demolition. Newbuildings averaged 61,500dwt last year, confirming popularity of Ultramaxs at the top end of the Handymax range. By contrast, ships sold for scrapping averaged 46,700dwt, representing an earlier era when the 40–50,000dwt size was seen as most employable.

Newbuilding Handymax deliveries in 2019 as a whole look set to exceed last year's deadweight volume. Growth of 25% or more could be seen, based upon the pace so far, coupled with expectations for the remaining months. The scrapping volume seems likely to be similar to, or above, last year's level. Although the end of 2019 is near, it is still difficult to estimate these figures precisely, because there is potential for unexpected changes in influences.

THE FUTURE FLEET

Continued restrained fleet growth through 2020 is quite likely, based on recent indications. The global orderbook schedule for new Handymax bulk carriers in the next twelve months or longer, set out in table 2 (below), suggests that deliveries may increase next year. But higher scrapping may ensure that the net addition to capacity remains similar to that seen in 2019. Both flows will be affected by evolving freight market patterns, and by changing market views and sentiment.

Newbuilding orderbooks at shipyards, as reported, provide only a rough guide to the amount of future fleet capacity likely to be added. Orderbook slippage and



postponements often occur, while more orders could be added. Higher scheduled deliveries next year, reflected in an expected rise in actual deliveries, result from the substantial volume of orders placed last year.

The entire Handymax orderbook for all future delivery years now totals under 16m dwt, equivalent to 8% of the existing world fleet in this size group, a relatively low percentage. Noticeably over four-fifths of the deadweight capacity is comprised of larger size ultramax vessels, the focus of recent investment interest.

Perceptions about the outlook for the freight market and investment returns, affecting incentives to invest in new ships, have seen changes. Twice in the past four years collapsing orders have been a feature. In 2016, and again this year, plummeting ordering patterns were seen in all bulk carrier size groups. Last year saw 135 orders placed for new Handymax bulk carriers, followed by only 47 in the first nine months of 2019, according to Clarksons Research.

Despite a recovery in freight rates this year following a depressed period in the first few months, collectively shipowners' views of potential for longer term market recovery have become more cautious. Uncertainty about the effects on the freight market of tightening regulation and, in particular, intensified focus on ships' emissions has reinforced this approach. Potential for overcapacity to continue in the Handymax and other bulk carrier segments is still apparent, implying an extended adjustment period before a more balanced market is fully restored.

Fleet growth will be affected also by changes in the pace of scrapping (recycling) activity. This influence is always difficult to predict both in the immediate future and further ahead. Potential for scrapping old tonnage is apparent, but the Handymax fleet's relatively young age is a limitation. Only 7% (about 15m dwt) is over 19 years old, an age group where recycling is most likely to occur, mostly in the 40–50,000dwt size sub-group. However, tightening regulations and compliance costs progressively could encourage more scrapping.

DIVERSE TRADING PATTERNS

Trading patterns around the world conducted by Handymax bulk carriers show that a high proportion of dry bulk commodity trades is accessible to this size of vessel, with only a few limitations. The typical dimensional and cargo-handling features offered by these vessels ensure their employability.

Nevertheless, major parts of global iron ore and coal movements do not normally employ Handymaxes. Bigger Panamax, Kamsarmax, Capesize and even larger bulk carriers can be accommodated on many routes. Preference for these higher-capacity units reflects greater economies of scale to be derived, usually providing cheaper transport.

Research published last year provided a guide to the significance of various trades for Handymax employment. It suggested that the iron ore and coal trades each contributed about one-tenth of employment for Handymax bulkers in the 40–65,000dwt size group. Grain and soya trade contributed about 20% of their total participation, while the remaining and dominant category of utilization of these ships, contributing around 60%, is the extensive minor bulk trades including a large variety of cargoes.

COMMODITY HIGHLIGHTS

In the coal segment many movements employ much bigger ships, but Handymax size cargoes still amount to large volumes, especially on specific trade routes.

TABLE 2: HANDYMAX (40–64,999 DWT) BULK CARRIER ORDERBOOK (MILLION DEADWEIGHT TONNES)

scheduled orderbook deliveries, not forecasts of actual deliveries				
	4q2019*	2020	2021/later	total
40–49,999dwt	0.1	0.4	0.7	1.2
50–59,999dwt Supramax	0.0	0.6	0.3	0.9
60–64,999dwt Ultramax	2.8	8.2	2.4	13.4
Total	2.9	9.2	3.4	15.5

source: Clarksons Research *fourth quarter of year

Seaborne coal trade is the second-largest dry bulk commodity trade after iron ore, amounting to over 1,250mt (million tonnes) last year, just under one-quarter of all global dry bulk cargo movements.

Coal trade has seen more than 5% annual growth in the past two years, recovering from previous weakness, despite notable negative influences affecting some parts. There are signs of further, albeit slow, growth in 2019. Movements consist of steam coal (used chiefly in power stations, and also in other industries), and coking coal (used in the steel industry). Steam coal is the largest category, comprising almost four-fifths.

Shipments from Indonesia, mainly steam coal, are an example of a trade utilizing Handymaxes extensively. Indonesia is the world's top exporter of this coal type, with a total estimated at over 420mt last year. But short-haul shipments to China are a feature, limiting demand for bulk carriers because of the restricted voyage length and vessel employment duration for each cargo load, therefore restricting overall vessel demand.

Global trade in grain and soya provides numerous cargoes for Handymaxes. A characteristic of this market segment is a continuously changing pattern of trade routes and quantities which is highly variable in both the short and longer term and usually quite unpredictable. During the past crop year world trade in wheat and coarse grains, and also in soyabean and meal, experienced slight reductions. The current 2019/20 year could see small advances in both parts.

According to International Grains Council calculations, world trade in wheat plus corn and other coarse grains was 5mt or 1% lower in crop year 2018/19 ending June, compared with the previous twelve months, at 365mt. In the soyabean and meal segment, world trade was 3mt (1% lower in marketing year 2018/19 ending September, at 210mt, based on US Department of Agriculture estimates. One especially prominent change was reduced

imports of grain and soya into China, partly offset by growth of imports into a wide range of other countries.

Constantly changing grain/soya volumes and geographical trade patterns necessitates flexibility of sea transport services. Large rises or falls from year to year in volumes of grain or soya available in exporting countries, and in quantities required in importing countries, often reflect harvest output fluctuations caused by unpredictable weather variations. Coupled with port and storage limitations in many countries, this feature provides employment opportunities for adaptable Handymax bulk carriers.

Wheat and coarse grains imports into many countries and areas, during the 2019/20 period ahead, are expected to be fairly similar to volumes seen in the past twelve months. Changes, upwards or downwards, may be mostly minor although Europe's large-scale grain imports seem set to decline.

In the soya category there is great uncertainty about China's imports. These fell by 12% to 83mt in the past twelve months, amid reduced consumption in livestock feed due to a severe outbreak of animal disease, and also reflecting the trade dispute with the USA.

Handymax bulk carriers are extensively employed carrying various cargoes within the 'minor dry bulk trade' category. A number of individual elements of this commodities group are not actually minor but large, amounting to massive annual volumes. The commodity range is broad and in 2018 the overall total appears to have reached just over 2 billion tonnes, growing by about 4% from the previous 12 months.

Steel products (coil, sheet, plate and other items), and forest products are the two biggest minor bulk trade components, although not all quantities are carried by bulk carriers. Also, big volumes are contributed by the bauxite/alumina (aluminium raw materials), fertilizer raw materials and semi-finished fertilizers, and cement trades, accompanied by large

quantities of ores and minerals such as nickel and manganese ore.

A prominent example is exports of steel products from China, a major trade frequently employing Handymaxes. These shipments totalled 68.8mt in 2018, although the volume was about 8% lower than seen in the preceding year.

REVIVING FREIGHT MARKET

Dramatic changes in the freight market affected the earnings of Handymax bulk carriers over the past 12 months. The underlying trends were moderating global fleet expansion, and a positive performance in commodity trades employing these ships. But short-term variations had large and sometimes disproportionate effects on the tonnage supply/demand balance prevailing, resulting in major market fluctuations and instability.

At the end of last year a steep fall occurred, taking freight rates to depressed levels in the early weeks of 2019. The Baltic Supramax Index calculated by the Baltic Exchange is a useful indicator of the sector's progress. This index fell from just over 1,200 in October 2018 to around 400 at the lowest point in February 2019, followed by a partial recovery during February/March. After several months within a narrow range around 700, there was then further firm improvement to a much higher level of 1350 in early September, subsequently moderating to around 1,200 in October.

What is the outlook for freight rates in this sector during the twelve months ahead? Among imponderables, prospects for global economic growth through next year are hazy and seem subdued, potentially restraining numerous commodity trades where Handymax bulk carriers participate. A reduction in international trade tensions could restore some depleted support. Another benefit could result from the effects of the International Maritime Organization's mandated global reduction in marine fuel sulphur emissions starting January 2020, potentially tightening the supply side of the freight market.

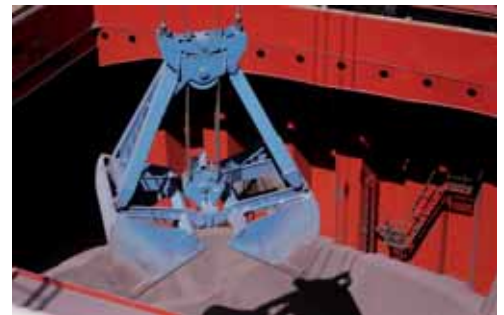
Although the Handymax size group is a distinct market segment, it is affected by what happens in the bulk carrier market as a whole. Overcapacity in the broader freight market persists even though a narrowing surplus has been evolving across the bulk carrier size groups. Assuming that global dry bulk trade and vessel demand in 2020 continues to grow, probably slowly, and fleet growth and tonnage supply is restrained, solid support for the market could unfold.

Baltic Supramax Index





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First-ever ABB electric propulsion to be installed on board a bulk carrier

ABB is entering a new market segment with an order to install Azipod® electric propulsion on board two dry bulk carriers from Germany's largest bulk carrier company, Oldendorff Carriers

Two self-unloading dry cargo transshipment units will be the first bulk carriers in the industry to feature ABB's Azipod® electric propulsion. Both vessels, due for delivery to Oldendorff Carriers in 2021 from the Chengxi Shipyard in China, will be equipped with a complete power and propulsion solution from ABB.

Each 21,500dwt vessel will feature two 1.9MW Azipod® units. ABB will also supply a wide range of electric, digital and connected solutions, including main diesel-electric power plant, generators, bow thruster motors, transformers, switchboards and the power management system for propulsion and cargo handling.

"The choice of Azipod® electric propulsion system has reduced the investment costs dramatically as the vessels are already equipped with high power generation required for self-unloading/loading cargo handling," says Jan Henneberg, Newbuilding Manager, Oldendorff Carriers. "These shuttle vessels must perform reliably over an extended period at maximum efficiency, and need to be especially manoeuvrable in shallow waters."

Controlling a fleet of around 700 ships, Oldendorff Carriers is Germany's largest operator of bulk carriers. Around 95% of Oldendorff's owned fleet is comprised of 'eco' newbuilds delivered since 2014, which are specifically designed for low fuel consumption and reduced carbon footprint.

"This is a significant breakthrough for Azipod® propulsion, reaching a ship type that some suggested would always remain closed to podded propulsion," says Juha Koskela, Managing Director, ABB Marine & Ports. "We are especially pleased to add Oldendorff Carriers as an Azipod® propulsion reference, considering its reputation for building and operating high quality, reliable and environmentally-friendly ships."

The newbuild vessels are developed by Shanghai-based CS Marine design company together with Oldendorff Carriers. The self-loading vessels will be able to unload cargo utilizing a built-in conveyor system and without the need for assistance from shoreside equipment or personnel. Oldendorff Carriers will deploy the vessels for transshipment operations — transfer of



cargo offshore from oceangoing vessels before delivery to the final destination.

Once in operation, the vessels will be among over 1,000 ships connected to ABB Ability™ Collaborative Operation Centers worldwide from where ABB experts monitor operational shipboard systems and offer 24/7 remote support. The vessels will leverage the ABB Ability™ Remote Diagnostic System, which deploys sensor-driven onboard monitoring software that fully integrates with analytics ashore.

Today, the global bulk carrier fleet comprises over 11,000 vessels, and, according to shipping association BIMCO, is projected to grow by 3.1% in 2019. The association estimates a total of over 400 newbuild bulk carriers scheduled to be delivered for launch this year. Global seaborne dry bulk trade is projected to reach 5.3 billion tonnes in 2019, according to shipping intelligence provider Clarksons Research.

The Azipod® propulsion system, where

the electric drive motor is in a submerged pod outside the ship hull, can rotate 360° to increase manoeuvrability and operating efficiency, as well as maximize cargo space on board. Over the course of close to three decades, ABB has supplied Azipod® units for about 25 vessel types, with the propulsion system accumulating more than 15 million running hours in total.

ABB is a pioneering technology specialist with a comprehensive offering for digital industries. With a history of innovation spanning more than 130 years, ABB is today prominent in digital industries with four customer-focused, globally renowned businesses: Electrification, Industrial Automation, Motion, and Robotics & Discrete Automation, supported by its common ABB Ability™ digital platform.

ABB's Power Grids business will be divested to Hitachi in 2020. ABB operates in more than 100 countries with about 147,000 employees.

Geared vessel plays major role in heavy-lift project in South Korea



HANDLING GIANT 86M PRESSURE VESSEL PROVES NO PRESSURE FOR AAL

Major project heavy lift carrier AAL has completed the successful handling and transport of an impressive cargo of South Korean-engineered petrochemical plant components, from Pyeongtaek to Map Ta Phut. The units are to be installed at one of Thailand's largest integrated producers of olefins and polyolefins — for industries like agriculture, automotive, building & infrastructure and medical — and comprised over 15,000cbm of individual

items, the largest of which was a pressure vessel measuring 86 metres in length and weighing close to 360mt.

The heavy lift vessel involved was one of AAL's S-Class fleet (19,000dwt and featuring a 700t max lift), the *AAL Dampier*. The cargo operation proved a truly 'international' exercise for AAL and testament to its award-winning service, and accredited internal systems and communications. The cargo was booked by its chartering desk in Korea, operated by its Australia Office, and engineered and

supervised by its team in Singapore.

AAL is the multipurpose sector's most awarded carrier and provides worldwide project heavy lift, breakbulk and dry bulk solutions — both tramp chartering and scheduled liner services — to the world's most dynamic industries, including petrochemical, oil and gas, energy, infrastructure and mining. Its fleet is one of the sector's largest and youngest and comprises specialist MPVs of multiple sizes, with a number of large 30,000+dwt 'mega-size' vessels that offer AAL's shippers





significant cargo intake volumes and economies of scale on each sailing. The gear on the *AAL Dampier* made the unloading process simple and easy, and did not require the use of any shore-based heavy-lift cranes.

ABOUT AAL

AAL is one of the world's foremost breakbulk and heavy lift project cargo operators, offering a unique 'total

multipurpose solution' of flexible and competitive Chartering, Liner and Semi-Liner services for its customers — connecting Asia, Oceania, Middle East, Europe, Africa and the Americas. It operates one of the multipurpose sector's youngest fleets of modern multipurpose heavy lift vessels (ranging from 19,000 to 33,000dwt), offering extreme heavy-lift capability (700mt maximum), with leading

intake capacity.

The company has held the title of 'Best Shipping Line - Project Cargo' at the AFLAS Awards for six years running, and also counts among its accolades the 2017 Lloyd's List APAC Awards 'Project Carrier' honours, and the 'Excellence in Bulk Logistics or Heavy Lift Handling' award at the Australian Shipping & Maritime Industry Awards 2018.

DCi



STP Yuzhny achieves year's target 77 days ahead of schedule

Ukrainian state stevedoring company Sea Commercial Port 'Yuzhny' has achieved its annual operational plan 77 days earlier than forecast. According to information from the operations control centre, as of 2000hrs on 15 October (when 100% of plan was achieved), the company has handled 11,680,000 tonnes of cargo. Sixty-seven per cent of the total cargo is made up of export iron ore, pig iron, grain cargoes and grain cargo processing products; the rest of the total cargo is made up of import thermal coal and coke coal, transit and cabotage. A total of 197 vessels have been handled since the beginning of the year; this represents a rise of 14% over last year. More than 40% of the vessels which are handled at the berths of the state stevedoring company, are Capesize, with deadweight tonnage of over 200,000 tonnes.

The main cargoes of the state stevedoring company are stable. The lion's share (75%) comprise export iron ore and import coke coal. Moreover, the company helps power engineers to get prepared for winter and successfully carries out the schedule of coal handling for power stations. SE STP 'Yuzhny' has handled three



vessels carrying import thermal coal since the beginning of 2019. Combined, this represents approximately 227,000 tonnes.

Last year, the decline in ore production encouraged the port to search for new cargoes. At the end of 2018, the company increased the volume of pig iron handled (1.2mt [million tonnes] per year). This year, nickel ore, bentonite clay and fertilizers have been added to metal and grain cargoes. All in all, SE STP 'Yuzhny' has increased cargo turnover by over a million tonnes due to these cargoes.

"Efficient activities of the industrial area and all the departments of the state stevedoring company, effective logistics and co-operation, cargo owners' trust and their choice to have us as a partner allowed us to

[achieve] the annual plan in October. But this is not a reason to slow down, the handling equipment operates 24/7. We deal with 20 clients simultaneously; it gives us the possibility to work till the end of the year with profits. We are improving our facilities, updating machinery and changing together with the country in order to increase our cargo throughput. I am really grateful to the port team for the efficient work," said Anatoliy Yablunivskiy, acting director of SE STP 'Yuzhny'.

Sea Trade Port 'Yuzhny' is located on the north-west coast of the Black Sea in the non-freezing Adzhalytsky estuary and it is the deepest port in Ukraine. The company provides a wide range of loading & discharging services, storage and related works; it handles bulk, general and breakbulk cargoes. Scheduled cargo delivery and cargo handling are effectively performed due to the convenient location of the Berehova railway station, developed infrastructure of the road and railways. The company operates five deep-water berths, two of which are dedicated to the handling of Capesize vessel up to permissible DWT. The annual cargo turnover of the company is 15.07mt.

Illinois International Port District announces start of the Butler Drive Rehabilitation Project (BDRP)

IIPD EMBARKS ON ITS FIRST CAPITAL PROJECT IN DECADES

On 28 October, at the Senator Dan Dougherty Harbor (Lake Calumet), the Illinois International Port District (IIPD) embarked on its first major capital project, which will play a pivotal role in the growth and in the life of the City of Chicago and the State of Illinois, as well as the region. As the only Great Lakes and Inland Rivers Port, the vitality of the IIPD is of global importance. This improvement project begins to bring the IIPD back to the forefront of logistical planning in North America.

"This multi-year, multi-million-dollar project will begin to usher in a new and

exciting era at the Illinois International Port District," said Clayton Harris III, Executive Director for the IIPD.

Current tenants and clients at the IIPD will see immediate benefits, from a totally revamped roadway to ease of service and more efficient operations. Future tenants and clients will be attracted to the logistics centre of the 'Greatest Multimodal Port in North America', as the arteries to the heart of transportation are cleared.

"This capital improvement will help us facilitate sustained growth at our Lake Calumet facility," said Stephen Mosher, Vice President of the North America Stevedoring Company. "Sustained

growth allows us to continue to create more opportunities in the region."

ABOUT THE ILLINOIS INTERNATIONAL PORT DISTRICT

Founded in the late 1950s, the IIPD was established as an independent municipal corporation to oversee harbour and port development across 1,600 acres of marshland at Lake Calumet. Today, the IIPD operates on two waterway systems and moves more general cargo than any other port on the Great Lakes, maintaining Chicago's place among the top 36 ports in the nation. The IIPD is also the Grantee for Foreign-Trade Zone #22.

STP Yuzhny exceeds cargo turnover target by 34%

Ukrainian state stevedoring company Sea Commercial Port 'Yuzhny' handled 1,343,000 tonnes of cargo in October 2019, 34% more than planned and 19.8% (221,600 tonnes) more than last year. Cargo turnover growth is attributable to an increase in vessels carrying iron ore, import thermal coal and grain cargo processing. A total of 813,000 tonnes is represented by export, 349,000 tonnes is transit and 182,000 tonnes is import. In total, 18,849

railcars and 18 vessels were handled during that month.

Fifty seven per cent of the total cargo is made up of iron ore. Moreover, 120,000 tonnes of import coke coal was handled, 46,000 tonnes of thermal coal and 41,500 tonnes of grain cargo were processed.

It will be recalled that state stevedoring company Sea Commercial Port 'Yuzhny' has achieved its annual operational plan 77 days earlier than forecast (please see 'STP

Yuzhny achieves year's target 77 days ahead of schedule' on 25).

State stevedoring company Sea Commercial Port 'Yuzhny' has handled 12.4mt (million tonnes) of cargo, including 7.96mt — 64% — for export (iron ore, pig iron, grain cargoes and products of grain cargo processing) since the beginning of the year. Import coke coal made up 1,316,000 tonnes, that is 68.2% of the total import cargo.

Jan De Nul helps to boost Mauritania's iron ore exports

On 14 October, the Jan De Nul Group announced that it has started work on the deepening and widening dredging in the inner port channel and turning basin of the large ore export port of Nouadhibou, Mauritania. With the deepening and widening of the 25km-long entrance channel to the mineral terminal of Port of Nouadhibou, the National Industrial and Mineral Authority of Mauritania (Société Nationale Industrielle et Minière or SNIM) opens the port for vessels with a capacity of up to 250,000 tonnes.

One of Jan De Nul's largest cutter suction dredgers, *Zheng He*, arrived in the first week of October on site. She will soon be assisted by another Jan De Nul dredger, the trailing suction hopper dredger *Leiv Eiriksson*, which will arrive in the second half of October. Both vessels will evacuate about 21.6 million m³ of sediments and transport them to a dedicated offshore location. The turning circle of the port will be deepened to -20.3m.

OPTIMIZATION OF PRODUCTION PLANNING

In order to be able to dredge and dispose of these significant quantities within the set period of 12 months, cutter suction dredger *Zheng He* and trailing suction hopper dredger *Leiv Eiriksson* will work simultaneously: the *Zheng He* will pre-cut the sandstone after which the *Leiv Eiriksson* will dredge the sediments and dispose of them offshore.

Jan De Nul Group was previously



awarded by the DPC Innovation Awards for this efficient working method in 2018. In Taiwan, a cutter suction dredger pre-cut hard mudstone in the Port of Linkou which was subsequently dredged by a trailing suction hopper dredger for the extension works in the Port of Taipei. This pre-cutting by a cutter dredger and subsequent dredging with a hopper dredger, on this scale, is unprecedented.

FACTS ON THE PROJECT

The Port of Nouadhibou is located on the West Coast of Mauritania and is an important iron ore export facility. Mauritania is the second-largest iron ore export nation in Africa. The project is supported by the European Investment

Bank (EIB) and the African Development Bank (AfDB).

ABOUT JDN

Shaping water and land: from complex offshore services for both fossil and renewable energy sectors, over large dredging and reclamation project at the edge of water and land to all possible civil and environmental works onshore.

Thanks to the continuous investment in people and own equipment, in combination with the intense co-operation between the different departments, Jan De Nul Group studies and executes complex multidisciplinary projects from A to Z. In this way, it offers a total package, time after time, and in a sustainable way.

Reducing the OPEX of a bulk terminal



how off-the-shelf software
can revolutionize cost control

TBA Group is a global software & consultancy business offering integrated solutions to simplify the operations for the entire lifecycle of ports, terminals and warehouses.

TBA Group's CommTrac TOS software is suitable for bulk, breakbulk and general cargo terminals.

There are many reasons for the success of leading bulk terminals. Here, TBA Group examines five of these reasons, and shows where change, through process improvement, can positively impact the

operating expenditure (OPEX) of a terminal. By pinpointing areas where revenue loss is common, and applying procedural changes, terminals can resolve issues around productivity & output and implement measurable performance metrics to ensure ongoing optimization of terminal operations.

TBA Group also looks at the Terminal Operating System's (TOS), also known as Terminal Management System (TMS), and its role in optimizing operations to achieve the above. It considers the options

available, from custom TOS/TMS to off-the-shelf solutions, and the benefits/pitfalls of each.

COST-REDUCING MEASURES

Terminals, facing growing pressure to reduce OPEX amidst a volatile, and increasingly competitive landscape, are beginning to look inward to improve efficiency of operations, reduce costs and maximize revenues. The primary causes of revenue leakage can be the difference between success or failure.

The following, often overlooked, areas provide terminals with a high impact roadmap to drive optimization resulting in reduced OPEX.

1. VESSEL DELAYS

Delays can pose a significant OPEX risk for terminals, yet it is only recently that terminal operators have begun to understand that the loading/unloading of ships can be optimized, and that optimization can lead to significant cost reductions. By understanding the major causes of controllable delays, where and why they occur, and how delay time can be minimized, terminal operators can reduce time losses, use the delay time to prepare for next steps or to perform other tasks, which ultimately speed up the overall process.

Implementing a TOS, such as CommTrac, provides sophisticated data capture of the entire operation and, coupled with detailed analytical reporting, mitigates the cost implications of delays through a solution-driven process.

2. EQUIPMENT EFFECTIVENESS

Inefficient equipment is a drain on OPEX, negatively impacting demurrage costs, berth occupancy/turnover and labour costs. By measuring efficiency against a performance-based KPI, operators can optimize overall equipment effectiveness (OEE) with consideration to availability, speed loss and output quality, a process



which can be applied very successfully to a bulk terminal. OEE has several advantages over other methods and, because one figure connects all the parameters measured, it is easy for operators to understand and influence the outcomes.

The standard OEE calculation used in the manufacturing sector uses the quality parameter to temper the desire to increase productivity beyond the point where the end product is of a saleable quality. In the bulk sector, where the process is moving cargo from A to B the quality parameter is difficult to use effectively.

Possible quality parameters are spillage and/or vessel damage on the basis that if

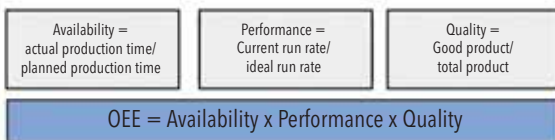
the terminal over extends its capability these two issues are more likely to occur. As it is very difficult to measure these factors, TBA Group therefore proposes that the quality parameter is disregarded and a modified calculation is adopted.

3. DEMURRAGE

When a terminal operator does not maintain status as 'keeper of facts' and relies solely on the independent Cargo Superintendent, there is a risk that, despite the skills of the Superintendent, delays might take place simultaneously or overlap. This is where inaccuracies can occur between recorded and actual resulting in operators paying more than required.

Improving the commercial outcomes of demurrage/dispatch agreements, through a fully integrated TOS such as CommTrac, creates time-stamped data that is difficult to dispute. This results in accurate payments which, if left unchallenged, can amount to a substantial lifetime penalty.

Standard OEE – Manufacturing sector



Recommended OEE – Bulk sector



Quick wins for instant OEE improvements

- ❖ stop the feed not the conveyor system for minor stops;
- ❖ 'hot swap' at shift changes;
- ❖ find the TPH bottleneck and remove it;
- ❖ equipment checks during weather delays;
- ❖ cream dig the next hatch whilst the dozers are cleaning up; and
- ❖ renegotiate rates on known bad ships/cargoes.

Consider the example: During a night shift a loading conveyor trips and needs to be reset. The stoppage is recorded, and the agreement says this delay has an affect on demurrage. In the meantime, the vessel decides to perform some maintenance on a faulty hatch cover. The conveyor is then fixed, and the terminal is ready to load; however, the delay is extended by 30 minutes while the hatch maintenance is completed. The Superintendent is likely to record the whole of the stoppage time to the conveyor fault, whereas CommTrac records the signals from the controls system which validate that the conveyors were clear of faults and ready to go. Additionally, the Berth Superintendent saw the vessel maintenance taking place and recorded this as a vessel delay on his mobile application, further illustrating

the true picture. Over the course of a year these types of small discrepancies add up to significant amounts of delay time, which are of no fault to the terminal but cost them on the bottom line.

4. TRUCK TURNAROUND TIMES

For many terminals the processing of trucks arriving to collect or deliver customer cargo is a vital part of their operations. Slow processing results in a dissatisfied haulier who will then complain to the cargo owner who will in turn complain to the terminal. Slow turnaround times can have a severe affect on the reputation of the terminal; truck drivers share stories and, ultimately, this bad feedback can lead to customers moving their cargo through terminals with faster processes.

Automating gate, traffic management and weighbridge processes can optimize traffic flows, keep congestion to a minimum and the technology required to implement this type of system is well proven. Integration of the traffic management systems to the TOS is essential and can further enhance the process.

TBA Group has developed a mobile application which makes it possible to send work instruction to the loader driver, from the point where a truck leaves the incoming weighbridge, allowing him to be in the right location and ready to load. As a by-product the traffic management system provides the TOS with real time data for analysis and KPIs. This allows the terminal to focus on turnaround times, spot exceptions and generally improve the customer/haulier experience.

5. ADMINISTRATION COSTS

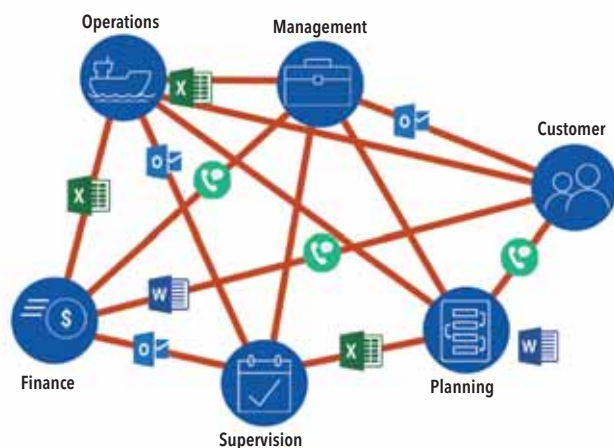
In TBA Group's experience, many team



members have evolved away from their original job description to becoming not much more than a spreadsheet

administrator. By removing this burden, the person is able to refocus on their actual role and deliver better value for the

A Typical Terminal Process Map



CommTrac offers a centralized hub vs the typical terminal process map, creating a unified system to manage all terminal activities.

Terminal Managed with CommTrac



business. Without a TOS, almost all inventory management, operational management and transposing operational data into the finance system for billing and P&L involves humans handling a variety of spreadsheets.

For this reason, a TOS offers an obvious return on investment through the reduction of administrative tasks. The fact that using a TOS means that one data entry updates all users radically reduces the administrative work load is a given. How best to extract the business case from this reduction in tasks is more complex and occasionally streamlining is not enough and only a reduction in headcount will deliver the business case they require

From a purely administration perspective the savings won't just be in operational administration. Savings can be made in maintenance, commercial and especially in finance departments where often activity reports require intensive manipulation to create invoices.

A well-thought-out change management plan is required to execute this rationalization with success — but the difference to the bottom line is often the difference between success and failure of the project.

SELECTING THE RIGHT TOS: IN-HOUSE SOFTWARE VS OFF THE SHELF SOLUTIONS FUNCTIONALITY

A company usually develops in-house when its requirement is 'seen' internally as complex or unusual — the 'we do things differently' comment, or where the IT department is perceived as a fixed or sunk cost to the business and therefore a 'cheaper' option.

When considering terminal operating systems the 'we do things differently' position is difficult to support simply because shipping is a global business handling the same modes of transport and cargoes using the same methods and

commercial agreements around the world. Therefore, although there are small localizations such as tax, language and customs, specialist TOS systems are well proven to manage the workflows required to receive, store and deliver cargo.

Off the shelf will therefore provide most the core functionality in a stable and bug free condition whereas the in-house development will consist of a very large new body of work with all the inherent testing and de-bugging requirements.

COST

If an organization has an in-house IT team already on the payroll, it could be a good way to utilize this resource to build a system for what appears to be very little cost. Capex is minimal (hardware, database etc.), and the IT department will likely embrace the opportunity to cement its position in the organization. However, there is no guarantee that the in-house team has the necessary skills and experience to build a large system and may therefore need to utilize external consultants and developers to support the project, which incurs costs which may be difficult to control.

Off-the-shelf systems are perceived to be more expensive because there are licences to purchase, but these licences are almost guarantees against risk. Off-the-shelf deliveries can also be managed via the commercial contract so that if the vendor fails to deliver in line with the contract the client has protection.

The concept of 'Software as a Service' is becoming more widely accepted and, using this model, the Capex costs are minimized with the client paying a monthly fee for usage and support and largely removing the up-front cost argument.



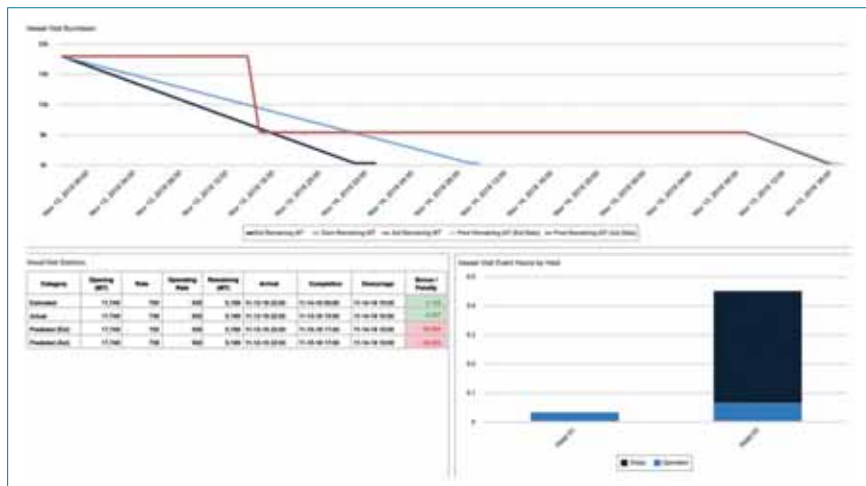
SERVICE AND FUTURE DEVELOPMENT

The availability of an in-house team to support users and maintain the software is very reassuring for an organization. The team are readily available and can commit time to developing the software to improve functionality over time. The off-the-shelf software support team are remote and although on the end of a phone/laptop do not have the same relationship with the users as the in-house team. However, contract obligations regarding SLAs can ensure better response and resolution times.

One area where the off-the-shelf product significantly outscored the in-house option is the future development of the product. The off-the-shelf vendor will continually develop and improve the product based on other clients' requirements and their product roadmap. These improvements and enhancements are released to existing customers, often at no cost. The vendor will also make strategic new releases to move their product forward in line with technological developments and market trends. The in-house team will also make enhancements to the system but the client bears the cost for this and it is very difficult for the in-house team to make strategic technological advances, which ultimately leaves the client with an obsolete platform and the need to start again.

CONCLUSION

In the container handling sector the utilization of an off-the-shelf TOS system is the *de facto* option. Why should this be any different in the bulk and general cargo sector? Highly functional and proven solutions are available and the SAAS model alleviates the need for large capital expenditure. If the terminal business has a large in-house IT capability, then it may be a good use of their time to develop a system but the outcomes are less likely to meet the needs of the business within a reasonable timescale.



Essar Ports

major player in the ambitious Indian port development programme



Kunal Bose

India has a big challenge ahead of it, to raise its port capacity at a rapid pace and also, at the same time, to lift port operational efficiency to global benchmarks to support the country's foreign trade which must grow at close to double-digit rate.

Vibrant foreign trade is essential for an economy of the size of \$3 trillion which is sought to be expanded to \$5 trillion by 2025 to find a place among the world's upper-middle-income countries. During 2018–19, India's merchandise exports were up 9.06% to \$331.02bn and imports advanced 8.99% to \$507.44bn. Not only for foreign trade alone, the government wants ports to be used more and more for domestic movement of cargoes. It is in this context prime minister Narendra Modi says: "We are laying emphasis on futuristic infrastructure. Port, shipping and overall maritime infrastructure find prominence in our infra development plan." This is good

news for Essar Ports and other industry constituents.

In India's ambitious port capacity development programme requiring major



Rajiv
Agarwal.

capital investment and management inputs, private sector groups such as Essar Ports will feature prominently. Essar Ports has in recent periods raised annual operational port terminal capacity to 110mt (million tonnes) from 82mt. According to the company's managing director and CEO Rajiv Agarwal, developing this large capacity has required an investment of over \$1.5bn. He says that all the four terminals of Essar Ports are highly scalable and the available infrastructure could support doubling of capacity. The company is part of Essar Group that has a presence in industries from shipping to steel to energy. Essar Ports' focus is in handling dry bulk cargoes.

Sector specialists say it has been wise on the part of Essar Ports to provide its four terminals with infrastructure that will facilitate large capacity addition at the appropriate time. In this context, it is good to remember that around 95% of the

country's trade by volume is done through the maritime route. Global trade tensions and weak demand at home have, of late, shrunk exports and imports. But economic headwinds will, in the course of time, blow away. The government believes that by 2025, the annual cargo traffic of India will be around 2,500mt, while the present cargo handling capacity of the country's 12 major ports and about 200 non-major ports is approximately 1,500mt. The good thing is the country has the roadmap for increasing port capacity to 3,300mt in the next six years. The task is no doubt challenging, but not impossible to achieve.

Capacity growth is attempted in three ways: expansion of existing ports, building of new ports and efficiency improvement through induction of best technologies and machinery and equipment and introduction of best operational practices. Essar Ports, which is among the country's largest private sector port operators with about 5% share of India's port capacity, has earned high marks for continuous improvement in efficiency to the benefit of its anchor customers and also leading to increasing volumes of cargo generation from third parties.

In an interview with Exim India, Agarwal said the company's "significant" investments in developing world class mechanized terminals resulted in "some of the best vessel turnaround times (at our terminals) in the Indian port sector." As a result, the company's own business and that of its clients has gained in competitiveness. He said: "Our biggest milestones have been the commissioning of targeted cargo handling capacity at our four terminals." Agarwal claims that these developments are enabling the company to score the industry best EBITDA (earnings before interest, tax, depreciation and amortisation) margins.

Essar Ports has four deep draught terminals equipped with state-of-the-art cargo handling equipment to accept vessels of 100,000dwt and more. Two of the terminals are on the country's west coast in Gujarat and two on the east coast at Visakhapatnam in Andhra Pradesh and



Paradip in Orissa. Growing port operations within the country aside, the company has footprints in foreign shores too. Under a concession granted by the Mozambique government, Essar Ports is developing a 20mt coal terminal at Beira Port. The company also owns and operates a liquid terminal in the UK. Essar Ports is driven by two principal objectives of equipping all its terminals with the most modern cargo handling equipment so that its clients have the benefit of the industry best turnaround time for vessels and keeping the terminals clean and safe. Deep draughts, mechanized cargo handling systems and caring for the surrounding areas and people living there have helped the four terminals to rightfully claim the green terminal status.

Agarwal wants top priority to be given to the greening of ports. Essar Ports terminals are a shining example of balancing its environmental responsibilities with business goals. This is a philosophy worthy of emulation by owners of other ports and terminals. Greening of terminals calls for capital investment and imagination which are plentifully evident at the company's 24mt terminal at Vizag, part of the Visakhapatnam port complex. Located on the outer harbour of the port, the Essar Port asset there happens to be the country's largest iron ore handling terminal. Of the company's four terminals, the one at

Visakhapatnam armed with an 8,000 tonne per hour loader will load cargoes at the fastest rate.

An intelligent guess is, for the industry as a whole, the Visakhapatnam terminal will stand out as a showpiece for what amounts to green operation at every stage of cargo handling. This has been achieved by way of covering the entire conveyor system. Installation of cold-fog system and 100% mechanisation of cargo handling have resulted in minimal carbon footprint and also zero spillage at the terminal earning appreciation of the port authorities.

At the end of the day, the proof of the pudding is in the eating. In the first half of 2019–20, the four terminals of Essar Ports achieved a 20.7% growth in cargo handling with a throughput of 27.29mt. The growth has been principally driven by a 183.21% rise in third-party cargo on a year-on-year basis. Cargoes from captive customers were up 6%. While captive cargoes advanced by 6% from 19.10mt to 20.24mt, third-party cargoes took a leap of 183.21% from 2.49mt to 7.05mt. Agarwal says: "Major accretions in third party business were the key driver for our growth in this year's first half. This besides, our continued focus on driving operational efficiencies and lowering of operating costs aided strong growth. Significantly, Essar Ports has uninterruptedly bettered the sector's average growth rate."

Performances of the four terminals in the first half of the year: the 50mt-capacity Hazira recorded a 3.24% cargo growth at 14.17mt. The 24mt Visakhapatnam terminal recorded a growth of 52.2% to 5.91mt. As for 20mt Salaya terminal with the deepest draught facility in the Saurashtra region of Gujarat, the growth was 184.96% at 3.22mt. The 16mt Paradip terminal's handling of 4mt cargo showed no growth. The company is hopeful of handling 60mt of cargoes during 2019–20.



TBA Group leads the way in South Africa's bulk operations

UK company TBA Doncaster Ltd has announced that South African Bulk Terminals (PTY) Ltd (SABT) has selected TBA Group to deliver CommTrac, Terminal Management Software, to its grain operations located in South Africa's busiest port, the Port of Durban.

SABT owns and operates two world class bulk terminals (DBS and RBT) in the Port of Durban. The RBT terminal at Maydon Wharf 5 (MW5) has a combined silo/flat bin storage capacity of 150,000 tonnes and the DBS terminal located at Island View 3 (IV3) has a silo storage capacity of 70,000 tonnes.

As South Africa's largest bulk grain handler, SABT plays an integral role within the South African economy allowing both import and export cargoes to flow through the Port of Durban efficiently and effectively.

SABT, which is also about to embark on a site wide automation upgrade, selected CommTrac based on its industry-leading functionality as well as

its ability to fully integrate into the terminals automation layer.

TBA's engineering experience alongside CommTrac's functionality provides SABT the ability to eliminate the potential risk of cross contamination by handling all the critical routing decisions within the terminal as well as recording all plant stoppages and events automatically.

"We are really looking forward to take our company to the next level with the CommTrac Terminal Management Software" said Mr Jackie Goodwin, Managing Director of SABT.

Glynn Thomas, Sales Consultant at TBA Group, stated, "We are delighted and excited to be working with SABT on this project. The enterprise software solution being delivered will allow for the standardization of operational procedures across both locations as well as simplifying their master data from a product, customer and finance perspective. The enterprise solution also

enables senior management to quickly report on activities at either a terminal or company level, allowing key decisions to be made in an efficient and timely manner"

South African Bulk Terminals (SABT) is a major business unit within Bidvest Freight, the freight management arm of the listed Bidvest Group.

This latest contract with South African Bulk Terminal (Pty) Ltd further cements TBA Group's footprint in Africa and increases CommTrac's installation base to over 35 terminals across the globe.

ABOUT TBA GROUP:

TBA Group is a leading international provider of software and services for ports, terminals and warehouses with over 150 live installations worldwide. The company's product and service portfolio centres on marine, intermodal, container and bulk terminals as well as providing software for warehouses.

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Recycling plant in the US working with third SENNEBOGEN

818 R CRAWLER MACHINE IN A DUSTY WORKING AREA

Maximizing efficiency was a top priority for Sun Recycling partners Brian Shipp and Andrew Springer when they recently purchased a new SENNEBOGEN 818 material handler from Midlantic Equipment. It was the third 818 they had purchased over a 14-month period. The challenge at Sun Services, in the Beltway region of Baltimore, MD and Washington, DC: running inside a building that moves up to 800 tonnes of construction and demolition debris every day is going to be tough on a machine.

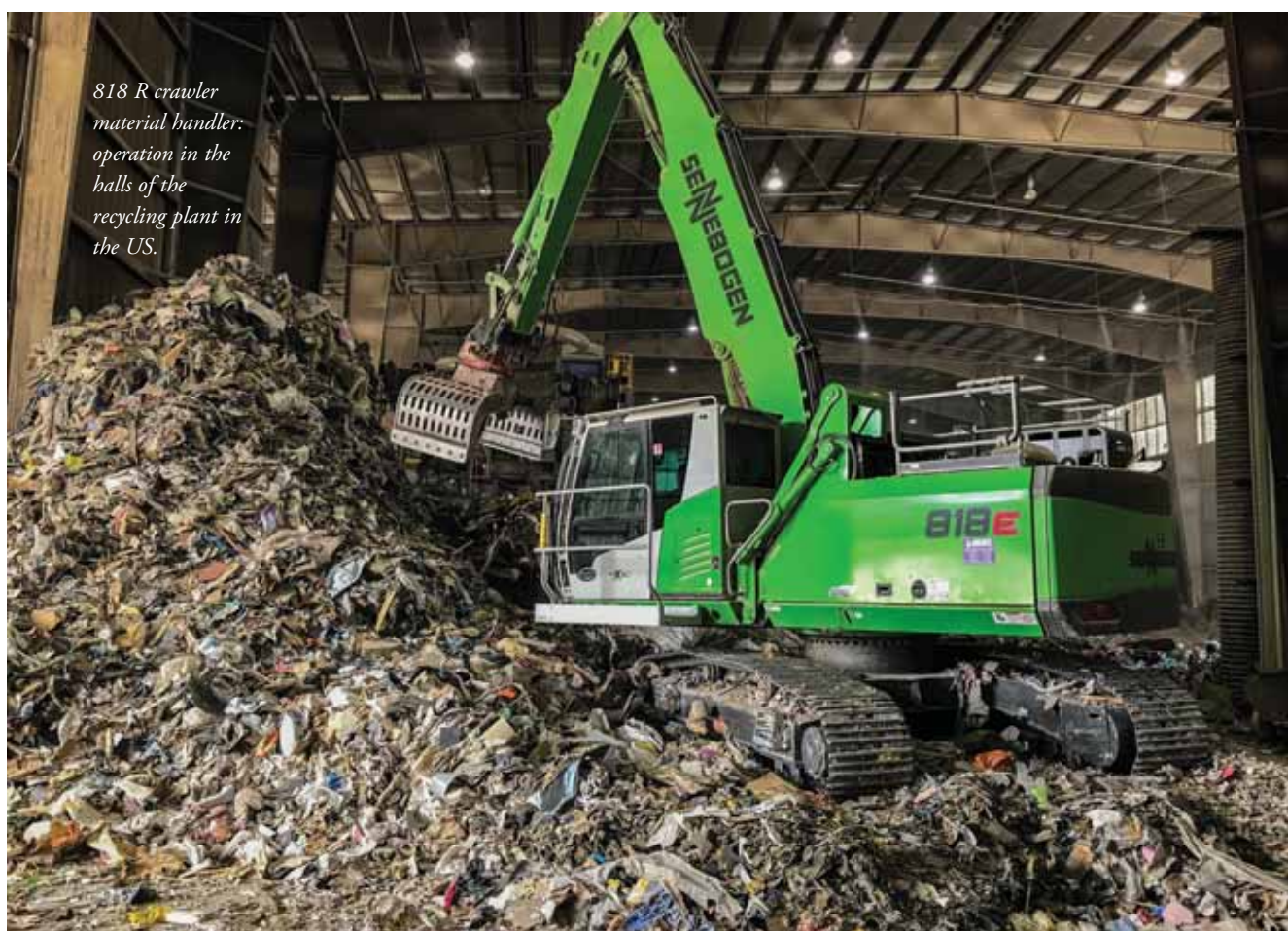
Their facility, first opened in 2013, started with a conventional fleet of wheel loaders and excavators. Looking for alternatives to load their new shredder, their wish list led them to consider replacing the excavator with material handlers. "We wanted an elevating cab," Shipp recalls. "And we needed rotation in the grab in order to pick out material that should not go into the shredder." But a material handler that could live in the recyclers' extreme environment remained a top priority.

SERIOUS ABOUT RECYCLING

Shipp and his father Gary first got in to the trash business with Springer in 2004. As their knowledge of trash hauling expanded,



818 R crawler material handler: operation in the halls of the recycling plant in the US.



material handler

their interest in new processes for recycling grew, as well. Following a five-year process of licensing and planning, they built the new Sun Recycling facility with the goal of sending no material to a landfill.

Today, their facility receives 125 to 200 truckloads of waste material every day, six days a week. They deploy dumpsters and roll-off trucks throughout the DC region. Loads of construction and demolition debris, asphalt, dirt, metals, drywall, wood, carpeting, furniture and other waste materials are all dropped on the facility's tipping floor. Then, one of the 818s goes to work.

KEEPING PACE WITH WASTE

Employing about 50 workers and drivers, the whole operation takes place under roof, in a fully enclosed building. Metals and concrete are sold into recycling markets. The residual stream goes to a nearby energy-from-waste producer. Cycle times are critical. "We cannot be down," says Shipp. "We only have 250 yards of metal storage in three bunkers; and another two bunkers for concrete. However, we do not have the capacity to store our residual material stream. We have to truck material out immediately. We watch those numbers pretty closely day-to-day, to make sure we are moving out at least as much as we are bringing in."

UP TO THE TASK

Finding the right machine to feed the shredder non-stop in a harsh environment turned out to be a simple search. Shipp and Springer enjoy a solid relationship with Midlantic Equipment, their SENNEBOGEN dealer. "We needed an additional machine, and our territory representative at Midlantic, Shane Pinzka, was able to demonstrate an 818 quickly," says Shipp.

THE LOAD-OUT SOLUTION

A continuous stream of walking floor trailers is ready to transport the plant's residual material to an energy plant. 'Residual' covers about 40% of the material processed here. The need to move product efficiently into the trailers led to Sun Services' purchase of the second 818 M.

"We made some changes to the building to improve our load out," Shipp explains. "We had been using our wheel loaders, but we realized that another 818 would be the best fit for that end of the operation." With the 818's serial elevating cab, operators are able to see into the trailer as they place the materials, so they can fill holes and finish the load quickly. According to Springer, the operators are also pleased with the new machines because the cab offers enough space and is a comfortable place to spend a working day at.

THREE TO STAY READY

The latest addition to Shipp and Springer's SENNEBOGEN fleet is identical to the first two machines. Again, the driving factor behind the purchase was efficiency. Day-to-day, the 818s are keeping up with the demands of the pace and the working environment. According to Shipp, "Their downtime for general maintenance and blowing out the machine because of over-heating has come to a minimum. We used to have to do that all the time. These 818s have been a great addition to our fleet." All SENNEBOGEN machines are equipped with powerful reversing fans to help them run cool in harsh conditions like this. For an extra boost, the Sun Services units were fitted with a custom pre-cleaner.



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Two SDLG wheel loaders smooth operations for Australian sawmill



Mary Valley Timbers is using two reliable SDLG wheel loaders — the LG938L and LG946L — to process high quality timber for wholesale and retail in Australia.

On one of the few remaining working sawmills in the Gympie Region of South East Queensland, Australia, two SDLG wheel loaders — the LG938L and LG946L — are busy transporting hardwood for Mary Valley Timbers, an Australian timber company, as it works to keep up increased demand for forestry products.

“The LG938L and LG946L are value for money with simple mechanics,” said Jason File, partner of Mary Valley Timbers. “With our new mill commissioned, there is a higher demand for our production and these two SDLG wheel loaders have been a great asset to date as they are very reliable.”

With the Australian government expecting growing demand for forestry products and committing \$12.5 million for the research and development of the country’s forestry industry, companies like Mary Valley Timbers are relying on robust machinery, like SDLG’s LG938L and LG946L, to ensure smooth operations at their busy sawmill.

On site, Mary Valley Timbers is using the SDLG LG938L and LG946L wheel loaders with log grapples and forks to process and

transport timber at its hardwood sawmill.

The 11 tonne-rated LG938L wheel loader is designed for optimum break-out force to improve productivity and efficiency. The machine’s long wheelbase and high tipping load keep it stable — even on rough terrain. The LG938L also features a Deutz turbocharged engine, which is perfectly matched to the hydraulic pump for further enhanced performance.

The 13 tonne-rated LG946L is one of Australia’s favourite SDLG loaders for its versatility and performance. Ideal for loading and unloading loose materials, the LG946L is widely used on timber plant applications. The LG946L’s heavy-duty planetary power-shift transmission is

smooth and reliable.

Mary Valley Timbers operates two green mills and stocks all hardwood, pine and hardware for wholesale and retail. Mary Valley Timbers purchased both SDLG wheel loaders from CJD Equipment, SDLG’s distributor in Australia.

“CJD has been nothing short of excellent. Being a family owned business ourselves, it was delightful to partner with another family owned company with common values and history,” said File. “We are sure to support each other into the future. We have received tremendous service from CJD equipment’s field service technician and part representative. They are always there to help us and that is excellent service.”



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Kiln feeding by bucket elevator (all photos: AUMUND).



Silo feeding by bucket elevator.

Louise Dodds-Ely

AUMUND India: trusted partner to leading cement manufacturers

ACC Limited is one of India's leading manufacturers of cement and ready-mix concrete, with 17 cement production plants, 75 ready-mix concrete facilities, over 6,700 employees and a countrywide network of dealers and sales offices. For the Jamul Plant Expansion Project (Line 2), AUMUND India supplied via KHD a wide range of AUMUND Bucket Elevators and Pan Conveyors in 2016, to increase the capacity of clinker production to almost 3mtpa (million tonnes per annum).

Jamul Cement Works is in the Durg District of Chhattisgarh State, and it started cement production in 1965. AUMUND India's scope of supply for the recent plant expansion included:

- ❖ six AUMUND pan conveyors type KZB for clinker handling, with plate widths between 1,200mm and 2,200mm and centre distances ranging from 50m to 195m;
- ❖ two AUMUND bucket elevators type BWD for the handling of raw mix;

- ❖ three bucket elevators type BWZ for raw meal, clinker and phosphorus with centre distances varying from 32m up to 36m; and
- ❖ six bucket elevators type BWG for raw meal and cement, one of which stands at a massive height of 160m.

ACC, previously known as The Associated Cement Companies Limited, was formed in 1936 by the merger of ten individual cement companies. With its headquarters



Raw mill re-circulation by double bucket elevator (and below).

in Mumbai, ACC Limited became part of the Holcim Group in 2005, and since 2015 part of the merged LafargeHolcim Group. Over the years, ACC Limited has continually placed its trust in AUMUND India, and to date there are over 200 AUMUND machines in operation in ACC plants across India. These include 133 AUMUND belt bucket elevators, 11 chain bucket elevators and 59 pan conveyors.

ABOUT THE AUMUND GROUP

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Truck loading in style with Van Beek's Dino DS400 Cement



Screw conveyor specialist Van Beek has also developed a separate machine line for bulk truck loading machines, known by the brand name Dino. This mobile bulk truck loader loads bulk goods efficiently and safely, packaged for example in big bags or in tankers. Decades of experience also make the Dino an ideal solution for dust development during loading.

The Dino is available in a cement model: the Dino DS400 Cement has been adapted for loading big bags of cement and cement-like products such as limestone, soda ash and bentonite into bulk trucks. The Dino Cement has a capacity of 90m³/hour, while the capacity of a standard Dino is 45m³/hour.

The inlet hopper is fitted with a cross of U-shaped blade (big bag cutting knife) so that a forklift truck driver can pour in the bags quickly, safely and easily. He does not have to get out to cut the big bag open and can immediately fetch the next big bag. This means a bulk truck can be filled within 30 minutes.

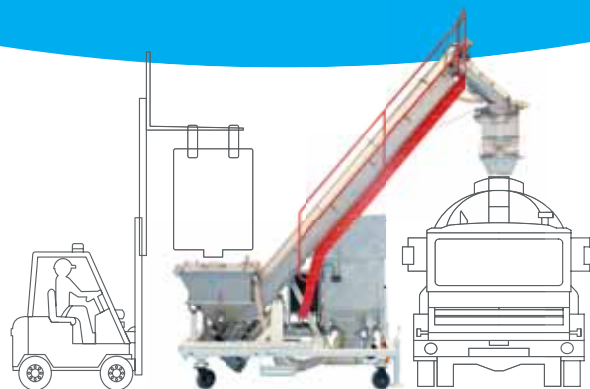
On the inlet hopper is a screening deck with vibrator. This separates the large chunks and lumps from the cement powder. The vibrator breaks down the chunks so that they can flow freely. The inlet hopper itself is fitted with fluidizing pads. These spray air into the product and create an 'air film' on the inside of the inlet hopper so that the product can flow into the screw more easily.

The outlet side is fitted with a manually operated loading bellow to prevent dust formation. Of course, it is possible to modify this Dino to suit the client's specific requirements.

DUST CONTROL

The loading bellow on the outlet side of the Dino is by far the most popular means of reducing dust. This can be connected quickly, safely and efficiently to the manhole on the top of a bulk truck and for a small investment eliminates a lot of dust development. The loading bellow can be

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connected to an extraction unit. This creates a negative pressure in the loading compartment and so fewer fines or small particles escape during loading.

The next logical step in dust reduction is to connect the inlet hopper of the Dino to the extraction unit. The unit immediately extracts most of the dust that is released when emptying big bags or 25kg bags.

The extraction unit extracts the dust through a row of filters. At set times a blast of air passes through the filters, this knocks out the dust which then falls into an easily removable collection bin underneath. To minimize product loss Van Beek can fit the filter unit above the body of the Dino and fit it with a rotary valve. The dust particles collected and knocked out of the baghouses then fall straight back into the product stream.

Due to more stringent requirements for the protection of personnel, clients are increasingly often extending the Dino they have already been using for years with dust-reducing modules. "You see fewer and fewer logistics departments where the personnel always wear a dust mask for their work because of dust clouds," explains Roel Kneepkens, Sales Engineer at Van Beek. "Companies are doing all they can to reduce dust and by upgrading their Dino a great saving can be made for a low investment."



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Siwertell unloader delivered for South Texas cement handling operation



Bruks Siwertell has delivered a high-capacity Siwertell ST 640-M screw-type ship-unloader to South Texas Cement's terminal in the US port of Corpus Christi. Ordered in 2018 by US-based GCCM Holdings LCC after an extensive decision-making process, the Siwertell unloader was found to be the best fit for the cement handling operation.

It was delivered fully-assembled by heavy-lift ship to the port in October. Once the operator is ready, Bruks Siwertell will oversee its testing and commissioning, with the unit expected into operation in the near future.

"When combining all of the deciding factors that led to choosing a mechanical unloader, it was apparent that Siwertell was the best fit for our needs," said a spokesperson for GCCM Holdings and South Texas Cement at the time of the order. "We especially like the high rate of unloading combined with the versatility to handle various ship sizes."

"The factors considered by GCCM and South Texas Cement during the decision process included unloading times, venting requirements, electrical demand, capital and lifetime maintenance costs, ship size, and storage capacity,"

added Patrik Henryson, Sales Manager, Bruks Siwertell. "Once operational, the unloader will not disappoint."

Siwertell ship-unloaders have set cement industry standards for decades, offering some of the highest unloading and loading capacities available on the market. The new fully-enclosed unloader will offer the terminal a continuous rated cement-handling capacity of 1,500 tonnes per hour, unloading ships up to 60,000dwt.

ABOUT BRUKS SIWERTELL

Bruks Siwertell designs, produces and delivers systems for loading, unloading, conveying, storing, and stacking and reclaiming dry bulk materials, alongside equipment for chipping, screening, milling and processing wood for the biofuel, board, saw mill, pulp and paper industries. All equipment is designed to ensure environmentally-friendly and efficient cargo operations.

Siwertell ship-unloader transport by heavy-lift vessel.



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Gambarotta Gschwendt is known worldwide for the design, construction and installation of equipment for the elevating and transport of solid bulk materials, such as bucket elevators, conveyors and high capacity feeders for any type of use, from the concrete and gypsum sectors to those of metallurgy and mining.

Countless plants built around the world tell of a working philosophy that has always characterized the company since 1919, the year of its establishment, updated continuously according to Kaizen techniques and expressed by the ability not only to meet any customer's need, but often ahead of the times with innovative and technologically advanced projects. This is all possible thanks to the synergies put in place internally, with partners and with major research centers throughout Europe.

Quality and reliability have always been the strength of Gambarotta Gschwendt, attested to by numerous certifications including ISO 9001, whose specifications were met by the company even before they were officially set up, as well as EN1090, EN ISO 15609, ISO 9606 and ATEX standard.

This is thanks to: the level of excellence achieved by the design departments; statutory company procedures; a continuous



Bulk material loading system.



exchange between the internal divisions of the company and on-site with customers; rapid prototyping; and the use of the best materials and components available on the market, able to withstand greater levels of wear with a favourable impact on maintenance costs and timing.

Today, this all translates into extensive and specific know-how that creates highly reliable machines on a daily basis, to meet every need and in full compliance with the strictest international standards.

The reliability of Gambarotta Gschwendt's equipment fits perfectly with the customer support organization in every operational phase of each site around the world, starting from its design.

The high degree of customization very often requires Gambarotta Gschwendt to create fully customized systems or entirely new products.

Over the years, the company's Technical Department has developed effective organizational methods to reduce the time to market of its equipment.

One method, for example, is the systematic collection and storage of data of each type of machine, and the creation of calculation and sizing systems.

In addition, Gambarotta Gschwendt opts for a



Internal workshop.



comparative analysis with real situations and collects information through its customer support.

Gambarotta Gschwendt reviews the existing technical literature and creates design specifications, in general and related to individual machines, receiving both the criteria to be applied in the designing itself, and the construction characteristics.

Gambarotta Gschwendt also uses pilot plants and carries out tests on a small scale.

The FEM analysis on individual components guarantees performance and reliability for the customer.

The steady updating of the design solutions, supported by the data gathered on the field during the after-sales activities all around the world, ensures a constant improvement in the production process.

The range of products is focused on:

❖ **pan conveyors:** metallic slat type, deep

bucket conveyors and box conveyors (standard and special execution), for clinker and similar materials. Capacities exceed 1,000tph (tonnes per hour);

❖ **apron feeders:** apron feeders for extracting heavy and lumpy materials from silos and hoppers. No limits on capacity and material size. Surface feeders.

❖ **elevators:** high and low speed, with single or double chains, with shackles or round link components, with bushed type chains, with rubber belt. Capacities up to 2,000tph, lifting heights of 140m, material sizes up to 400mm.

❖ **drag chain conveyors:** all type of drag chain conveyors with single, double or multiple chains for conveying and extracting. Capacities range from 10 to 1,250tph, width from 190 to 3,000mm.

❖ **screw conveyors:** all type of screw

conveyors, mixers, humidifiers with full flights, ribbon flights and paddle flights in normal and stainless steel. Complete supply of dosing and weighing systems, special design for the chemical Industry.

❖ **bulk loaders:** for open and closed trucks (normal and heavy duty version); for cement, ashes, clinker and other materials.

❖ **cell feeders:** in carbon and stainless steel with capacities up to 500tph, double-acting flap valves, cut-off valves with needle gate, sliding or rotating gates, etc.

Cooperation with different cement plants worldwide and major engineering companies, and the experience acquired through installed machines, have allowed Gambarotta Gschwendt to develop state-of-the-art technology and to offer tailor-made equipment.

The constant updating of the design solutions, which are supported and confirmed by the data collected following after-sales activities at customers' sites, ensures steady improvement in order to offer highly specialized and durable machines.

Skills developed in several sectors as well as a consolidated, global presence, make Gambarotta Gschwendt a reliable and expert partner, ready to face international challenges presented by globalization and increasing market complexity.

Designing efficient and integrated solutions and optimizing production processes thanks to the identification of innovative and custom-made solutions make the difference.

Gambarotta Gschwendt: 100 years of history, 100 years of reliable products.



CEO Eng. Fabrizio
Gambarotta.

ARODO designs and develops bagging machines for cement in fully deaerated plastic bags that don't feature perforations of any kind. This brings along a great deal of advantages compared to conventional paper packing: like clean, unprotected open air storage without leaks. Dust and spillage free with capacity on demand.



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Capotex protects workers from crystalline silica



The health of workers has a direct correlation to the productivity of a company. Therefore, it is important to know the risks to which they are subjected to in each business and try to minimize them.

All work activity involves some health risks. Accidents due to being exposed to situations that affect physical and mental

health, such as using unprotected machines and equipment or chemical and biological risks when the workers are exposed to substances that can directly affect their health.

The World Health Organization (WHO) notes that: “all workers, and particularly those in high-risk professions, need health services that assess and reduce exposure

to occupational risks, as well as medical surveillance services.” Companies are responsible for evaluating and measuring the risks to which their workers are exposed and take measures in order to prevent them from contracting diseases or being injured. In recent years, lung cancer has been associated with crystalline silica dust.





According to the National Cancer institute, crystalline silica is a natural material found in stone, soil, sand, concrete, brick and mortar. This natural material comes in a variety of forms, quartz, a mineral present in all the continents of the planet, is the most common. Crystalline silica, can be breathed in as quartz dust is breathable.

Dust particles are extremely small so they cannot be seen, but they can penetrate the deepest parts of the human lung when inhaled. When this respirable crystalline silica powder is breathed, it can cause serious lung diseases, such as silicosis and lung cancer.

Workers' exposure to respirable crystalline silica dust is associated with high rates of lung cancer. According to the National Cancer Institute "the strongest link between human lung cancer and the exposure of respirable crystalline silica has been seen in studies of quarry and granite workers and workers involved in ceramics, refractory brick and certain land industries."

Silicosis is known as the oldest occupational disease. It is a disabling occupational sickness produced by the aspiration of silica dust particles deposited in the lungs that make breathing difficult.

There are some regulations which have as a purpose the protection of workers against risks to their health and safety that may arise from exposure to carcinogens or mutagens during work. It is important that companies take actions that improve occupational safety and environmental protection.

Capotex is a company committed to the environment and safety protection. The company designs, manufactures and markets covers for conveyor belts around the world. Covering conveyor belts seeks to protect workers and also communities near mining and construction facilities that carry out activities that may contaminate. Covering belts will not only help to protect workers; it also provides protection to the facility's conveyor belts.

The reasons for using conveyor belt covers are the following:

- ❖ They help to reduce the risk from work accidents because the covers isolate the moving parts from the belt conveyor, avoiding the risk of entrapments and other accidents. The isolate noise to prevent damage to physical integrity.
- ❖ They reduce emissions, providing energy efficiency of the installation.
- ❖ The covers increase efficiency in the transportation of the material and reduces maintenance costs.
- ❖ They help to reduce losses during transportation and protect the material.
- ❖ They eliminate UV light that may degrade the belt and the equipment.
- ❖ They prevent rain from entering.



We make sure that nothing gets lost!

For over **50 years**, our loading systems for bulk materials have been synonymous around the world with long-lasting and reliable technology.



- › Bulk loading systems for open and closed loading
- › Loading with no segregation e.g. with **FLOW-stop** technology
- › Dust-free loading
- › High quality loading hoses e.g. made in wear-resistant **PU-flex**
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Controlling dust with Standard Industrie International

The LIFTUBE® optimizes the sealing of the conveyor belt, reducing dust emissions and maintenance costs while providing full safety.



For the past 40 years, Standard Industrie International has been a specialist in the design and manufacture of solutions aiming to facilitate the handling of bulk products by combining safety and environment respect.

Optimizing production tools means reducing atmospheric emissions, improving visibility and staff safety, and reducing maintenance costs. Below following a few of the advantages of using Standard Industrie's solutions to control dust in cement and clinker plants:

LIFTUBE®

The LIFTUBE® is a solution that optimizes the sealing of any conveyor belt (smooth or cleats, rubber or PVC, vulcanized hot or cold). It comes as a replacement to stations equipped with three rollers on conventional conveyors. These are standard one-metre modules that are scalable and easy to install on all or part of a new or existing conveyor while keeping the belt, chassis and motorization of origin. It is installed between the point of loading and unloading. Available in widths from 500 to 1,400mm, in high temperature, explosive, food or self-extinguishing

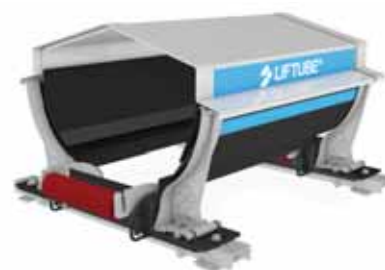
versions, the LIFTUBE® avoids any contamination of the product transported with the outside environment. This seal proof system enables easy tilting of the glide boards and the central roller for easy and minimal maintenance. Thanks to its pinch points protections, the LIFTUBE® significantly improves the working conditions of the operators.

AN EXAMPLE IN A CEMENT PLANT

Standard Industrie was recently contacted by the Lafarge Holcim cement plant in Orizaba, Veracruz, Mexico, after replacing the 600mm conveyor belt with an 800mm belt that it wanted to equip with LIFTUB2-800.

Customer's problem

The cement manufacturer was looking for a solution in combination to a drastic shift in fuel consumption. In order to reduce the average yearly energy costs, a target was set to reduce the traditional fuel consumption such as coal to AFR (alternative fuels and resources — such as shredded plastics and cardboard). Opting for these new fuels meant that the conveying system had to be drastically



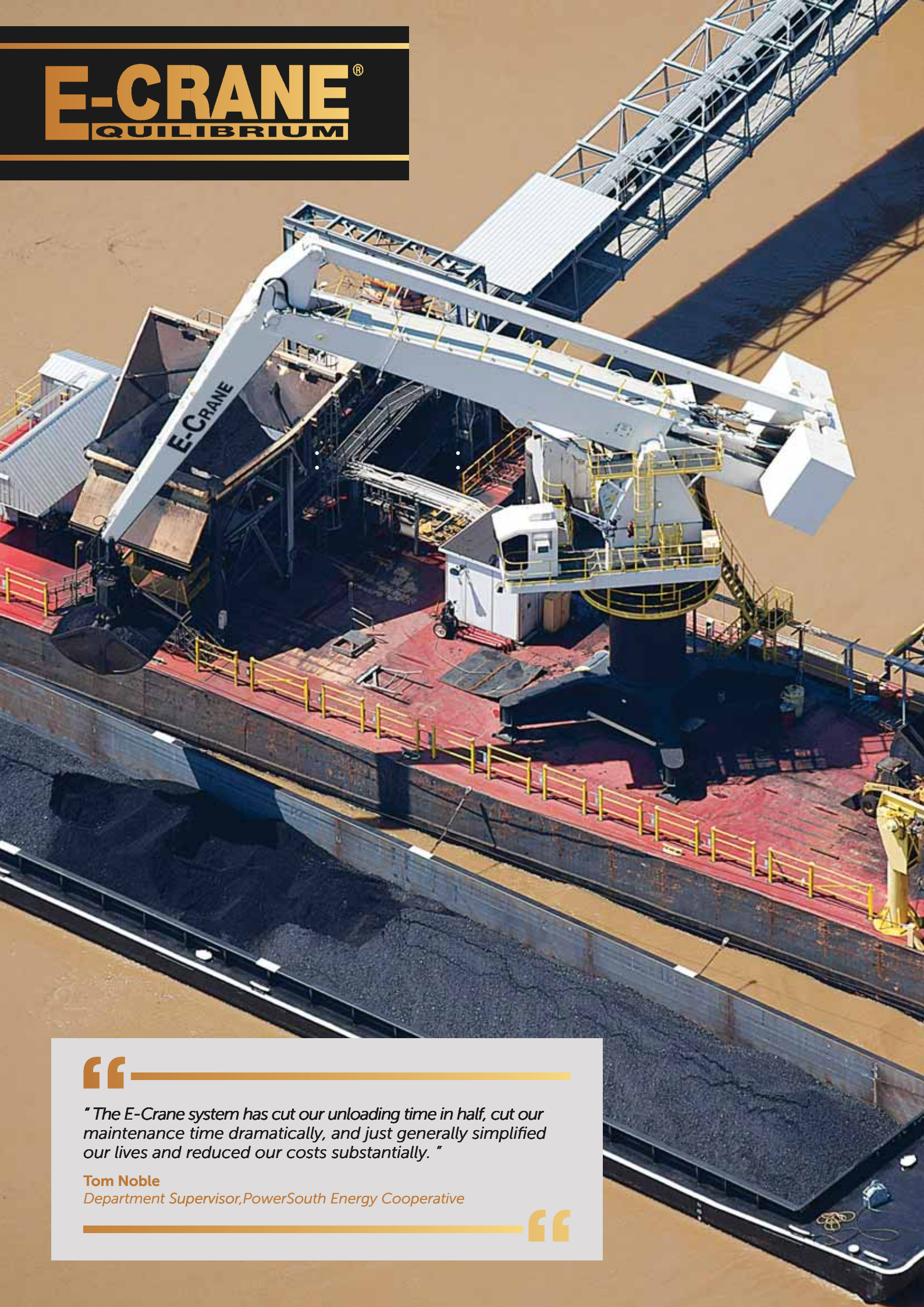
redesigned. AFR material, such as tiny plastic particles, need to be conveyed in a totally sealed system as wind or any rough weather conditions can blow away these particles and affect the immediate environment. Indeed product density is very low 0.3–0.5tonne/m³ with moisture of 5–20% and above all risks of toxicity and inflammability of the AFR were very high. Last but not least, the belt is to run around the clock even though if velocity of the belt is rather slow: one metre per second.

Solution

It turns out that LIFTUBE® is a solution that is mostly adaptable to these requirements. Thanks to its unique design offering complete sealing, AFR is entirely enclosed and contained in the conveyor. After a

E-CRANE[®]

QUILIBRIUM



“

“The E-Crane system has cut our unloading time in half, cut our maintenance time dramatically, and just generally simplified our lives and reduced our costs substantially.”

Tom Noble

Department Supervisor, PowerSouth Energy Cooperative

”

Standard
Industrie dust
collector.



study on site, several visits to the plant and a comprehensive adapted design solution LIFTUBE® was offered. Standard Industrie co-operated with the customer's installation company and — after all requirements for energy consumption, design of tumblers and hooding were met — 136 metres of LIFTUBE® were delivered to Mexico. Today, the customer is very pleased with this installation.

Technical description

The patented LIFTUBE® and the dust-collector are accessories for the conveyor belt. The dust collector was developed to increase the containment effect of the material and to minimize dust emissions.

The LIFTUBE® system enables the belt to run on a central horizontal tilting roller and to slide on the edges, which also tilt.

A removable hood can be adapted to the equipment to reduce belt conveyor dust emissions. Only the size of the hood and the central horizontal roller depends on the width of the conveyor. The conveyor belt and rollers can be easily accessed thanks to innovative tilting legs.

- ❖ belt width: from 500 to 1,400mm;
- ❖ belt speed: from 0.05 to 5m/s;
- ❖ output: up to 1,500tph (tonnes per hour);
- ❖ particle size: up to 500mm;
- ❖ density: up to four;
- ❖ product temperature: up to 300°C;
- ❖ modules: standard & evolutive; and
- ❖ installation: suitable for both new or existing conveyors.

VACUUM CLEANING MACHINES

To meet its clients' industrial cleaning, pumping and vacuuming requirements, Standard Industrie also offers a complete range of equipment and vehicles that combine safety and performance. From vacuum vehicles to mobile vacuum units, Standard Industrie has a solution for every industrial vacuuming problem.

EXAMPLE:

A cement plant and all its areas (bagging, tunnels, conveyor belts, cement grinding, and coal workshop) needed to be cleaned. The plant was already equipped with Standard Industrie's famous AIRCHOC® WIRELESS. This time, the cement producer turned to STANDARD INDUSTRIE International, which supplied several vacuum machines and purchased a

UMA3000DMX. The UMA was the best solution to tackle the difficulties and constraints associated with a heavy vehicle. Powerful, mobile and adaptable, the UMA is equipped with explosion vents. It can therefore vacuum coal and petroleum coke. The plant's old equipment could not do it. Standard Industrie International was also responsible for installing a fixed pipe network in the bagging area. The nine suction inlets of the network made it possible to optimize the cleaning of three buildings.

IN USE WORLDWIDE

These innovative and reliable solutions proposed by the design office of Standard Industrie international have been adopted by many plants of bulk industry, all over the world.



The vacuum cleaner on trailer makes it possible to carry out cleaning operations as well as heavy pumping with a large scope of operational possibilities.

Experience the Progress.



The Port range – material handling machines from Liebherr

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LIEBHERR

THIELE's nearly 85 years of experience makes its chains ideal for cement

As a family-owned German company, THIELE has become one of the world's foremost chain manufacturers to date. Next year, THIELE will celebrate its 85th anniversary.

The added value of THIELE chains for customers consists of application-specific technical solutions from a single source.

For the cement industry, THIELE manufactures: round steel chains; bush conveyor chains; forged fork link chains; chain wheels; flights and scrapers; chain locks and accessories for apron conveyors; reclaimers; trough chain conveyors; bunker discharge conveyors; clinker conveyors; and bucket elevators.

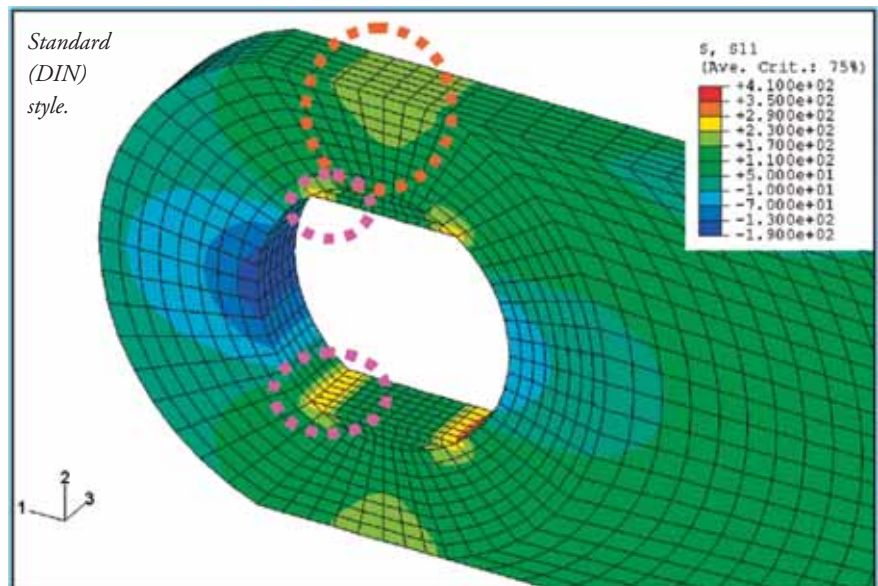
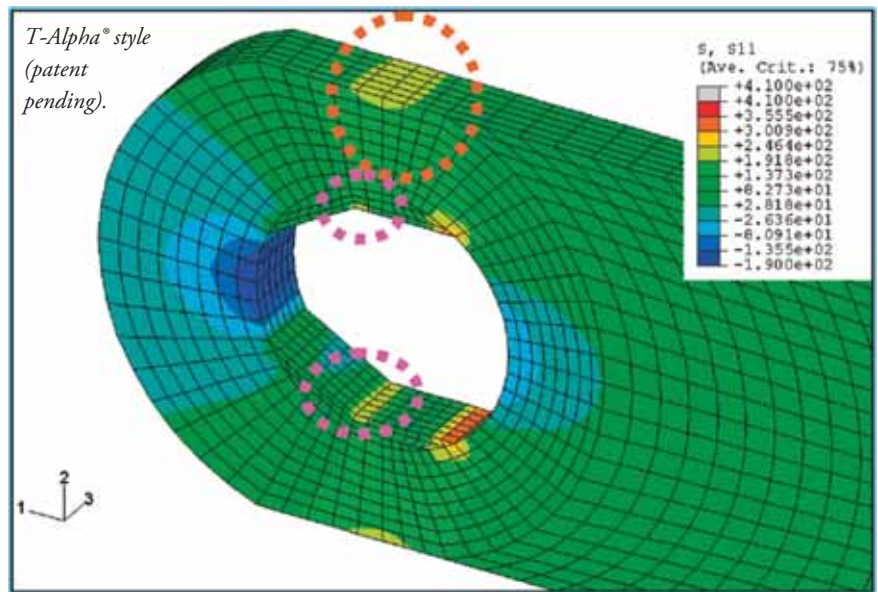
Thanks to many years of experience in developing and manufacturing of complete chain systems, THIELE has substantial know-how, for example in the conversion of bucket elevators to central chains or in the design of highly wear- and corrosion-resistant forged link chains for conveying secondary fuels (alternative fuels).

Below are details of some of THIELE's outstanding chain solutions for the cement industry.

1. TOPIC CLINKER CONVEYOR

On the one hand, the high temperatures and abrasiveness of the material to be conveyed and, on the other hand, the large distances bridged by the clinker conveyors in the majority of cases place high demands on the chains, rollers, pans and buckets.

THIELE clinker conveyors are characterized by a long service life thanks



to the use of high-quality materials, precise mechanical production and heat treatment of the individual components used. In addition, the use of THIELE patented T-Alpha® plate link chains guarantees greater safety and reliability even under the most difficult operating conditions.

The T-Alpha® plate link chain is characterized by a special shape of the bores and bushings.

THIELE SOLUTION

- ❖ 20% stronger than DIN;
- ❖ lower stress concentration due to better load sharing;
- ❖ longer life;
- ❖ increased elongation prior to fracture;
- ❖ optimal in-use elastic qualities;
- ❖ improved load and cycle qualities; and
- ❖ compatible with like-design conveying systems.

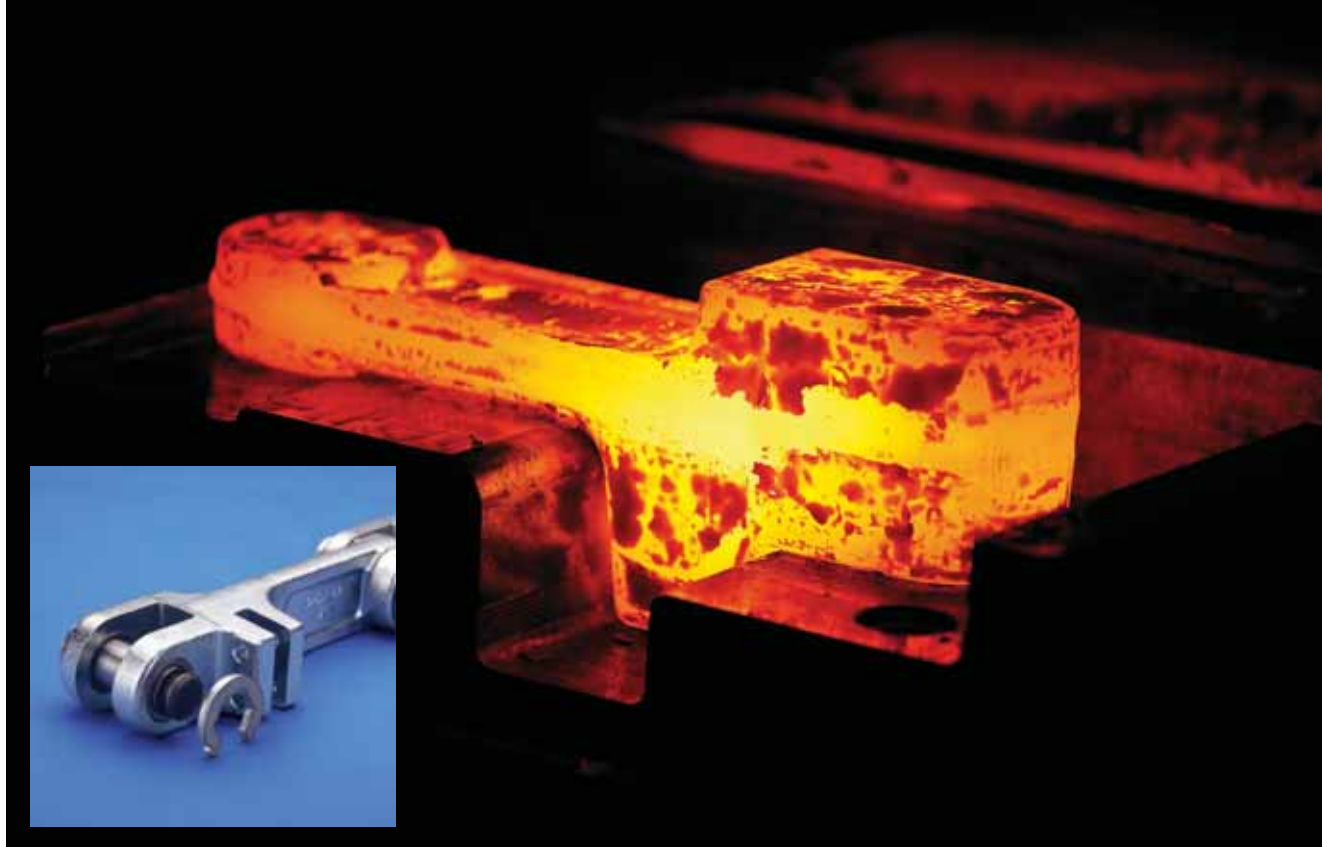
2. CONVEYING OF AGGRESSIVE MATERIAL

When adding waste and biomass, the aggressive material properties often lead to massive process disturbances when using standard forged link chains. This is especially true in the eye area of the forged link chains, where an increased wear of links and bolts can be observed. As a result, the links break in the eye area and the bolts wander out.

In light of this experience, THIELE has developed special acid-resistant forged link chains especially for secondary fuels.

THIELE SOLUTION

- ❖ hot-dip galvanized forged link chains;
- ❖ bolts and bushes made of stainless steel;
- ❖ bolts induction-hardened;
- ❖ chains and flights heavily armoured;
- ❖ resistant to wear and corrosion; and
- ❖ increase in the operating lifetime by a factor of 2.5–3.



3. RECLAIMER CHAINS

Independent of the large number of different storage reclaimer systems the THIELE reclaimer chain HDR-BO with its typical box profile has proven itself in practice under the most difficult conditions time and time again.

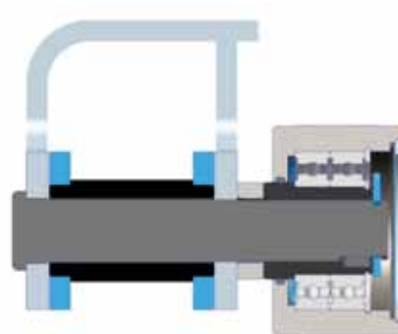
THIELE SOLUTION

- ❖ heavy duty chain with box profile;
- ❖ weld-connected outer link forms the box profile;
- ❖ highly fluctuating external forces with frequent load peaks are effectively induced into the chain thanks to the



robust design of bucket connections;

- ❖ maintenance-free, dust-tight outside rollers, anti-friction bearings; and
- ❖ absorption of lateral forces via separate centre-guided rollers.



4. BUCKET ELEVATOR CHAINS

The forged, patented THIELE bucket elevator chain HLB-WG for breaking forces from 1,200kN to 2,000kN has very special design features.

THIELE SOLUTION

- ❖ chain joint is protected by labyrinth seals;
- ❖ labyrinth seals are also used on the push-fit bucket plates;
- ❖ each labyrinth is filled with high-performance lubricant;
- ❖ overall support width is increased by load-bearing, forged inner and outer links;
- ❖ accurately machined contact faces with the chain wheel ensures a uniform contact/wear pattern;
- ❖ the bucket plates assembled in the shadow of the inner plates;
- ❖ link-joint surface pressure is reduced by increasing the contact ratio of the pin in the bucket link; and
- ❖ push-on bucket plates make the system reversible.



Titan lined Multi-Port Diverter from Vortex handling sand and cement

Vortex, a globally respected expert in the handling of dry bulk materials, believes in listening to the needs of its customers during the development of the right solutions to meet the most demanding applications. The result is a product that will perform well for a long time.

Founded in 1977, Vortex specializes in the design and manufacture of components for the transport and flow control of dry bulk solids. Vortex's technical focus is in the development of innovative technologies to improve solids process efficiency, ensure dust-free environments, and establish long-term reliability.

Throughout the world, more than 20,000 companies — such as Dow Chemical, Nestle, DuPont, Sabic, Jacobs Engineering, BASF, Kraft Foods, P&G, PepsiCo, Fluor, Vale, Solvay, Rio Tinto, ADM, Cargill, Bunge, and InBev — rely on Vortex's innovative slide gates, diverters, iris valves, and loading solutions to improve process efficiency.

The cement industry is just one of the major users of Vortex equipment. Below are details of a recent contract for a diverter to handle cement:

The client is a cement mix packager, based in Southeastern USA. The size of the diverter is: 14in (356 mm). It weighs 750 lb (340kg).

This Vortex Multi-Port Diverter features three two-way Titan Lined Diverters connected by fabricated chutes.

The diverters and the chutes are manufactured with replaceable, abrasion-resistant, interior steel liners (400 BHN) to address the abrasive qualities of the materials handled. This feature extends the service life of the diverter.

Each diverter contains an exterior



TITAN: TLD DIVERTER

The Vortex® Titan Lined Diverter™ is designed for use in gravity flow applications handling abrasive materials such as cement, coal and frac sand. Material from one source can be diverted to either of two or three destinations. The TLD Diverter offers replaceable wear liners for added abrasion resistance

and removable access panels for internal inspection, cleaning or maintenance.

Rated for ATEX Zone 0/20 internal and Zone 1/21 external.

- ❖ handles aggregates, rock, glass cullet, sand, refractory mix and clinker;
- ❖ leading edge of blade protected from material flow

- ❖ wear compensating shaft seal preventing leakage
- ❖ removable access doors for internal inspection, cleaning and maintenance
- ❖ positive seal of dust and fine powders
- ❖ material construction options available
- ❖ standard sizes: 16–36in (400–900mm); custom sizes available.



access port that allows inspection or maintenance of the diverter without having to remove it from service.

Application: the multi-port arrangement allows material to be delivered from a single source to any of four destinations — one destination at a time.

BEUMER Group delivers belt apron conveyors for reliable and economical transportation of cement clinker

BLAZING THE TRAIL IN RELIABILITY

From a kiln cooling system to silos: the safe and economical transportation of hot materials like clinker is crucial in cement plants. The material can have extremely high temperatures of 500 to 800°C. Reliable plant operation requires a robust conveying system. The BEUMER Group supports cement manufacturers with system solutions tailored for this industry, with apron conveyors for example. A special variant offered is the belt apron conveyor (GSZF): using a belt instead of a chain as the traction element allows higher speeds and a slimmer design while still delivering the same level of performance. The GSZF is therefore particularly suitable for modernizations, as can be seen with the Turkish cement manufacturer Göltas Cemento.

Why are apron conveyors particularly efficient for the transport of clinker? André Tissen doesn't need to think long: "The cement plant operators are still not able to ensure with one hundred percent certainty that the material does not leave the clinker cooler at temperatures of 500 to 800°C."

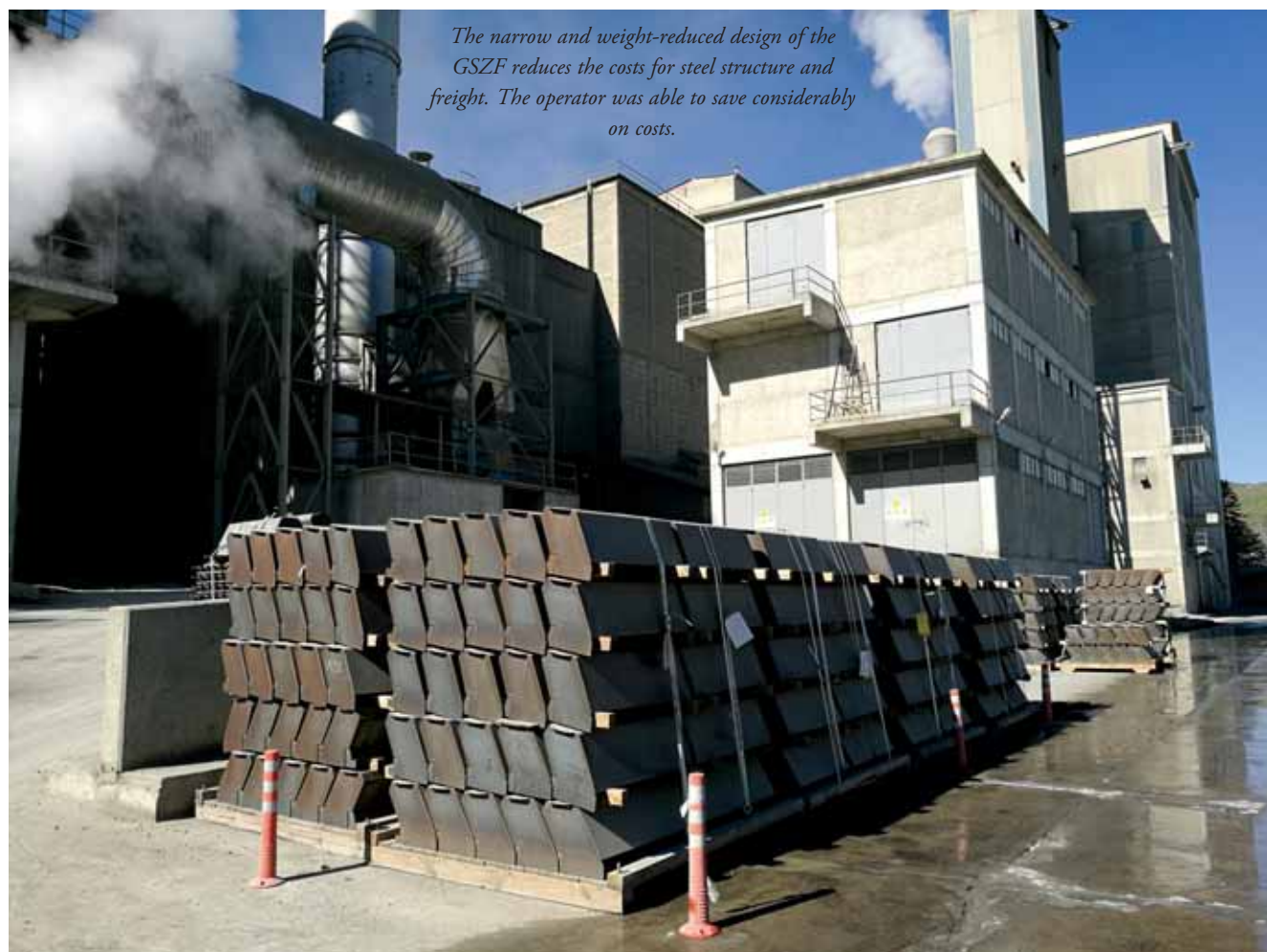


BEUMER Group supplies belt apron conveyor to the Turkish cement manufacturer Göltas Cemento. (All photos: BEUMER Group GmbH & Co. KG.)

Tissen is a sales manager for customer support at BEUMER Group and is familiar with the demands of the customers. In general, the clinker should cool down to the ambient temperature plus 80°, but during the process, a so-called raw meal flash can occur in the shell section of the preheater tower, caused by breaks in the kiln outlet sealing. "It doesn't happen often, but it does happen. It can't be completely avoided," explains the expert. Within a few

seconds, several tonnes of raw meal or clinker run through the cooler. The material cannot cool down and arrives on the conveyor at extremely high temperatures.

BEUMER Group apron conveyors provide robust and reliable solutions that are completely heat resistant. The specific design of the cells allows safe, low-friction transportation of any hot material. Sealed and overlapping side walls and bottom



The narrow and weight-reduced design of the GSZF reduces the costs for steel structure and freight. The operator was able to save considerably on costs.

plates in the cells prevent the clinker from exiting and minimize the escape of dust. Operators get the BEUMER apron conveyors SZF and GSZF with cell width gradations from 500 to 2,000mm, centre distances of more than 250 metres and conveying capacities of over 1,300 cubic metres per hour.

ANGLES OF INCLINATION UP TO 60°

The angles of inclination on the SZFs and GSZFs depend on the height of the silo and the conveying distance. The systems come in three different designs. "We have an open cell design where the bulk material is transported at an angle of up to 30° without rolling back," explains Tissen. The cells on the second design are equipped with baffle plates. Inclinations of up to 45° are possible. The design as steel box conveyor allows extreme inclinations of up to 60°. "This design is perfect for steep inclinations and small curves, but also for smaller inclinations when transporting clinker with a high content of fine particles," he describes.

And this is becoming more and more important for operators. Instead of using fossil fuels like coal and gas they are opting for alternative fuels in order to reduce greenhouse gas emissions and production costs. Besides liquid materials like waste oil or solvents, the majority of the solid alternative fuels are composed of municipal and industrial waste, such as plastic, paper, composite material and textile mixes. This also changes the chemical process. "Clinker grains are spherical with a diameter of ten to 30mm and the content of fine particles is less than five percent when using fossil fuels. This content increases however to 30% when using alternative fuels," explains Tissen. "In order to handle this safely, the boxes need to be completely enclosed."

BELTS — THE ECONOMICAL ALTERNATIVE

The traction element in the conveyor is usually a single or double strand sprocket chain, designed as steel-bushed roller chain with a pitch of 315mm. Finely regraded versions for breaking forces ranging between 250 and 2,700 kilo newton ensure optimum adaptation to the required parameters. The maximum conveying speed is 0.3 metres per second.

"Instead of a chain we also offer the apron conveyors with our tried and tested BEUMER steel wire belt coming from the bucket elevator technology," reports the expert. Here the cells are attached to the low-wear, long-lasting and steel-wire reinforced belt in a way so that the heat of

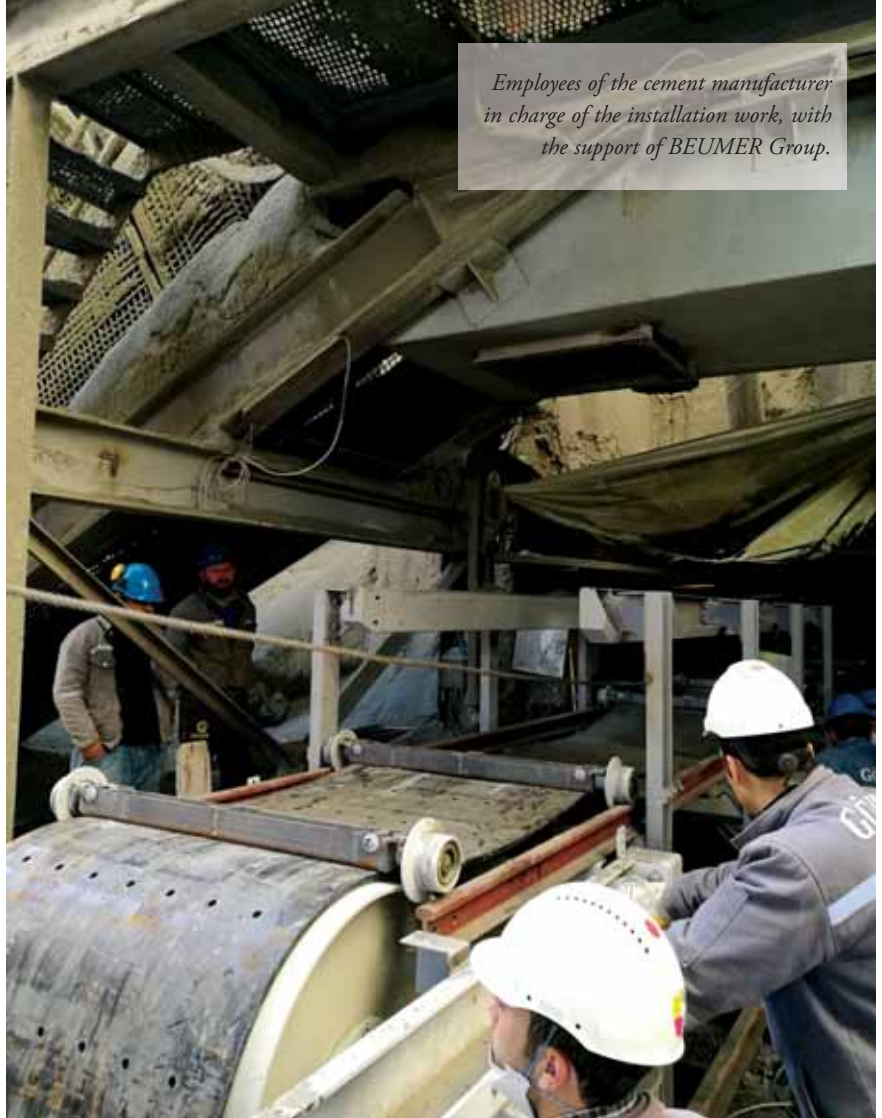
the clinker in the steel cells is not transferred on to the belt. A special profile between the steel cells and the belt prevents this. Partition plates are attached in the material feeding area below the cooler and can be easily removed for maintenance, protecting the belt against hot clinker in case of a kiln flash.

PERFECT FOR RETROFITTING

One decisive advantage of the belt apron conveyor: with 0.6 metres per second, it can reach double the conveying speed compared to apron conveyors with a chain. "This makes it perfect for retrofitting and modernizations," says Tissen. If the operator wants to increase the kiln capacity for example, he can replace an existing apron conveyor with an belt version of the same size. It means double the capacity without having to change anything on the steel structure or the conveyor bridge.

The operator also benefits of a new construction application: the thinner, lighter design of the GSZF reduces costs for the steel structure and freight. Furthermore, the decreased net weight lowers the static and dynamic loads which affect the clinker silo and the foundations for example. "A

Employees of the cement manufacturer in charge of the installation work, with the support of BEUMER Group.



new construction project can be designed for a smaller load and is therefore more cost-effective to build," explains the expert. "The lightweight design also lowers operational costs."

QUIET, LOW IN MAINTENANCE, RELIABLE

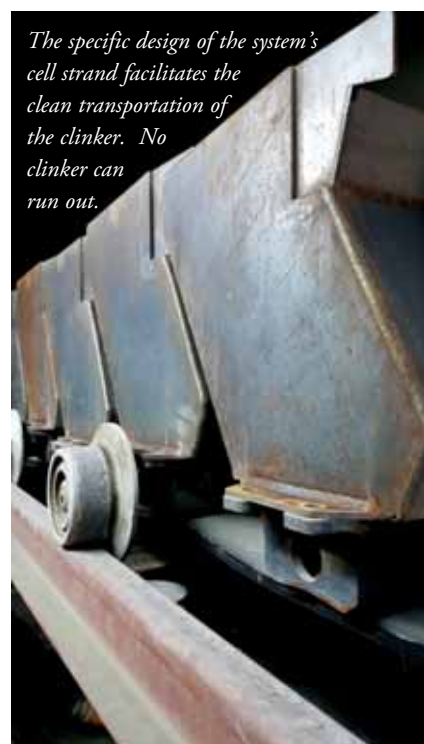
As the entire belt lies with its surface on the drive and return pulley, the unwanted polygon effect on the chain is avoided. The particularly smooth running of the machine also reduces noise emission considerably. The noise is less than half as loud as conventional SZFs with chains. This is good for the employees, the environment and the surrounding area.

The use of the durable BEUMER steel wire belt instead of a chain lowers the maintenance costs, and extends maintenance intervals. Chains can also break, if preventive maintenance is not performed properly, which will lead to the conveyor collapsing. "The belt with the steel wires only ages and the rubber becomes brittle, but it would never completely break," describes Tissen. Lubrication is also not required for the belt, whereas used frequently on a chain, if for no other reason than to reduce noise levels. Grease and oil are not only a cost

factor, but also detrimental to the environment and the conveyor. The clinker dust gets stuck on it and settles in the chain links, which accelerates the wear and tear.

GÖLTAS CEMENTO OPTS FOR GSZFs

BEUMER belt apron conveyors are in operation for nearly 150 companies. One of them is the Turkish cement manufacturer Göltas Cemento, located close to Isparta, approximately 130km north of Antalya. In the wake of a building boom in Turkey and the growing demand for cement, the cement manufacturer opted for modernizing its kiln and increasing the performance. An increase from 250–400tph of the conveying technology capacity was required, for a chain apron conveyor that transports the clinker from the kiln cooling system to the silo. And for an economical production, Göltas Cemento has been increasingly opting for alternative fuels over the last several years,



The specific design of the system's cell strand facilitates the clean transportation of the clinker. No clinker can run out.

which meant that the content of fine particles also increased continuously. The existing conveyor already transported high quantities of material, and the process had become extremely dirty. Personnel was constantly needed to perform cleaning work.

To find an efficient solution and a suitable partner on their side, Göltas Cement turned to the BEUMER Group. The two companies have been working together since 1996. The system provider has supplied two clinker transport systems and four belt bucket elevators over the course of their partnership. So, the cement manufacturer was already familiar with the advantages of the BEUMER steel belt technology. The project phase began mid-2015, the contract was awarded in the beginning of 2016, followed by the installation and commissioning in the fall.

MODERNIZATIONS WITHOUT EXTENSIVE RECONSTRUCTION WORK

"For a more powerful chain apron conveyor, we would have needed to take down the entire system including the building structures and the concrete tunnel," says Tissen, who was responsible for this project with his team. "This wasn't necessary when opting for the belt version. It reaches double the conveying speed, so that the BEUMER Group engineers could design the system for an increased capacity while keeping the same width. The conveyor bridge and the self-supporting steel structure, as well as the concrete foundations remained. Göltas Cement was able to considerably reduce costs, and put the system quickly into operation. "The silo is 50 metres high. In order to overcome an inclination of 40°, we installed a steel box conveyor," explains the expert. It releases almost no material to the environment, despite the higher content in fine particles, creating a cleaner work environment.



In the background: The belt apron conveyor reaches an inclination of 40°.

For the installation work, BEUMER Group provided the supervisor, the assembly was carried out by the client personnel. "Our collaboration went great," sums up Tissen. "The assembly only was a little trickier in the very narrow concrete tunnel, where the conveyor is located. But the installation was well-prepared. So we were still able to stick to the set schedule." Göltas Cemento and BEUMER Group are already discussing future modernization projects.

ABOUT BEUMER

The BEUMER Group is an international manufacturer of intralogistics systems for conveying, loading, palletizing, packaging, sortation, and distribution. With 4,500 employees worldwide, the BEUMER Group has annual sales of about €900 million. BEUMER Group and its subsidiaries and sales agencies provide customers with high-quality system solutions and an extensive customer support network around the globe and across a wide range of industries, including bulk materials and piece goods, food/non-food, construction, mail order, mail and airport baggage handling.



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FLSmidth announces MissionZero to reduce emissions in cement and mining by 2030

At its Capital Markets Day held in Copenhagen on 6 November, FLSmidth launched MissionZero, a new sustainability programme aimed at significantly reducing emissions across the global cement and mining industries by 2030.

“With economic growth, urbanization and growing populations comes the demand for infrastructure, such as housing, schools, hospitals and roads. Added to this, modern conveniences such as air conditioning, appliances and smartphones are high in demand, and renewable energy options such as electric cars, wind and solar energy are looked to as the future. All of that requires cement and minerals, and demand will only continue to rise. Today, we launch MissionZero to seize the opportunity to increase production and at the same time drive emissions towards zero,” said Thomas Schulz, Group CEO, FLSmidth.

Central to MissionZero is FLSmidth’s focus on enabling its customers in cement and mining to move towards zero emissions in 2030. The company will do so by leveraging the development of digital and innovative solutions tied to sustainable productivity, offering its customers the required technological solutions to:

- ❖ operate zero emissions cement plants by 2030; and
- ❖ manage zero emissions mining processes by 2030 — with specific focus on water management.

TOWARDS ZERO EMISSIONS IN CEMENT

FLSmidth estimates that it can reduce the CO₂ emissions per kg cement by approximately 70% by 2030 by leveraging opportunities within existing pioneering technologies, innovation projects and early-stage R&D. To achieve this, FLSmidth is

MISSION ZERO	
Accelerating solutions to reduce emissions in cement and mining by 2020	
Goals for cement	Goals for mining
FLSmidth will develop solutions that will enable its customers to operate cement plants with:	FLSmidth will develop solutions that will enable its customers to manage mining processes with:
❖ zero emissions;	❖ zero water waste;
❖ 100% fuel substitution; and	❖ zero emissions; and
❖ zero waste.	❖ zero energy waste.

developing solutions such as blending clinker with alternative materials, exploring the use of new types of cements and providing solutions to cement producers to operate 100% alternative fuelled cement plants including waste-to-energy solutions.

In addition, FLSmidth will accelerate solutions to close the remaining gap (30%). As these solutions do not exist today, FLSmidth will actively seek knowledge partnerships with other companies and suppliers to co-create solutions.

TOWARDS A WATERLESS MINING PROCESS

Water is a scarce resource in many parts of the world and represents a rising cost for FLSmidth’s mining customers. The company has set a goal to offer its customers solutions that support zero water waste by 2030, building on the success of recent developments, such as its dry-stack tailings solution (DST). Utilizing DST can recover up to 95% of process water while being economically competitive with alternative water management options such as desalination, even for high tonnages.

AMBITIOUS GOALS

Ambitious goals require collaborative

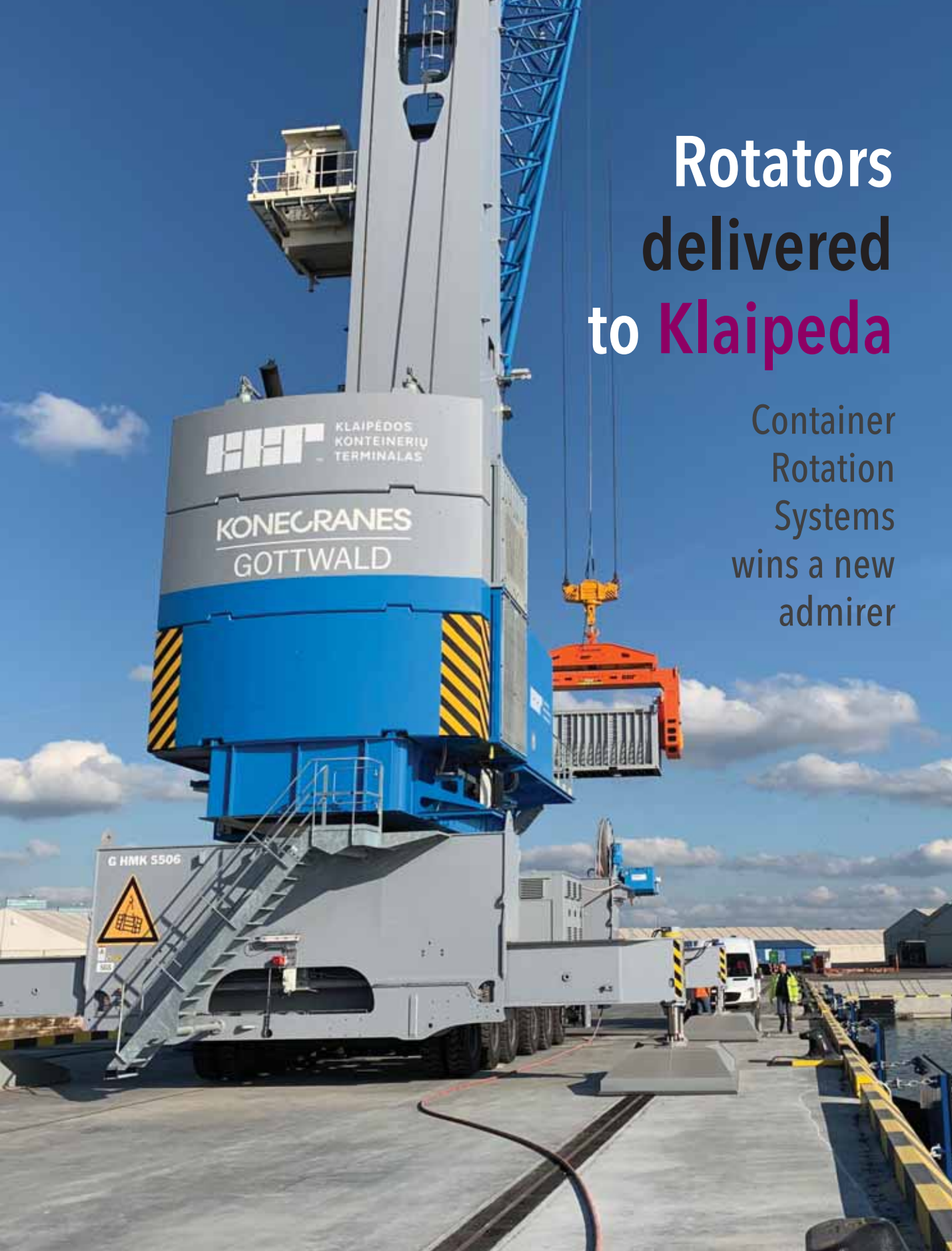
efforts “With MissionZero, we commit to our most ambitious goals to date. We are doing it because it is necessary, because it is sound business, and because it provides us with a competitive edge. We are the go-to partner for sustainable productivity, and are perfectly positioned to address the challenges our customers face such as rising costs, tighter regulations and increased societal expectations. MissionZero goes beyond what is feasible today, and requires a paradigm shift in how industry players collaborate and innovate. As a leader in the cement and mining industries, we have a responsibility to accelerate the adoption of sustainable solutions,” said Thomas Schulz.

Underlining its commitment to drive sustainable solutions, FLSmidth was among the first companies to join the GCCA’s Innovandi – Global Cement and Concrete Research Network. This new network brings together the cement and concrete industry with scientific institutions to drive and support global innovation with actionable research. Its aims to decisively build on the industry’s sustainability progress with the focus on reducing emissions and achieving better use of alternative fuels.



Rotators delivered to Klaipeda

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Another successful installation for Container Rotation Systems' Eurospec 38

Australian company Container Rotation Systems (CRS) is renowned for its container-emptying system, which offers an efficient solution to the problem of

unloading bulk from containers. This is a concept that is gaining in popularity worldwide, and is in use internationally handling cargoes of vastly different

properties, from alumina to coal.

This relatively new initiative brings with it its own challenges, including getting the right handling equipment in place to empty



containers that are full of loose/free-flowing product.

One of CRS's popular products is its Rotainer® Eurospec container rotators. The first of these was delivered to

Canadian stevedore and terminal manager QSL to empty its alumina cargoes. Since then, more have been ordered, and CRS has revealed that its Eurospec 38s are now operational at the Klaipeda Container

Terminal in Lithuania. Klaipeda Kontainer Terminal Lithuania (KKT) is another successful installation for CRS's Rotainer® Eurospecs.

KKT has three large mobile harbour





cranes, which were all connected to a Rotainer® Eurospec 38 in a matter of three days.

Two Liebherr Cranes — an LMH 320 &

LMH 420 — with a Gottwald HMK 5506 fully electric unit were set up and handed over to the client in record time.

The client also ordered a fleet of

Rotorcon® 2900mm High Cube (Certified Rotatable Containers) to maintain compliance with international crane standards and regulations.

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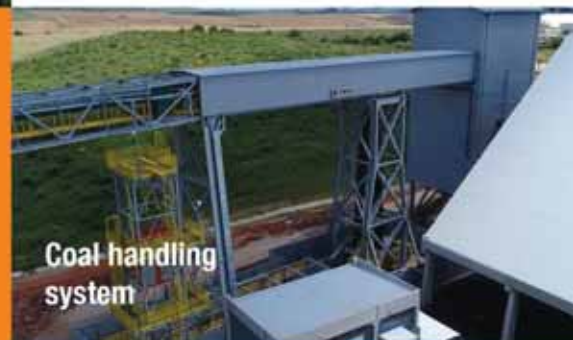
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Fertilizer handling & storage

getting to grips with a tricky cargo



Patience pays off: Legacy supplies fabric building to major fertilizer dealer

LEGACY FABRIC BUILDING FOR ATKINSON FERTILIZER FEATURES OPTIMIZED DESIGN FOR FLEXIBLE USE

Patience is a relative term, but is typically regarded as a virtue for those who demonstrate it. The dictionary definition (one probably endorsed by most parents of young children) suggests that patience is mainly about staying even-tempered while dealing with some form of adversity. Its broader use in everyday language, however, doesn't assume there is any trouble involved; in fact, 'patience' often refers to something purely positive, such as the ability to wait until the right moment for a given opportunity.

When Atkinson Fertilizer Inc. — a branch of Stuart Fertilizer and Grain, Inc. — set out to plan a new facility project for dry fertilizer storage and blending in Atkinson, Nebraska, patience was the order of the day. The company was aware it needed a new building that would offer more capacity, but it also recognized that a hasty decision might only cause other frustrations. Instead, company leadership took the time to consider all options in hopes of yielding the best long-term results.

As the general manager of Atkinson Fertilizer since 2001, Chuck Peterson knew exactly how insufficient the existing storage situation was. "We had a couple 40- or 50-year-old wood stick buildings located right on main street downtown, built on a railroad spur that has since been taken out," said Peterson. "They were good buildings in their time, but they were dark and dingy. We also had to load and

unload all the trucks outside, which caused dust problems in town."

The search for a new building carried the company across the Midwest and beyond, with research including visits to trade shows and tours of several existing fertilizer buildings. Beyond the need for increased capacity, Peterson and his colleagues sought an operational layout that would keep all their workers safely on the ground. They also wanted the facility to fit their new rural lot, a half mile west of Atkinson, without wasting any space.

After more than three years, the search landed in somewhat familiar territory. Several years earlier, Atkinson Fertilizer had a fabric hoop building constructed outside of town strictly for storing potash. "We had experience with fabric, but we were looking for the newest fabric and designs," said Peterson.

The idea of adding a bigger and better fabric building gained more traction and became the ultimate choice for Atkinson Fertilizer after meeting with Legacy Building Solutions. Many fabric structures on the market utilize web truss framing in a curved or hoop shape, and manufacturers often only offer them in standard pre-engineered sizes. By contrast, Legacy buildings feature rigid frames engineered by finite element software, allowing the customer to easily specify exact building dimensions unique to their project.

While a lot of patience had been required throughout the process of researching building options, things quickly accelerated once Legacy was selected to construct the building. "I told them what

we needed, and I think after about five phone calls back and forth we had the design and blueprints we wanted," said Peterson.

The rigid frame building concept provided an ideal opportunity for Atkinson Fertilizer to get an optimized design that would achieve all their construction goals, and work began on a new facility that measured 200ft wide by 280ft long, with a peak height of 75ft and sidewall height of 20ft.

"The width is the maximum that would fit our location site," said Peterson. "The biggest selling point was that we could get the overall dimensions we needed while having a clear span interior with no need for support beams or poles for anyone to run into with payloaders and skid loaders. And everything inside can be done from ground level with no climbing required."

The new facility provided 56,000ft² of storage capacity, a massive increase from the 7,500ft² that compromised the larger of the two old wooden structures. Movable precast concrete containment walls from Hanson Silo Company were placed inside the building to section off storage areas for individual products, including urea, potash, pelletized lime, K-Mag, ammonium sulfate, MAP and DAP.

The plan is to simply move the walls around as necessary to store different quantities of product. "We have this wide-open canvas of space that we can change around every year if we want to," said Peterson. "And we can put a large percentage of the material we'll need for the entire year in this building before we

even get started blending. In the past we constantly had to unload semis at the same time we were trying to blend, so it required more employees since some were purely dedicated to unloading trucks.”

The process of loading and unloading trucks was another key factor in the decision to utilize a rigid frame design. Because the building features structural steel I-beams, rather than a rounded web truss, it has straight sidewalls. That allowed Atkinson Fertilizer to incorporate doors for trucks to enter along the sidewalls, in addition to the main doors at the endwalls. Each of four total truck doors opens vertically along the wall or roof line to avoid opening out into the building’s usable space.

“We have a 20ft wide by 20ft tall door at the north end and a 20 by 20 door on the south end, so when delivery trucks bring product to us they can drive straight through the building from one end to the other,” said Peterson. “And because we have tall, straight sidewalls, we also included east and west sidewall doors measuring 16 feet wide by 18 feet tall for smaller delivery trucks. Everything that happens — blending, loading, unloading — is contained inside the facility.”

The presence of fertilizer obviously creates corrosion concerns for building owners, a big reason why fabric membranes are popular for fertilizer storage applications. Therefore, all steel beams and



components in the new facility were hot dip galvanized to protect against corrosive elements. For the fabric itself, Atkinson Fertilizer chose Legacy’s exclusive 27-ounce ExxoTec™ Elite PVC fabric, a cost-effective option that features more durable coatings and higher tensile strength than the polyethylene fabrics common to many fertilizer buildings.

“The fabric is translucent and we really like the natural light it allows to enter the structure,” said Peterson. “There’s no need for overhead lighting during the day, and we don’t have people having to climb up to change light bulbs. We just have one yard light at each end, and that takes care of all the lighting we ever need at night.”

While corrosion resistance and natural lighting were expected positives of having a fabric roof, Atkinson Fertilizer quickly

began to recognize additional environmental benefits.

“The building just absolutely surprises you,” said Peterson. “We don’t have any insulation, but it still feels much warmer inside during the winter. And in the summer, there’s enough ventilation that it feels 10 to 15° cooler than outside. You’re a lot more comfortable inside our building than you are outside in Nebraska almost all the time.”

Ventilation is provided by a combination of 28 ARV-2000 roof ventilators and 12 aluminium end wall vents. “I’ve never been in a fertilizer shed ventilated this well,” said Peterson. “We still get days where it’s 100-percent humidity and floor gets wet from urea dust. But when you drop the humidity to 80% or so, everything dries up instantly.”

To meet local building codes, the fabric building is designed to withstand snow loads of 35 pounds per square foot and 90 mile-per-hour windspeed. It is also designed to meet seismic zone ‘A’ design codes, and includes icebreakers along the roof overhangs.

Installation was completed by a Legacy in-house crew. “It only took them three to four weeks, so it flew up in a hurry,” said Peterson. “The crew was excellent and even worked through some storms. Within two months we had all our equipment and components inside and were in full production. We couldn’t be happier.”

Atkinson Fertilizer is already planning to expand the building length from 280 to 400ft, an addition that was accounted for in the original design. Consider it another sign of the company’s commitment to patience, which thus far has certainly paid off.





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Bedeschi strengthens its presence in North Africa



As part of its strategic development plan, OCP Group has once again chosen Bedeschi as EPC (engineering, procurement and construction) contractor for the enhancement of Jorf Lasfar plant and port. The aim is to increase the volume of fertilizer sea freight cargoes.

The project consists of a 5km, 2,000 tonne per hour conveyor line for fertilizers and phosphates. Bedeschi will provide the engineering, design, assembly and commissioning by integrating it with the existing handling systems.

Another significant achievement for Bedeschi is an order for a reclaiming system for sand, iron ore, clay for Société des Ciments de Sour El Ghoulane in Algeria.

Bedeschi's new project for KIMA

Bedeschi equipment has been installed at an Ammonia Plant, Granular Urea Plant at onshore/offshore facilities in Aswan city in upper Egypt. The project is to be undertaken by Egyptian Chemical Industry (KIMA) and it has been developed with Bedeschi's long-standing client Tecnimont. It

covers the transport of the fresh urea from granulation to bagging silos or to urea bulk storage and the transport of the reclaimed urea from bulk storage to bagging silos.

The supply consists of a complete handling system, specifically: a reclaimer with a capacity of 240 tonnes per hour, a

belt conveyor line with a total length of 1,000m, three tripper cars, diverters, a dedusting system for each transfer point, vibrating screens, and belt weighers. Moreover, Bedeschi will be responsible of the transfer of all the towers and galleries and will supply a complete control system.





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Fertilizer handling: combining productivity with a clean environment

With the value of the global fertilizer market exceeding more than US\$150 billion in 2019, this industry is a key player in the economies of many countries worldwide. At the same time, however, the fertilizer industry faces many challenges from sustainability to regulatory hurdles, with the biggest plant issues being that of corrosion and particle degradation, according to DemcoTECH GM, Paul van de Vyver. Therefore, chute design and corrosion protection on fertilizer installations are key design elements to mitigate any negative impact on the product while being both conveyed and stored, as well as on the plant life.

"In addition, skilful design of materials handling systems and the careful selection of appropriate materials and technologies limit not only particle degradation but also dust generation by thorough attention to the number of transfer points," adds van de Vyver.

DemcoTECH's wide experience in the design of storage and conveying systems for fertilizer and related materials includes a mobile ship offloading and warehouse distribution system for Grindrod Terminal's fertilizer distribution and storage facility at Maydon Wharf in Durban, KwaZulu-Natal (KZN), South Africa. The system replaced a trucking system with major improvements in the productivity and costs of the existing operation.

"We designed a high level of flexibility into the system, making use of mobile (grasshopper) conveyors on the jetty and multi-point continuous discharge shuttle conveyors retrofitted into the existing warehouse," says van de Vyver.

The four 800tph (tonnes per hour),



Grindrod Terminal's fertilizer storage facility at Maydon Wharf: mobile ship offloading using 'grasshopper' conveyors.

1,050mm mobile (grasshopper) tyre-mounted conveyors are easily positioned along the jetty at locations to suit the various ship size and docking requirements. The fertilizer is offloaded using the ship's grabs which feed fertilizer into receiving hoppers located on the grasshopper conveyors. The fertilizer is then conveyed to a central 36m-long pivoting and retractable conveyor straddling the quayside, which in turn feeds fertilizer into the existing warehouses.

The existing warehouse roof structure was modified to incorporate the five 98m-long, reversible, multi-point discharge shuttle conveyors. These conveyors feed product into the individual warehouse bays, with fully sequenced automatic starting and

stopping of the systems ensuring a seamless operation.

"As a result, this design eliminated blockages or hang-ups, and the facility also has the ability to handle different types and grades of fertilizer."

Also contracted by Grindrod for a project located in KZN, DemcoTECH was responsible for the entire design and supply of the materials handling for a 4mtpa (million tonnes per annum) multiple product terminal at Richards Bay. In addition to rock and coal, the terminal handles phosphates and sulphur, being two critical components in the fertilizer industry.

"The use of pipe conveyors and enclosed warehouse storage with trippers, amongst other technologies, protects the environment and the product from mutual contamination from storage through to ship loading," notes van de Vyver.

In a recent project, DemcoTECH delivered a complex EPC contract, awarded by the SYS & McConnel Dowell joint venture (SMJV), for the sulphur handling system for the refinery and petrochemical integrated development (RAPID) project and associated facilities in Pengerang, Southern Johor, Malaysia.

The contract covered design and engineering through to commissioning of a granular sulphur handling system, which had stringent environmental regulations that had to be adhered to.

"The materials handling system offloads sulphur prills delivered by tip trucks, to stack the material onto a 30,000-tonne



RAPID PROJECT: pipe conveying provides enclosed, environmentally friendly handling of sulphur.

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RAPID PROJECT: pipe conveying provides enclosed, environmentally friendly handling of sulphur.



capacity stockpile and then innovatively reclaims and transports the sulphur in an environmentally friendly manner via a multi-curved pipe conveyor and mobile ship loader into 15,000dwt vessels,” says van de Vyver.

“In order to meet the strict environmental regulations, we designed advanced features into the sulphur handling system, including a multi-curved 2.2km-long pipe conveyor system, enabling optimization of the system in order to reduce the number of transfer points and enhancing the plant significantly for the client.

“The inclusion of a state-of-the-art telescopic chute on the shiploader also reduced the potential for spillages and dust generation.”

Johannesburg-based DemcoTECH has extensive experience working on major international projects, particularly in South-east Asia. As a result, adds van de Vyver, it was able to bring this experience to overcome the various risks the project posed, such as language barriers, monsoon weather conditions and inclement weather patterns. In addition, a major risk to the engineering phase was sourcing the design of the structures’ members in the region to suit the climatic conditions.

ADVANCED TECHNOLOGIES

DemcoTECH provides a total solution to the storage and handling of bulk materials,

with its expertise and range of advanced technologies enabling it to provide a custom design tailored to the client’s needs. Such solutions include both enclosed and open storage, conveying open and enclosed systems, mobile conveyors and stackers on dumps, as well as ancillary equipment such as dust suppression and control. All equipment it designs and installs complies with international environmental and safety standards.

“Systems such as warehouses and enclosed stockpiles are ideally suited to sectors such as the fertilizer industry, preventing contamination of product by the external environment and vice versa,” says van de Vyver.

“Similarly, conveying technologies, such as the DemcoTECH pipe conveyor and aero conveyor technologies provide an environmentally friendly and highly efficient solution for such industries, offering opportunities to reduce the number of conveyor flights, eliminate transfer points, minimize spillage, reduce the conveying distance and save total costs.

“Comprising both fabric and steel cord belting, and with up to 2,250tph conveying capacity, pipe conveyors can be designed using a triangular tubular gantry fitted with a mobile maintenance trolley, thus eliminating walkways along the conveyor length.

“We also engineer and supply two-way and multiple curve pipe conveyors having

drives distributed at the head and tail end,” says van de Vyver.

Resembling a conventional troughed conveyor at its tail end where the material is loaded, the pipe conveyor’s open belt is formed into a tubular shape as it passes through transition idlers, giving it its ‘pipe conveyor’ name. This ‘pipe’ shape enables the conveyor to be curved through vertical and horizontal curves that are far tighter than is possible with troughed conveyors, while at the same time retaining the high-capacity, long-distance conveying capability of troughed conveyors.

At the terminal point the belt opens up for material to be discharged in the same way a troughed conveyor is discharged. On the return-side, the belt is also formed into a ‘pipe’ shape and can be used to transport material in the opposite direction, with significant cost advantages.

DemcoTECH offers its services to the power generation, fertilizer, cement, mining, metallurgical, manufacturing and port handling industries through flexible contracting mechanisms from EPCM to lump sum turnkey, including studies from concept design through to detailed feasibility studies. After-sales services include spares, maintenance, refurbishments and operational readiness packages covering procedures, systems and workplace tools required to successfully operate and maintain a new or upgraded plant.



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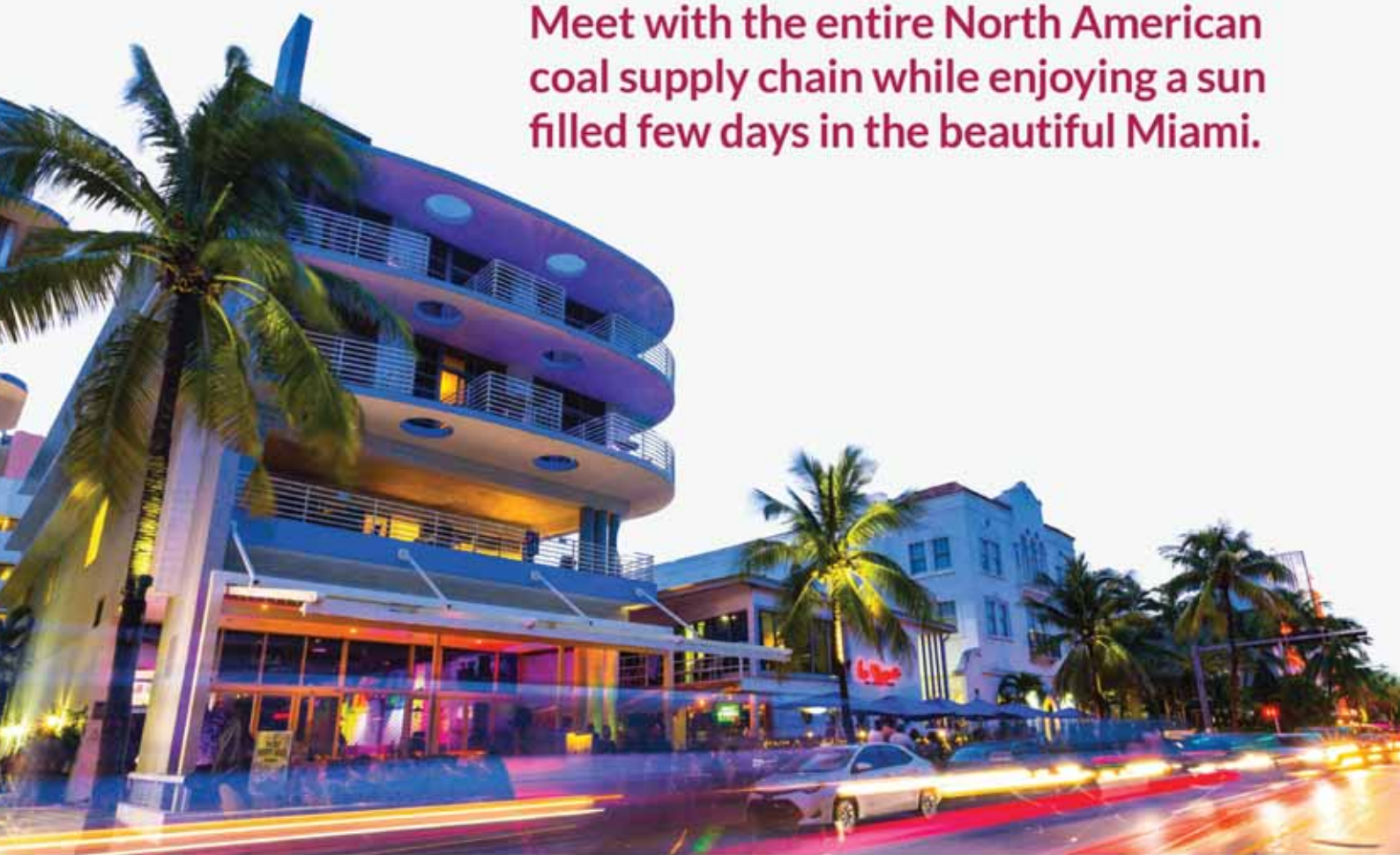
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One of the biggest TTS fertilizer projects to date is the design and construction of material handling equipment for Riga Fertilizer Terminal (RFT). The job was about creating a sophisticated system of: chutes, hoppers, bunkers, supporting structures, flap gates and, of course, belt conveyors, forming the chain with a total length of 1.5km.

One of the most challenging points was that the terminal must handle five different types of fertilizers with completely different characteristics. Each and every material parameter was learned and taken



into account in order to deliver a versatile equipment system capable of handling different materials. Today, the facility has eight dome-shaped storages with a total volume of 180,000 tonnes, a railcar unloading station and a shiploader. All of these units are connected into one system, allowing the cargo to travel within the system according to 120 pre-programmed routes, ensuring a capacity of 2,000 tonnes per hour.

While working on the RFT project, TTS engineers were tasked with another challenge — the supply of equipment for another terminal in Riga port, Riga Bulk Terminal (RBT). Two separate conveying routes were designed and built in order to ensure the ability to handle eight different bulk cargo types, starting from grain and ending with alumina. But to make the system fully enclosed, TTS designers invented the so-called moving roof, enabling the jetty conveyor to be open only at the point where the unloading crane is located.

Besides stationary equipment, TTS offers a wide range of tailor-made mobile handling solutions, which are extremely effective in terms of investments and changing cargo flow.

Today, TTS offers engineering solutions of material handling logistics and equipment, storage facilities, loading/unloading procedures with subsequent possibility of production at the TTS factory.

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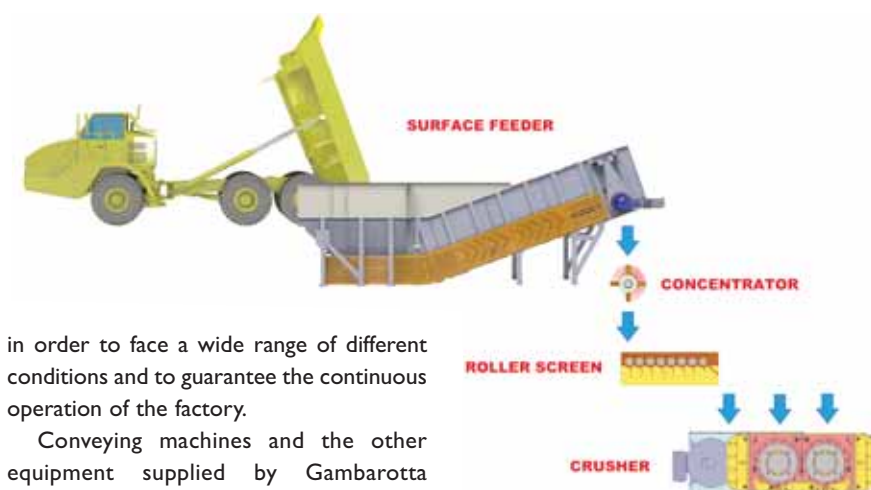
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GAMBAROTTA EP-N 'TIREX': THE MULTIPURPOSE SOLUTION

The handling of material characterized by heavy specific weight, high dust content and large sizes has always represented a big challenge for bulk material equipment suppliers. This is especially true for the mining, cement and steel industries, so the need for a mechanical system that is able to withstand heavy loads and material impacts has been everywhere for many years now. Other significant requirements in these fields typically concern the ability to receive different materials from trucks or off-tipper lorries at yard level, minimizing spillage in the unloading area.

Another important point concerns the requisite civil works. In fact, apron feeders and other type of conveyors usually require an appropriate project and an on-size concrete construction.

The answer to this big challenge has been found in the new Gambarotta Gschwendt EP-N surface feeder, the so-called 'TIREX', a new robust machine with a strong structure able to withstand the typical hard work encountered in mining areas and heavy industries. This special conveyor has been specifically designed for efficient discharge operations, with the possibility to adjust the flow rate of the conveyed material on demand optimizing the process time.

STRONG DESIGN FOR GREAT PERFORMANCES

The main structure of the 'TIREX' is suitable to withstand both large material unloading, including material impacts, and the weight of the trucks which are placed on the back of the machine for discharge operations. Two wheel stoppers are installed on a service platform with the aim of keeping the truck standing still, allowing the material to drop on to the conveying pathway in total safety.

The service platform can also be designed in order to accept up to three trucks, operating on the three sides of the surface feeder at the same time.

The big inlet steel hopper is internally protected with anti-wear material and can include, depending on the EP-N model, one or more service chutes, specially developed to slow down the falling material before reaching the transport group.

A de-dusting cover placed on the



overall top side of the 'TIREX' guarantees no dust leakage during the discharge and conveying operations, keeping the outer area clean and totally safe for workers. This cover includes a tall plastic curtain on the inlet section allowing the off-tipper truck to unload the material without any leakage, keeping the inner side protected from any contamination. At the top of the cover, a filter system can be placed for the de-dusting, including a top service platform for maintenance operations.

The EP-N transport group consists of a train of high quality steel plates, connected to a high strength steel chain on both sides and surrounded by a strong shear proof rubber belt. Basically, the pathway is composed of a straight horizontal track, where the material is initially discharged, followed by an inclined track in which the material is conveyed to the outlet chute. The width of the transport group goes typically from 2.6m to 6m and storage versions of the conveyor are even available. A layer limiter is properly positioned on the inclined section with the aim to level the material and to control the flow rate.

The hauling is provided by a reliable and powerful variable frequency drive (VFD) system, on the top of the pathway of the surface feeder. Depending on the required machine capacity, the drive station can be supplied with single or double motorization and the feeding speed can always be regulated according to the customer's needs.

The drive group, with its own powerful planetary gearboxes, can withstand efficiently the peaks of power during the transportation guaranteeing continuous work and high reliability of the whole conveying system. The outlet side of the surface feeder includes a discharge chute made in anti-wear steel, which can be supplied with material concentrator, a mechanical device that makes it possible to group the conveyed material in a certain

point of discharge. The overall structure does not require any special civil work, but only a solid concrete base and a ramp for the truck arrival.

The machine has been designed with the option to be moved from one place to another without any permanent fixing to the ground. This feature makes the Gambarotta Gschwendt EP-W conveyor extremely versatile and flexible, a feature very appreciated by the customers. The whole conveying system can be supplied also according to ATEX requirements when needed.

QUALITY FIRST

The EP-N 'TIREX' Surface Feeder has been requested by mining plants, cement and steel industries getting a great success and customer's satisfaction. Recently Gambarotta Gschwendt won two orders for the supply of n.5 EP-N for China and other n.4 EP-N for South America.

THE MAIN TECHNICAL FEATURES OF THE EP-N 'TIREX'

- ❖ high strength structure;
- ❖ completely customizable;
- ❖ suitable for any kind of material, even abrasive or big sizes;
- ❖ no civil works required;
- ❖ mobile construction for extreme versatility;
- ❖ with de-dusting cover and filter system;
- ❖ no dust during the discharge of the material;
- ❖ anti-spillage platform underneath truck area available;
- ❖ conveying widths from 2.6m to 6m;
- ❖ weighing version available;
- ❖ restricted outlet version available;
- ❖ able to manage the discharge of n.3 trucks at the same time;
- ❖ storage version available;
- ❖ high performance VFD drive system with single or double motorization; and
- ❖ available in ATEX versions.

Italgru delivers first of three cranes to Stukwerkers

The first of three diesel-hydraulic cranes ordered from Italgru by Stukwerkers, arrived at the Grootdok in the Port of Ghent in Belgium towards the end of August 2019.

The new model IMHC 2120 crane, with a lifting capacity of 125 tonnes and a boom of 51 metres, was manufactured at Italgru's site in North Italy – Bergamo Area. After being mounted and tested at Marghera Port (Venice), the crane was loaded onto a heavy-lift ship and was delivered to its final destination in Ghent.

Two heavier cranes (IMHC 3160), with lifting capacities of 140 tonnes each, will follow in January 2020. The cranes will be used for a multipurpose terminal loading general cargo, containers and bulk materials.

According to Italgru C.E.O, Fabrizio Bonfanti, "Stukwerkers chose Italgru for its competitive price and because the Italgru cranes are simpler in construction and maintenance than competitors."

ABOUT ITALGRU

ITALGRU S.r.l. has proven experience in providing specific operational solutions in the cargo handling industry. These solutions cater to the most important logistic segments such as harbour, offshore, shipyard, and steel mills businesses. Competence and innovation are the pillars behind the ITALGRU brand, designs and developments.

Port cranes

With over 60 years of experience in the cargo handling industry, Italgru's mobile harbour cranes are the result of careful studies of technological developments and the application of the necessary technologies to modern harbour



equipment in order to handle every type of goods.

Both diesel-hydraulic and electric drive system are available, controlled by its state-of-the-art ITALGRU electronic crane management system, ensuring the crane's performance is optimized.

Offshore Cranes

ITALGRU consistently works towards improving its products and services while meeting the demands of developing markets.

The company's products display the highest workmanship quality and full traceability is available for customer review, from the initial steel plate up to the final commissioning of the crane.

All offshore cranes are designed and manufactured according to the highest industry standards with strong adherence

to customer requirements and third party certifications.

Since 1954 a total number of 1,500 cranes have been delivered world wide and both ITALGRU and BONFANTI are established market leaders in crane technology.

ABOUT STUKWERKERS

Stukwerkers has been active in the Port of Ghent since 1338 and is considered to be one of the oldest stevedoring companies in Europe.

Stukwerkers serves its customers from five different deep water locations in Ghent and as such offers a considerable advantage in the field of transport and distribution logistics.

In total, Stukwerkers has more than 500,000m² of open quay at its disposal and 100,000m² of storage space.

MORE ABOUT ITALGRU'S MOBILE HARBOUR CRANE IMHC 2120

An all-rounder, the IMHC 2120 is the flagship within Italgru's range. Flexibility and fast handling of all sorts of cargoes on vessels up to Post-Panamax size: project cargo, bulk with electro-hydraulic or mechanical (four-rope) grabs, coils and containers (with telescopic spreaders 20'-40' or twin-lift). The crane is built in two variants: single winch with two ropes or double winch with four ropes (for mechanical grab handling).

TECHNICAL FEATURES:

- ❖ Lifting capacity max: 125 tonnes;

- ❖ Maximum radius: 51m;
- ❖ Standard version: upper cabin height (operator eye level) 21m (option 24m);
- ❖ Boom pivot height: 17m;
- ❖ Special version: upper cabin height (operator eye level) 27m; and
- ❖ Boom pivot height: 23m

NOTABLE FEATURES

- ❖ Load linear motion;
- ❖ Radio remote control;
- ❖ Torque-controlled cable reel;
- ❖ Telecamera on boom tip;
- ❖ Active dust protection system;

- ❖ Upper (tower) cabin;
- ❖ Additional seat in tower cabin;
- ❖ Air conditioning system in upper cab;
- ❖ Hydraulic luffing cylinder;
- ❖ Closed loop hydraulic control;
- ❖ 3-chord boom configuration; and
- ❖ Latest generation diesel engine.

OPTIONAL EQUIPMENT

Possible optional equipment available for the crane includes: electric drives, a energy saving system (hybrid drives), the ability to be directly supplied by the electric grid on the quay, emergency power pack and many more.



GOLFETTO SANGATI
GRAIN MILLING AND HANDLING

Mechanical and Pneumatic Systems for grain handling and port facilities

Designed, engineered and built in Italy
with 90 years of experience and evolution

Golfetto Sangati, part of GEA Group, designs, builds and installs turnkey equipment for grain handling and milling. The company fulfills the market demand in a competitive way and with state-of-the-art technologies based on research, experience and in-depth technical knowledge. The company designed and built more

than 60 port systems all over the world and plays a primary role in technological advancement from the first pneumatic ship unloader to the more advanced mechanical loaders and unloaders. The company supplies a large range of handling, processing and storage, loading and unloading systems on tires or rail

Italy to infinity – Negrini attachments at work globally



Two- or four-rope orange peel grab.

It's a well known fact that any good machine, be it cable crane or hydraulic excavator, will perform at its best only if the attachment used to work is well engineered and manufactured. In fact, any high-quality attachment will not only do a good job but will also reduce machine stress, allowing for safer working and helping saving energy.

That's why choosing the right attachment is one of the main concerns for any wise contractor and a very important factor to guarantee the successful outcome of any job.

Since 1967, the Negrini company has engineered, manufactured and supplied contractors and port authorities with specially designed buckets for cargo handling operations, as well as special valves that are widely used to collect polluted mud from the sea or river bed. By doing so, Negrini has gained a very good reputation in this field.

Negrini's attachments are at work in many different parts of the world: from Italy

to the United States and from the Gulf countries to Australia, Negrini is the brand of choice for many contractors.

The success of Negrini's products has been boosted up in particular in recent years, confirming that performance and quality are the ultimate features that contractors want for the attachments that

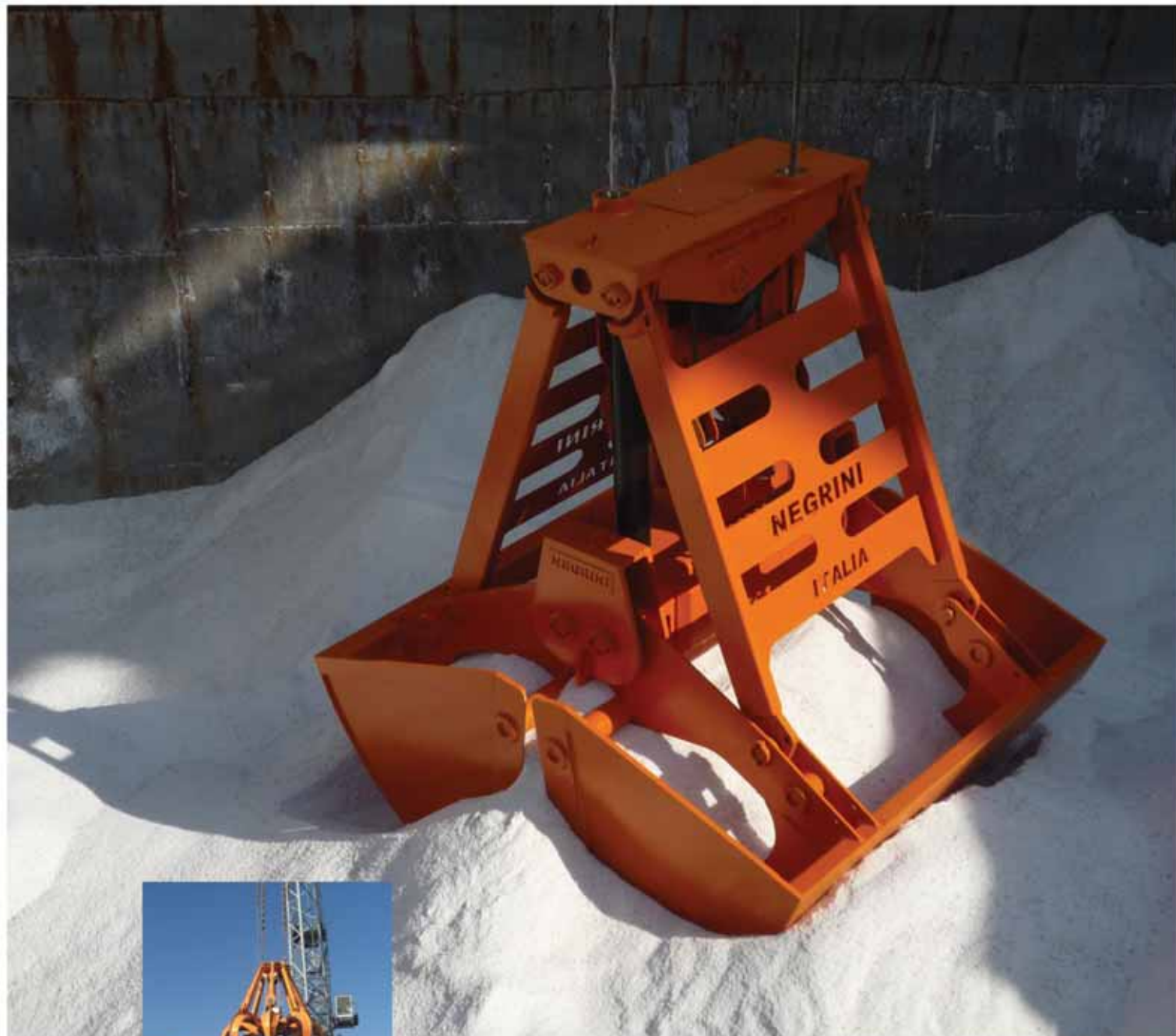
they will employ for their most demanding jobs.

NEGRINI'S STANDARD PRODUCTION RANGES FROM BUCKETS WITH A CAPACITY OF 1m³ UP TO BUCKETS WITH A CAPACITY OF 40m³ AND CAN BE DIVIDED INTO 3 CATEGORIES:

❖ LM (light material), materials with



Radio controlled single-rope grab.



NEGRINI
since 1967 SRL

Negrini company, established in 1967, specializes in engineering and manufacturing a comprehensive range of grabs and buckets for rope machines and crawler mounted cranes; they are employed to do many jobs. Negrini buckets and grabs are very well-known for quality as well as for the very accurate and skilful engineering work; in fact Negrini supports their clients by analyzing the job to be done and, if needed, by adjusting the standard design of grabs and buckets to enhance their performance once in operation.

VIA TORRICELLI 4 - CASTELFRANCO E. (MO) - ITALY



www.negrini.org



Two- or four-rope dual-scoop grab.

densities of up to 1.0 tonne/m³;

- ❖ GP (general purpose), materials with density until 1.6 tonne/m³; and
- ❖ HD (heavy duty), materials with densities up to 2.6 tonne/m³.

THE MAIN NEGRINI PRODUCTS FOR PORT ACTIVITY ARE:

- ❖ two- or four-rope orange peel grab;
- ❖ radio-controlled single-rope grab; and
- ❖ two- or four-rope dual scoop grab.

TWO- OR FOUR-ROPE ORANGE PEEL GRAB

The purpose of this bucket is to handle large volumes of bulk material quickly and efficiently. A good design combined with the use of high wear-resistant steel and an excellent pulley system, allows the design and construction of very strong buckets with relatively low deadweight and high production capacities. The blades of all buckets are made of Hardox (or similar) wear-resistant steel to improve strength and extend life. Minimal maintenance can also be carried out by non-expert personnel, greasing and periodic inspection of the structures (pins, bushings, welds, etc.). The equipment has been designed for heavy-duty use in presence of dust, sand

and dirt with hot and harsh temperatures.

RADIO CONTROLLED SINGLE-ROPE GRAB

The lifting device does not require a hydraulic or electrical system to power the bucket, and a single cable or hook is sufficient. The bucket is opened when suspended using a remote radio control. Closure occurs simply by resting the tool on the ground. An underwater model is available for operating submerged in water or other fluids. The bucket is designed for heavy use in the presence of dust, sand, and dirt, and in very hot or very cold conditions.

MAIN ADVANTAGES OF USING THIS TYPE OF GRAB:

- ❖ reduced adherence of materials inside the shells;
- ❖ smooth emptying of material, avoiding recoils that can damage the crane;
- ❖ can be fitted on any crane with a hook, and is fully independent;
- ❖ does not require any power supplies or control cables;
- ❖ opening and closing times are more than halved compared with the electro-hydraulic model;
- ❖ zero operating costs, the bucket has no

power supplies, motors, filter pumps, etc.;

- ❖ can be used and maintained by unspecialized personnel;
- ❖ underwater model available for use submerged in water, mud, etc.; and
- ❖ easy low-cost maintenance.

TWO- OR FOUR-ROPE DUAL SCOOP GRAB

Clamshell grabs are the optimum solution for any bulk material, that can be used on all hoisting devices, two- or four-rope or crawler cranes.

The bucket can be required with transverse or longitudinal orientation, the cables that control opening and closing can be both internal and external ones replacing only the upper balance. On request, Negrini can replicate the interaxis of crane cables by building special blocks, this correct alignment of the cables guarantees a long life, including crane and bucket components.

The bucket can be requested with standard profile valves suitable for all materials, with containing profile to reduce material dissipation or with dredging profile to increase penetration in difficult materials with optional teeth.



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Big movers in the Continental bulk market



VIGAN 200tph pneumatic barge unloader with loading arm installed at Brabomills in 2004.

France & Belgium
in focus

Jay Venter

Belgian flour mills use VIGAN unloaders

As in other European countries, the Belgian flour milling industry is still proceeding in its consolidation process.

Of the 16 mills that still exist in Belgium (instead of more than 60 mills 20 years ago!), the three largest account for around 80% of market share: Ceres (Soufflet group), Brabomills (Paniflower) and Dossche Flour Mills.

Compared with some local and smaller mills, these large capacity flour mills import their wheat essentially from abroad and by ship (mainly from Germany and France). The flour they produce meets the needs of the country's own bakery sector and important volumes are still exported after being fine-tuned to match the local bread market needs.

Most French and Belgian fast-growing wheat (which therefore results in high yields) is very price-competitive compared with other markets. By adding Vital Wheat

Gluten and biotechnological additives to the milled flour, it can withstand comparison with the highest standards.

VIGAN plays an important role in the success of Belgian flour exports. By providing efficient unloading solutions to the largest Belgian flour mills, the company adds value in the competitiveness of the country's flour mills export volumes.

MADE IN BELGIUM

Created in 1968, the Belgian company VIGAN manufactures a complete range of pneumatic and mechanical conveying systems for dry agribulk products and has renowned expertise in pneumatic ship unloading equipment.

From the alloyed steels — which are produced by a sister company — used for all the metallic structures and parts, up to the pre-assembly in the factory, VIGAN's production remains Belgium-made.

All the company's activities take place on the same 12,000m² site, which enables easy exchange of information between all teams including sales, engineering, manufacturing, quality control and after-sales technical assistance. This guarantees an accurate quality control of the entire machine manufacturing process and enables an easier and shorter response time with respect to after-sales support.

Thanks to unloading solutions that are particularly well suited to the needs and environment of Belgian flour mills, VIGAN has over the past several years developed partnerships of great value with the three largest Belgian mills.

PNEUMATIC BARGE UNLOADING

Ceres Mills is part of Soufflet group. It was the largest Belgian flour mill and among the top five in Europe, producing flour essentially for bakers.

For more than 20 years, Ceres has used the same 160tph (tonnes per hour) VIGAN pneumatic barge unloader for the discharge of cereals arriving by waterway to its facility in Brussels.

Brabomills-Paniflower is part of the 'La Lorraine Bakery Group', market leader in the field of fresh bread. On its site in Merksem (Antwerp), Brabomills grinds about 400,000 tonnes of grain annually. The wheat and rye is delivered by ship from France and Germany.

Brabomills uses a 200tph VIGAN pneumatic barge unloader for discharging grains. The machine is also equipped with a loading arm for loading of pelleted fibres, a resulting by-product of the milling process.

Being located in an urban area, sound emissions had to be contained even more than usual. VIGAN's equipment has been installed inside the production building. Several features have been added to the equipment to improve the acoustic insulation of filter, tower, piping and suction nozzle.

Dossche Flour Mills is one of Europe's largest mills, with 3,200 tonnes of wheat transformed daily and its flour being distributed in 40 countries. It is also one of the largest European exporters of flour and mixes, having gained important market shares in Africa, the Gulf countries and in Latin America.

Dossche Flour Mills is currently using a



VIGAN 160tph pneumatic barge unloader installed at Ceres in 1996.

200tph VIGAN pneumatic barge unloader for discharging grains at its production facility in Antwerp.

Several other big companies, like CARGILL, SYRAL, ADM, AXERREAL, HEINEKEN or ROQUETTE, are also important wheat users as far as they transform grains (mainly wheat, barley, corn and cocoa beans) into starch, glucose syrups, Vital Wheat Gluten, malt, chocolate and other derivate products.

Most of them have found their way to VIGAN unloading solutions for their raw materials.

For example, VIGAN has delivered several pneumatic unloading and loading

machines to CARGILL Group (namely in Belgium, the Netherlands, France, Germany, United Kingdom and Switzerland), SYRAL (in Marckolsheim, France), ADM (namely in United Kingdom), AXERREAL (unloaders and loaders in France), HEINEKEN (mainly in France and the Netherlands), MASELIS (in Belgium), ZUIDNATIE (in Belgium), and so forth.

VIGAN is proud to receive repeat orders from existing customers. Some of them are still using machines that were built 30 years ago. VIGAN's dedicated policy to produce maximally at its in-house facilities allows adequate follow-up of all of its customers.



VIGAN 200tph pneumatic barge unloader installed at Dossche Mills in 2014.

Experimentation with the 'Smart Data Services Platform' launched in Le Havre

On 31 October, five public and private partners launched an experiment for the development of the 'Smart Data Services' platform in Le Havre, just weeks after the announcement of the results of the 'Innovation Regions' call for projects for the investment programme of the future (TIGA). The experiment, which is fully in line with the Le Havre Smart Port City project, is designed to deliver services in the urban and port ecosystem by enhancing data valorization.

Among the 24 winning projects in France in this third State-funded investment programme for the future, the agreement on the Smart Data Services platform signed on 31 October in Le Havre is a first, underlining the high level of co-operation among the five public partners (HAROPA – Port of Le Havre, Le Havre Seine Metropole) and private partners Orange, Cisco and SOGET).

Data management is one of the main features of smart cities, especially industrial and port cities. The aim of this new partnership is not only to develop and facilitate a data exchange and service delivery platform but also to set up an innovative organization dedicated to data valorization. It is expected to have a booster effect on the innovation ecosystem, in line with the Le Havre Smart Port City project.

As part of the Le Havre Smart Port City project, the Smart Data Services project begins with a twelve-month experiment designed to define the conditions for the technical and commercial deployment of the platform.

More than a tool, this platform will help boost and reinforce the innovation ecosystem of the Seine Valley, as well as improve or create innovative services for enterprise and inhabitants alike.

The experiment will offer a range of services in areas such as data analysis, consulting, production of key performance indicators (KPIs), the creation of applications or training for business skill-building.

Examples of innovative services include new solutions to increase the fluidity of the transport of goods passing through port areas or improving the transport intermodality of inhabitants in connection with the MOBI SMART PORT project, and data expertise to optimize urban services.

To do so, the two regional public players, the Le Havre Seine Metropolitan Authority, and HAROPA – Port of Le

Havre have joined forces with major partners:

- ❖ **The Orange group** is a telecommunications operators with high-level expertise in digital and data projects and in supporting communities and territories in their Smart Cities projects;
- ❖ **Cisco** is shaping new uses for local and regional authorities and businesses to realize the opportunities created by digital technology; and
- ❖ **SOGET** brings its business expertise and in-depth knowledge of the links in port supply chains for the development of innovative services dedicated to the facilitation of international trade.

"The Metropolitan Authority produces a lot of data; it is a wealth that must be exploited today to better understand the expectations of citizens and improve the performance of public services. The partnership is of high quality and provides an opportunity to accelerate the digital transition of our region," says Jean-Baptiste GASTINNE, President of LE HAVRE SEINE METROPOLE.

ABOUT HAROPA – PORT OF LE HAVRE

Enjoying an exceptional location on the west coast of Europe, HAROPA – Port of Le Havre, the #1 French port for foreign trade and the fifth-ranking port on the North Europe range for container traffic, each year berths nearly 6,000 vessels including the largest container ships in the world. Accessible 24/7, it processes more than 70 million tonnes of goods each year and supplies nearly 40% of French crude oil imports.

A member of HAROPA, the #1 French port system, alongside the ports of Rouen and Paris, Le Havre is a fast shipping outlet to every continent for the world's shipping lines with nearly 700 ports of call. One of the largest port complexes in Europe, HAROPA has nearly 500 hectares of land available or suitable for conversion along the Seine corridor.

ABOUT ORANGE

Orange is among the world's foremost telecommunications operators, with revenues of 41 billion euros in 2018 and 148,000 employees as at 30 June 2019, including 89,000 in France. The group served 266 million customers worldwide as at 30 June 2019, including 207 million mobile customers and 20 million fixed broadband customers. The group is

present in 27 countries. Orange is also one of the world leaders in telecommunications services to multinational companies under the Orange Business Services brand. In March 2015, the Group presented its new 'Essentials2020' strategic plan which makes the customer experience central to its strategy, so that each can fully benefit from the digital world and the power of its high-speed broadband networks.

ABOUT CISCO

Cisco is a world leader in the technology that has allowed the Internet to exist since 1984. Its employees, products and partners connect the company in a secure way and make it possible to seize henceforth the future opportunities offered by digital technology. Cisco is an ever-more innovative company with \$6.3 billion a year invested in R&D and with more than 200 acquisitions since 1993. The company is present in 100 countries around the world on the EMEAR, Americas and APJC networks

ABOUT SOGET

Founded in 1983 as one of the collective aims of the port community of Le Havre, SOGET ensures the fluidity of port operations by organizing intelligent, shared, and instant management of supply chain information for the various public and private operators. SOGET provides innovative turnkey solutions combining the control of business processes, technological excellence and proximity with its customers and partners.

ABOUT LE HAVRE SEINE METROPOLE

LE HAVRE SEINE METROPOLE, created on 1 January 2019, is a Metropolitan Authority representing 54 municipal districts with a rich, multi-faceted identity due to trade on sea, river or shore. The leading French port for international trade opening up the Seine Valley, the industrial and port activity in the area covered by Le Havre Seine Metropole is a major economic hub for the whole of Normandy, providing a source of employment and specialized skills with 1,200 firms and 32,000 jobs (a quarter of the urban community's workforce).

In digital technology and innovation, the region hosts several world leaders in the maritime and port sectors as well as a network of 250 digital technology companies.

Hydrex repairs rudders in Zeebrugge, Dunkirk and Le Havre

Headquartered in the Belgian port of Antwerp, Hydrex teams recently carried out several rudder repairs on ships in Belgium and France. In all cases, cracks were found that needed to be repaired to prevent them from spreading and causing further damage to the rudders.

Hydrex can perform repairs at anchorage on any type of rudder or while the vessel is berthed. In most cases, this can be done without interrupting cargo operations. The following case studies give an account of some of the recent examples of this.

RUDDER CRACKS REPAIRS ABOVE AND UNDER WATER

A 230-metre ro/ro ship in Zeebrugge had suffered cracks on both sides of the rudder flap. On the starboard side, a branching crack was found while a single crack was present on the port side.

Hydrex divers first drilled arrests on all extremities of the cracks to prevent them from spreading. They then positioned C-shaped plates over the crack arrests and secured these with wet welding.

This allowed the owner to sail his ship without having to worry about the condition of the rudder. He can have a permanent repair carried out during the ship's next scheduled drydock visit at a more convenient time and location.

On two 229-metre sister bulkers in Le Havre and Dunkirk respectively, cracks were found on the upper pintle corner of the hinge that connects the rudder flap to the main rudder blade. Fortunately, these cracks could be repaired by grinding them out after a crack arrest had been drilled. The affected area was then filled with clad welding.

TIMELY DISCOVERY PREVENTS MORE COSTLY REPAIRS

The cracks on these rudders were spotted during an underwater inspection before they caused problems for the ship. This once again shows the benefits of having regular inspections carried out by competent divers, followed by comprehensive and accurate reports. Hydrex teams can detect any problem so that they can be corrected early and prevent the more costly repair which neglect and further damage would bring about.

ABOUT HYDREX

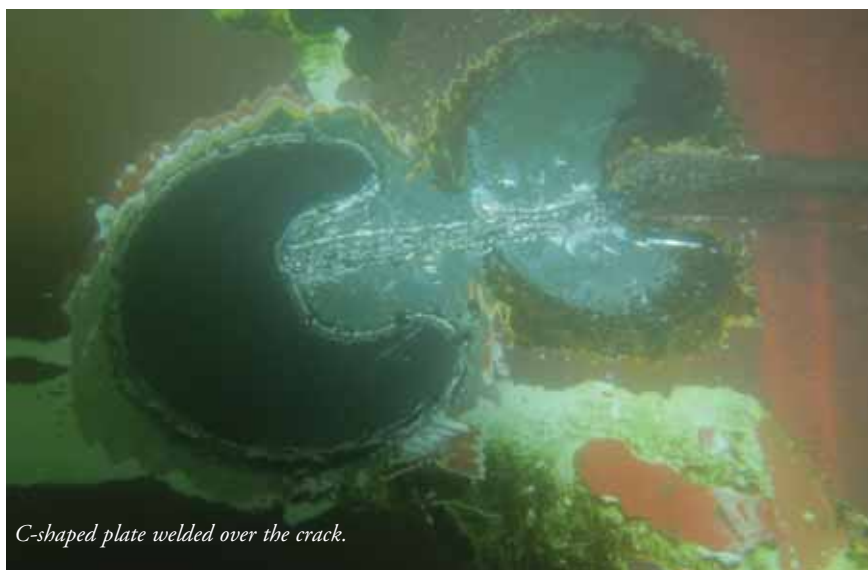
Through an ever-expanding, worldwide network of offices, Hydrex can provide



Branching crack on rudder of ro/ro ship.



Crack arrests were drilled on the extremities of the crack.



C-shaped plate welded over the crack.

start-to-finish solutions economically at any location.

All Hydrex offices have fully operational fast response centers where an extensive

range of state-of-the-art equipment is available at all times for immediate deployment with its skilled diver/technician teams to wherever they are needed.

Ports of Antwerp and Zeebrugge start negotiations

The port authorities of Antwerp and Zeebrugge have been given the green light to start negotiations on the possibility of a (phased) merger between the two ports.

This decision was made on the basis of findings of an economic complementarity and robustness study conducted by the external consultants Deloitte and Laga.

COMPLEMENTARITY INVESTIGATION

Since the beginning of 2018, the port authorities of Antwerp and Zeebrugge have had constructive discussions focusing on more intensive cooperation. These discussions were the reason for awarding a joint economic complementarity and robustness study to the consultancy firm Deloitte and Laga. In this study, (1) the current forms of co-operation were evaluated, (2) the potential added value around all possible forms of cooperation up to and including an economically inspired merger for both ports was objectified and (3) appropriate potential governance scenarios were explored. The port interest and the synergy benefits between the two ports were always at the forefront of this study.

FINDINGS BY DELOITTE AND LAGA

The research report from Deloitte and

Laga states that ongoing collaborations between the two ports have little impact due to existing competition, a limited scope and little commitment. However, both ports are highly complementary and share the same external challenges. Far-reaching co-operation makes both ports more robust in existing domains, anchors employment and strengthens the role in the region and, by extension, internationally. Far-reaching co-operation also enables faster and better response to future challenges such as scaling up, energy transition, innovation and digitization. The clientèle of both ports is also positive about far-reaching cooperation. Deloitte concludes that co-operation only provides a win-win for both ports if the focus is on extensive integration between the two port authorities. The governance models of a holding or merger were therefore the only ones retained in the governance part of the assignment.

START OF NEGOTIATIONS

MBZ (Maatschappij van de Brugge Zeehaven) and Port of Antwerp are positive about the findings of the research report and both port authorities show willingness to formally start negotiations with a view to the (phased) build-up of a

possible merger. It is expected that the entire process will have a lead time of two years.

Dirk De fauw, Chairman of the Board of Directors of the port of Zeebrugge said "We have been talking to the port of Antwerp for some time to see how we can work more closely with the aim of strengthening each other's port platforms. The ambition of both port authorities is to form a 'MAIN PORT FROM A to Z', which is 'future-proof'. Based on the growing confidence and the positive findings of the research report, we start the formal discussions with our colleagues from the port of Antwerp."

Chairperson of the board of directors of Port of Antwerp, Annick De Ridder said "It is clear from Deloitte's research that both ports are highly complementary and that we face shared challenges. Together, Antwerp and Zeebrugge can become the port of the future faster and more effectively by focusing on new domains, namely energy transition, innovation and digitization. We are starting formal merger talks with Zeebrugge because we believe that this way we can anchor transshipment, industry and logistics more strongly to our unified port and that we will become the gateway to Europe even more than today."

SOGET and the start-up Click2Rail sign a global partnership agreement

SOGET, the world specialist in Port Community Port Systems (PCS) and the start-up Click2Rail, which offers a web application dedicated to rail transport optimization, signed a partnership agreement on Monday 21 October.

As part of the Business Event organized by UMEP Le Havre, SYNERZIP-LH and HAROPA⁽¹⁾ in the heart of the Jacques Vabre Transat in Le Havre, Anastasia Dyakonova, CEO of Click2Rail and Hervé Cornède, Chairman of the SOGET Management Board, have thus formalized their collaboration by signing the agreement under preparation a few weeks ago.

The event was an opportunity for Click2Rail to announce the launch of its service in Western Europe: Click2Rail offers to optimize mass freight transport by offering a web platform to connect rail transport supply and demand.

For example, nearly 4,500 freight trains travel between the European Union and China each year. The filling of these trains is partial due to a lack of visibility and information exchange between rail operators and their freight forwarding and

shipper customers. Based on this observation, Click2Rail has designed a shared and web-based platform, allowing train operators to post their transport offers and places remaining on one hand, and freight forwarders and shippers to book an available place in a few clicks at a lower cost on the other hand.

The platform, now in test mode, will be available from January 2020 from SOGET's S)ONE portal. The subscription to the PREMIUM special conditions is open to the first four subscribers to the platform. This type of subscription allows users to publish an unlimited number of slots, access the entire service catalogue and the integrated API.

Anastasia Dyakonova, CEO of Click2Rail, commented: "To achieve the European objective of a 30% rail modal shift by 2030, innovative players must consolidate their efforts. We are very proud to be selected by SOGET to cooperate in digital logistics in order to greatly improve the efficiency of rail transport and make our world a greener place."

According to Hervé Cornède, Chairman of SOGET's Executive Board: "Our main objective is to provide additional services to our clients. Click2Rail's integration meets the needs of operators who want to use alternatives to road transport. This completes our work on the development of river transport, since we have been connecting all the river terminals of the Seine Axis via our systems for nearly ten years. It is also in line with the ambitions of the French government 'Towards a more competitive supply chain for business and sustainable development' in the report submitted by Mr Hemar and Mr Daher last month to the French Prime Minister."

The agreement between the two entities also provides for the development of interfaces between the S)ONE Port Community System proposed by SOGET and the Click2Rail platform, to automate certain procedures and the dissemination of information between software, in order to go further in facilitation and offer an even higher value-added service to users throughout the supply chain.

Slight increase in cement & clinker flows in French ports during 1st semester 2019

Bulk cement and clinker flows handled in French ports represented 2mt (million tonnes) in 2018, writes Sylvie Doutres, joint managing director, DSG Consultant.

This volume included import, export and domestic coastal flows ('cabotage') of which more than 80% just for reception in French ports (1.6mt). Of this volume, seaborne cement and clinker imports accounted for 1.35mt and domestic coastal distribution for 0.3mt.

During the first semester of 2019, cement and clinker flows reached 1.1mt of which 86% unloaded and 14% loaded. Compared to the same period in 2018, this traffic increased by 2.3%. A positive evolution of these traffics has been observed since 2016, especially with the development of cement and clinker imports and coastal distribution. Cement and clinker unloading in French ports reached 0.94mt at the end of June 2019 and increased by 4.6% compared to the first semester of 2018.

Even if cement and clinker traffics are considered as minor bulks and generate less volumes than steel production, this traffic is ultimately of great benefit to a large number of ports in France. In 2019, cement or clinker were discharged in 20 ports: Dunkirk, Boulogne, Le Havre, Honfleur, Brest, Nantes-Montoir, Lorient, Rochefort, les Sables d'Olonne, La Rochelle-Pallice, Bordeaux, Marseille, Fos, Sète and five ports in Corsica. Loadings were operated in four ports: Dunkirk, Fos, Marseille and Nice and excepting for coastal distribution, these flows remained limited.

More than half of the cement and clinker reception was handled in only three ports: Montoir, Honfleur and La Rochelle-Pallice, which totalled 468,000 tonnes of



First clinker unloading at Sete port for Cem'in'Eu, directly onto truck and using a dust-free hopper to limit dust contamination.

cement and clinker during the January-June 2019 period.

The supply of raw materials for the Grand Paris works has favoured the development of clinker and cement seaborne flows in the maritime ports along the river Seine and Ile de France nearby region.

As an illustration, an increase of 35% was observed between January and June 2019 with regards to the clinker volume unloaded at Honfleur. At Bordeaux-Bassens, this traffic decreased by 39% during the first semester 2019 because of the move of clinker imported for Cem'in'Eu to the port of Sete, where this importer commissioned a new terminal in June 2019. At Nantes-Montoir, this traffic

decreased by 10.5% as cement traffic stopped, with the port only receiving clinker since January 2019.

In most of these ports, cement players or their port operators have set up specific facilities for the storage and handling. A total of nine cement players are present in French ports: international groups like LafargeHolcim, Vicat, CRH, HeidelbergCement, Titan, Cementir, Cimatis and local players like Cem'in'Eu and PRB.

For the second semester of 2019, cement and clinker traffics could continue to increase at low path. Even if new entrants in the market could increase their traffic next year, it is expected that cement and clinker traffics will remain steady and perhaps even decrease slightly in 2020.



La Rochelle- dry bulk terminal and clinker grinding station of Eqiom at La Pallice.

Port of Antwerp results January–September 2019: total freight volume up 1.1%

Aerial view of Port of Antwerp. © Port of Antwerp



TOTAL FREIGHT VOLUME UP 1.1% DURING FIRST THREE QUARTERS

The total freight volume handled by Port of Antwerp rose from January through September 2019 by 1.1% compared with the same period last year. The container volume (in TEU) was up by as much as 6.4%. However the slowdown in the world economy reduced the growth rate of more volatile trade flows such as conventional breakbulk, liquid bulk and vehicles. On the other hand, the volume of dry bulk such as scrap metal, minerals and coal soared by 9.5%, further propelling the overall freight growth for Port of Antwerp.

DRY BULK RISING

Dry bulk volume, for its part, was up by 9.5% over the space of nine months. During this period, five times as much coal was shipped as in the same period last year. The strong increase in the volume of coal was partly due to a temporary shift in transport routes as a result of low water levels in the Rhine. This was accentuated later in the year by traders stocking up, given the prospect of higher coal prices in the coming months. The other dry bulk categories, such as fertilizers which were the highest performer in 2018, are coming under heavy pressure and are trending downwards.

CONTAINER VOLUME CONTINUES TO EXPAND

With growth of 5.7% container freight is by far the largest category in the port of

Antwerp. This growth can mainly be seen in the transshipment of containers, but the container volume is also expanding as a result of more imports and exports. All trading regions with the exception of Latin America recorded positive growth.

BREAKBULK FEELS EFFECT OF TRADE UPS AND DOWNS

Ups and downs in world trade are continuing to have an impact on breakbulk freight flows, resulting in an overall drop of 9%. The conventional breakbulk volume, with steel as the main category, suffered a fall of 12.9%. Both imports and exports of steel are increasingly feeling the consequences of geopolitical measures that restrict the flow of trade. Only exports to Mexico and Turkey experienced growth, while imports from all producing countries suffered a decline.

The total ro/ro volume for its part contracted by 2.1%, while the number of new cars handled was down by 10%, due to, among other things, the declining volume of new car exports in the third quarter. By contrast the decline was partly offset by an increased volume of second-hand cars, with growth of 12%.

LIQUID BULK FLUCTUATING

Liquid bulk experienced an overall fall of 6.2% by the end of the third quarter. On the other hand the crude oil volume was up by 5.5%. Chemicals, for their part, which by the end of the second quarter

had experienced growth of 5.7%, contracted again so that by the end of September they were at practically the same level, up by just 0.8%.

Oil derivatives also experienced a slack month in August, just as they did last year, resulting in an overall decline of 9.5% by the end of the third quarter. Nevertheless the refinery-bound volumes remained relatively stable, although the volumes related to trading activities performed rather poorly. A slowdown in economic growth and fluctuating oil prices with a downwards trend led to uncertainty among traders, with little rotation. But there are positive signals: the chemical giant BASF recently announced an investment of €550 million in additional production capacity at its Antwerp site.

SEAGOING SHIPS ON COURSE

A total of 10,814 seagoing ships called at Antwerp during the past nine months. The gross tonnage of ships berthing in the port was down slightly by 0.8%, at 313 million GT.

“Port of Antwerp keeps on growing. The recent call by the *Isabella* is a new record as the largest container ship ever to call at Antwerp. Proof that our port offers safe and easy access to megamax container carriers with deep draught. In this way we continue our sustainable growth because large ships like these significantly lower carbon emission per shipped container,” declared port alderman Annick De Ridder.

North Sea Port on course for new annual record

Over the first nine months of this year, the North Sea Port companies recorded a volume of 54mt (million tonnes) sea freight transshipment, almost 2% more than in the same period last year. This is according to results published on 10 October 2019.

If this growth continues for the remaining three months, the merged port may well end this year at a new record high.

Sea cargo transshipment increased by 1mt (+ 1.7%) compared to the first nine months of 2018 and amounts to a total of 54mt. This is a new record high for this period.

As a result, the port will probably reach a record for the fourth year in a row. The mark of 70mt of sea freight transshipment was first exceeded in 2018, and it now appears that the year 2019 will see over 71mt.

GROWTH IN DRY BULK AND CONTAINERS

One reason behind the increase in sea cargo transshipment in the first nine months of 2019 is dry bulk. The increase by 6.7% to 26mt is due to the transshipment of products for the steel industry (e.g. petcoke) and the construction sector (e.g. sand, cement clinker and bricks).

Another reason is a significant increase in the transshipment of containers. Container throughput has grown by 51% to almost 2mt, accounting for 277,000 TEU (20-foot containers).

THIRD QUARTER

In the third quarter of 2019 (17.4mt), maritime transshipment increased by 1% compared to the same period last year. This third quarter is in line with the recent stronger quarters.

MODESTLY OPTIMISTIC

At the beginning of this year, North Sea Port was modestly optimistic, and it still remains such after nine months. The port still has a high demand for location options and sea freight transshipment is increasing in some sectors. However, growth has slowed down in the second half of the year. An imminent Brexit and a shrinking economic growth continue to demand a cautious approach.

ABOUT NORTH SEA PORT

North Sea Port is the 60-kilometre-long cross-border port area that stretches from Vlissingen on the North Sea coast in the Netherlands, some 32 kilometres inland to



Nearly half the grain in Europe passes through North Sea Port.



Breakbulk makes up 17% of the goods transhipped by sea-going vessel at North Sea Port.

Ghent in Belgium. As a central hub in Europe, multimodality and a wide variety of types of goods are its chief concerns.

The port is a multimodal port, because it provides access to the hinterland via wide range of transport options, with a strong emphasis on inland shipping. And, what's more, it also offers space for development with over 1,000 hectares of commercial property still available.

DRY BULK

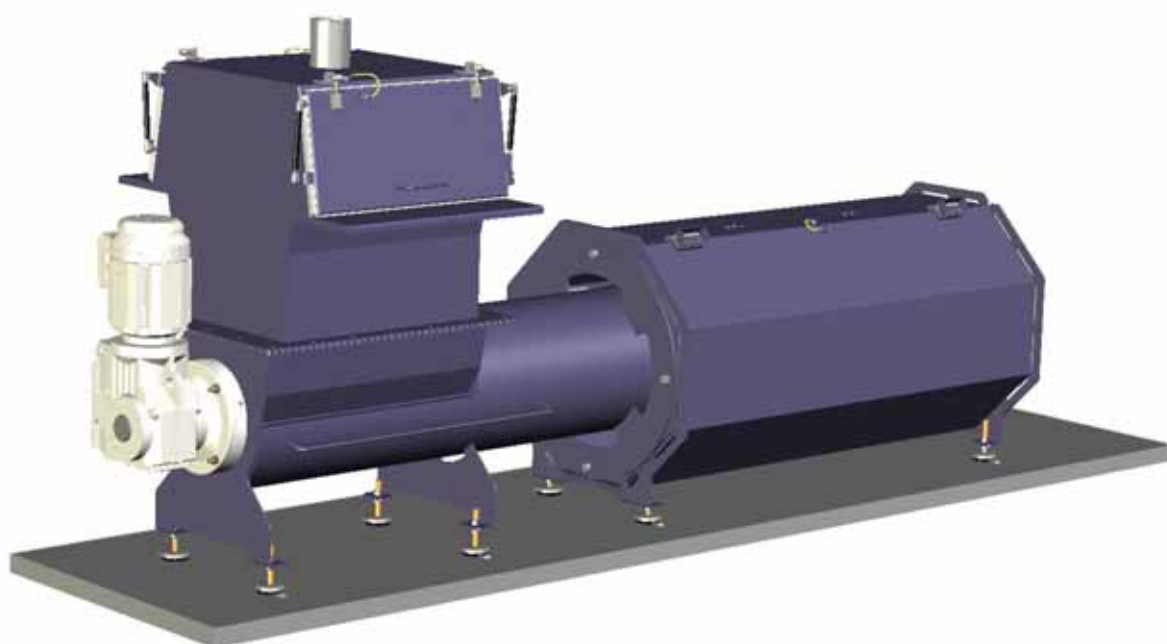
North Sea Port is a true dry bulk specialist. Dry bulk accounts for 47% of the

transshipment of goods by sea-going vessels in the port area. The port welcomes and provides accommodations for a large number of businesses that store, transship, process or manufacture dry bulk goods. Each of them has its own unique added value, which enables North Sea Port to create clever synergies.

FROM CEREALS TO GRAINS OF SALT

North Sea Port is sometimes referred to as the 'granary of Europe'. Nearly half the grain in Europe passes through its port area.

Packing a punch with modern bagging systems



Van Beek's bag compactor now also for big bags

In order to process empty bags in as efficient, cheap and environmentally friendly a way as possible, Van Beek has designed the bag compactor, which has now been adapted to handle FIBCs (flexible intermediate bulk containers). So, from now on, the company's bag compactor will from now on also be able to compact big bags easily?

TECHNIQUE ADAPTED TO BIG BAGS

The operation of the bag compactor is as effective as it is efficient. The screw in this machine compacts empty bags, which reduces the volume by some 60–80%. The market asked Van Beek if the bag compactor also worked for big bags. The answer was no, but Van Beek likes to think up solutions and set to work on this one. "Big bags are bigger and made of a coarse fabric that is a bit more difficult to compact," says Joram van der Heijden, sales

engineer at Van Beek.

"During testing it was found that big bags are in particular more difficult to feed into the screw. To draw big bags into the screw, we devised a technique that exerts extra pressure on the bags and as a result big bags are fed properly into the screw and then compressed."

ADVANTAGES COMPARED WITH OTHER PRESSES

The bag compactor can be used for compacting plastic bags, jute bags, cardboard bags and combinations of these. Van der Heijden says: "The machine has many different designs. The standard design is a steel coated version. For bags containing residues of aggressive powders that come into contact with steel, we have stainless steel versions."

For processes in an explosive atmosphere, Van Beek can produce an

ATEX version of the bag compactor. By using a chute the empty bags can be fed into a continuous process. The bag compactor can be used stationary, but a mobile version is also possible.

COST SAVING

According to Roel Kneepkens, sales engineer at Van Beek, the biggest advantage of the bag compactor is in the cost saving. "A hydraulic system is not in fact necessary to drive this press, only electricity. As a result the bag compactor is many times more economical and sustainable than a hydraulic press."

Another advantage is to reduce the handling of these bulky waste streams. It is no longer necessary to move containers back and forth with a relatively low load.

The empty bags are now compacted at the source and only the effectively compacted bales need to be removed.



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At K 2019 Starlinger unveils 'circular packaging': a closed loop for big bags made from polypropylene fabric

At the K 2019 trade fair, which took place in late October, Starlinger presented a closed loop system for big bags made from woven polypropylene. The sustainable concept 'circular packaging' was Starlinger's main theme at the K show 2019 as well as at the Starlinger Open House in Weissenbach/Austria.

Worldwide, more than 380 million four-loop big bags (called FIBCs in specialist vocabulary – Flexible Intermediate Bulk Containers) are sold every year; this equals an annual recycling potential of approximately 800,000 tonnes of material. To turn big bags into big bags once more, the Austrian Starlinger & Co. GmbH has now developed the concept 'circular packaging' for big bags made from polypropylene fabric; the well-known FIBC expert Dr. Amir Samadijavan acted as consultant for this project. The sustainable concept was presented at K 2019 in Düsseldorf/Germany; live demonstrations of the technology were the highlight of the Starlinger Open House in Weissenbach/Austria.

CIRCULAR PACKAGING

With 'circular packaging', Starlinger introduced K show visitors to an elaborate concept for a closed loop for big bags that begins with polypropylene granulate and leads back to polypropylene regrulate (rPP) through the process steps production, usage, recovery, and recycling. A closed loop has the advantage that production occurs within a quality assurance system, and the materials used are documented in a so-called 'material passport'. In co-operation with the renowned big bag manufacturers Louis Blockx and LC Packaging, Starlinger has simulated this loop and produced new big bags from fabric with high rPP content. Samples were available at K show and proved that Starlinger rPP big bags show the same quality as big bags made from virgin material in terms of tensile strength, weight, and safety factor.

A CIRCULAR ECONOMY FOR BIG BAGS

At the beginning of a closed loop stands the creation of a uniform material stream. After use, big bags are returned to the big bag filler; this guarantees that they are similar in composition and show the lowest possible degree of contamination, as they do not enter the post-consumer stream. At the FIBC manufacturer, the used big bags



are shredded, washed, and processed into rPP on the Starlinger recycling line recoSTAR dynamic, thereby yielding secondary raw materials for the production of new big bags. Apart from saving costs for raw materials, the recycling of big bags lowers the carbon footprint of this type of bulk packaging. "We have developed this concept because we would like to establish a circular economy for polypropylene fabric in which the recycled material is again processed into fabric — no downcycling involved," emphasizes Hermann Adrigan, Starlinger Sales Director. "This can only succeed if the packaging is already designed with an eye on recyclability (design for recycling), and all process steps are perfectly matched." To take an example, the 'circular packaging' sewing process is performed without the use of polyester multifilament yarns.

PLASTIC FABRIC MADE FROM rPET FLAKES

At the previous K show, Starlinger drew attention to itself with a sustainable concept: the production of tape fabric from up to 100 % rPET flakes. This year, the company installed the first projects that are using this technology for the production of big bags from recycled PET in Europe and Asia. "Since we have been intensively involved in the recycling and refinement of plastics for decades, the circular economy is an extremely important topic for Starlinger that is close to our business," adds Adrigan. "Now we have used our extensive know-how to present our clients in the FIBC sector with a sustainable solution also for polypropylene fabric."

Even without recycling options, the carbon footprint of flexible big bags is considerably below that of rigid FIBC containers such as drums or octabins

because of their lower weight and space-saving transport.

PET RECYCLING: A NEW LIFE FOR PET BOTTLES

Starlinger recycling technology focuses on recycling solutions that give new life to PET bottles. In the spirit of a circular economy, bottles become bottles once more: this is achieved with the Starlinger 'recoSTAR PET iV+' technology. The recycling lines meet the strict criteria of various national and international authorities (e.g., EFSA, FDA) with regard to food contact as well as the quality requirements of major brand owners. Another option in great demand is bottle-to-fibre recycling, which turns used PET bottles into textiles such as sports apparel. Starlinger offers the entire recycling technology from a single source, from lines for solid-state polycondensation (for increasing the intrinsic viscosity when mixing flakes with fibres) up to a continuous polymer filter for finest filtration down to 15µm.

Building on the 'circular packaging' concept, Starlinger exhibited machinery at both K show stands: a tape extrusion line starEX 1600 X, and a recoSTAR dynamic 85 C-VAC with SMART feeder and C-VAC high-performance degassing module for the recycling of post-consumer waste.

ABOUT STARLINGER & Co. GES.M.B.H.:

Starlinger is a Vienna-based engineering company with production sites in Weissenbach and St. Martin, Austria, as well as Taicang, China. As a world-respected supplier of machinery and complete lines for woven plastic bag production, recycling and PET extrusion and refinement, Starlinger & Co. Ges.m.b.H. is a synonym



The Starlinger recycling line recoSTAR PET iV+.

for leadership in quality and technology in over 130 countries. Founded in 1835, the

family-owned business has been exporting machines worldwide for more than 50 years with an export quota of over 99.5%.

Sales and service centres in Brazil, China, India, Indonesia, Mexico, Thailand, Russia, South Africa, USA and Uzbekistan ensure quick and professional technical support and service.



Starlinger tape extrusion line starEX 1600 X, seen at K show. This is the line that produces the rPP tapes that are then woven into fabric on circular looms.



Starlinger 'circular packaging'.

RB Intermodal uses Dinos worldwide to streamline big bag handling

At four strategic locations around the world, the Dinos at RB Intermodal form an important and valuable link in the transport process for bulk goods. This international and innovative supply chain service provider, specializing in dry solids, offers logistics solutions in particular for the chemical and mining industry. Dedicated cooperation between RB Intermodal and Van Beek is creating ground-breaking opportunities.

"We have invested in Dinos because this turn-key machine is simple to operate and can easily be extended with all sorts of options", explains Onno Sturme of RB Intermodal. "Furthermore the Dino is a safe solution for loading 25kg to 1,000kg big bags. Apart from the fact that you are investing in an excellent quality machine, Van Beek is always ready for us with customer-specific knowledge and good fast service."

CUSTOM MADE

The DR300 stainless steel Dinos for RB Intermodal have a capacity of 45m³ per hour, a loading bellow on the outlet side and a dust filter which is integrated into the base frame. The Dinos are also fitted with a removable expansion rim as a result of which a bigger quantity of the product can be poured through bigger buffering. "In addition these bulk truck loaders are made for several voltages and the motors are adapted for the country in which they are located", says Roel Kneepkens, Sales Engineer at Van Beek. "The machines are supplied in RB Intermodal's company colour and all are shipped in a 40ft sea container. However, they also fit extremely well onto a truck so they are flexible to use."

RB Intermodal transports powder products in particular, including many talc



powders. In Oman raw materials for the oil industry are loaded. Sturme says: "There are different grades of powders but it is not necessary to clean the Dinos in between. For our applications, with four to five consignments a day, the Dino is perfect. Apart from one small fault we have not yet had any problem with the Dinos."

The strength of the Dino, according to Sturme, lies in the fact that it can be assembled to suit the customer's specific requirements. "Van Beek designs for us the Dinos we have in mind, for example with special extraction", says Sturme. "With other companies this is often not possible."



AMBASSADOR

In 2013 Sturme saw the Dino at work for the first time at another company and this was how he came into contact with Kneepkens. "At a visit to Van Beek in October 2013 the technical matters were discussed and the basis for the four Dinos for RB Intermodal was largely laid," says Kneepkens.

"At present we are co-operating on a project for new loading stations for filling and unloading containers. The co-operation with RB Intermodal runs smoothly and at the same time they also profile themselves as an excellent ambassador. Through them other companies can now also find Van Beek."

Sturme adds: "Van Beek is characterized by a high level of involvement where a suitable solution is offered with short lines of communication. They help us to think things through and we can at all times count on their help and support. The expertise of Van Beek, with their knowledge of our business processes, fits in seamlessly with our wishes and those of our customers."



High-performance bagging with STATEC BINDER

STATEC BINDER is a respected specialist in packaging systems for bulk materials, and continues to successfully apply its expertise on a global scale. With its flexible and customer-oriented packaging technology, the Austrian company is represented on the international market, placing itself among the foremost suppliers of high-performance open mouth bagging machines. The wide-ranging product portfolio offers customized solutions of the highest quality for products used in a variety of industries.

The fully automatic high-performance bagging and palletizing systems by STATEC BINDER are package and palletize free-flowing bulk goods on a daily basis. With satisfied clients located on all five continents, STATEC BINDER bagging machines are used worldwide. The company counts small firms as well as large corporations — represented in the petrochemical or chemical industry, animal feed production, agricultural business, sugar or fertilizer industry and many others — among its existing customer base.

With more than 1,400 installed machines worldwide, STATEC BINDER can look back on numerous positive references.

Whether customers require fully automatic or manual machines, the packaging expert is able to offer the right system to each of its customers to meet their high standards and requirements. For all industries, made-to-measure solutions — tailored to the corresponding general conditions — are constantly created and strongly focused on customers. Beyond the standard product line, the Austrian company also offers customer-specific solutions, which are drawn up together with the customer.

“Today, it is becoming increasingly important for customers to find a competent and reliable partner. Even though our business are primarily bagging machines we consider it to be our responsibility to support customers with their challenges and to provide them with the best possible advice and support. This is the only way we can be a strong and reliable partner,” says Josef Lörger, Managing Director of STATEC BINDER.

CUSTOMER SERVICE AS A SUCCESS FACTOR

Thanks to proven technology as well as continuous developments and optimizations, the company serves as an internationally recognized partner to many. Customers all over the world put their



Big bag workshop.



trust in STATEC BINDER every day. Expert consulting services, a high level of service competence and support for any concern provide reasons for this. Customer service is characterized by highly trained employees and online service with real-time support.

STATEC BINDER specialists are always available to provide assistance and answers to questions, from dealing with orders of spare parts and their delivery, ongoing inspections and maintenance of machines and individual customer training programmes, to tailor-made service agreements.

The fullest satisfaction of the customers has the highest priority. STATEC BINDER focuses on a high level of communication, fast availability and proximity to the customer within its partnerships. That is why a large number of the company's representatives offer not only consultation, but also support customers with maintenance services and inspections directly and immediately on site.

After 40 years of experience, the Austrian company stands for absolute reliability, characterized by precision and constant innovation.

SYSTEM-T workshop.



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- Henry Ford



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HIGH- PERFORMANCE BAGGING SYSTEMS

Depending on the specific product and its properties as well as the desired performance, either open-mouth bagging machines or FFS (form, fill & seal) machines are used.

Standing as the most efficient machine out of the broad product portfolio of STATEC BINDER, the PRINCIPAC is also among the fastest open mouth bagging machines around the globe. As a result of this high performance, the machine is in great demand within many industries. High flexibility and reliability characterize this bagging system. There are two more open-mouth packaging machines in the product portfolio of STATEC BINDER: CERTOPAC and ACROPAC. Depending on the customers' requirements the suitable machine is chosen. On request, all STATEC BINDER packaging systems can be equipped with a dust proof filling spout for packaging powdery products.

The FFS machine SYSTEM-T is particularly suitable for fast packaging of bulk materials. It combines the highest packaging quality of PE tubing with a high production capacity. The SYSTEM-F, a fully automatic vertical FFS machine allows easy and quick adjustability and only requires little space.

The semi-automatic big bag filling station makes it possible to fill big bags (FIBC) with a filling weight of 500kg to 1,500kg. At 150 big



CERTOPAC workshop.

bags per hour, this big bag filling station is one of the fastest in the world. Furthermore, it is characterized by the extremely sturdy design and the high level of reliability.



ABOUT STATEC BINDER

STATEC BINDER is a well-known specialist when it comes to bagging and palletizing fertilizer. In addition, the Austrian company constantly proves that the customer's requirements have top priority and it is looking for the perfect solution for bagging and palletizing the respective product. For these reasons, many customers rely on STATEC BINDER machines and long-term and successful partnerships are established. One thing is certain for STATEC BINDER: only through the experience and feedback of the customers is it possible to continuously further develop and optimize the machines in order to meet the requirements of the customers and to ensure satisfaction.

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