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Coal trade prospects look fragile

In many countries where elements of commodity import demand weakened greatly during the past six months, some pick up may be seen over the period ahead if the covid pandemic control measures' negative effects progressively recede. A revival in global seaborne dry bulk trade could continue through 2021.

Attempts to predict world economic activity and its implications for trade over the next twelve months are inevitably speculative. Earlier ideas of a v-shaped economic recovery have tended to be replaced by expectations of a longer and more gradual process, possibly including further setbacks. It is unclear whether the IMF's recent suggestion that a 5% global GDP decline in 2020 could be followed by 5% growth in 2021 is achievable.

Coal

Forecasts for coal trade this year mostly point to a diminishing outcome. Signs of adverse influences in both the steam and coking coal segments were prominent recently. Lower energy demand and coal-fired power generation in numerous countries has been coupled, in some, with a greater emphasis on domestic coal mining industries.

In the coking coal market, falls in steel production have weakened coal consumption, reducing import demand. As shown in table 1, in the main Asian coking coal importing countries, comprising about four-fifths of this segment's total, the volume in 2020 could be reduced by about 7% compared with last year.

Iron ore

Steel output figures for the first half of this year underline the dramatic downturn caused by the coronavirus pandemic and its accompanying containment measures. China was the main exception, successfully keeping steel production steady with a 1% increase to 499mt (million tonnes). As a result, and reflecting other influences, Chinese iron ore imports were 10% higher at 547mt.

Among other major iron ore importers, steel production plummeted in the January–June 2020 period. According to World Steel Association figures, in the European Union plus UK a 19% crude steel output reduction to 68mt was seen. Japan's volume fell by 17% to 42mt, while in South Korea a 10% decline to 33mt occurred. These countries may be able to initiate a recovery during the second half.

Grain & soya

Contrasting with developments in other dry bulk commodity segments, grain and soya trends have remained solid. Some further growth may unfold over the next twelve months. Increasing soyabeans imports into China, and higher grain imports into Europe and North Africa could support seaborne trade.

China's soyabeans imports in the first six months of 2020 apparently rose by 18% compared with the same period of last year, reaching 45.0mt. Recent forecasts by the US Department of Agriculture indicated a 96mt total for the 2019/20 marketing year ending September, a 16% rise. Consumption of soyameal is regaining momentum amid livestock herd recovery after the severe disease outbreak. Tentative forecasts for 2020/21 suggest that soyabeans imports could remain strong.

Minor bulks

Seaborne trade in aluminium raw materials — bauxite and the processed alumina — increased rapidly last year to over 160mt, and the upwards trend seems set to continue this year. Growing bauxite imports by aluminium smelters in China, featuring rising long-haul supplies from Guinea are boosting these movements. In 2019 Chinese buyers reportedly imported 101mt of bauxite from all supply sources.

Bulk carrier fleet

The bulk carrier fleet's carrying capacity in 2020 is likely to be augmented by higher newbuilding deliveries than recorded in the previous twelve months. As shown in table 2, a 4% increase to about 43 million deadweight tonnes could be seen. This rise mainly reflects greater deliveries of Capesize, Newcastlemax, and ore carrier tonnage. But substantially higher scrapping probably will limit overall fleet expansion to about 3%, about one percentage point lower than last year's growth rate.

TABLE 1: KEY ASIAN SEABORNE COKING COAL IMPORTERS (MILLION TONNES)

	2015	2016	2017	2018	2019	2020*
Japan	70.6	74.0	71.9	69.5	69.0	63.0
South Korea	32.5	32.0	32.2	31.2	31.5	29.0
Taiwan	10.8	10.5	11.1	11.2	11.0	10.0
China	48.0	59.3	69.9	64.0	75.0	77.0
India	50.6	51.4	50.3	57.0	56.0	47.0
Total of above	**212.5**	**227.2**	**235.4**	**232.9**	**242.5**	**226.0**

source: various & BSA 2020 estimates * estimate*

TABLE 2: BULK CARRIER NEWBUILDING DELIVERIES (MILLION DEADWEIGHT TONNES)

	2015	2016	2017	2018	2019	2020*
Handysize (10–39,999dwt)	6.5	4.6	3.4	3.0	2.9	2.0
Handymax (40–64,999dwt)	15.9	13.2	10.8	5.6	8.2	7.5
Panamax (65–99,999dwt)	9.9	9.4	8.9	5.6	11.2	11.0
Capesize (100,000dwt and over)	16.9	20.0	15.3	14.3	19.0	22.5
Total	**49.2**	**47.2**	**38.4**	**28.5**	**41.3**	**43.0**
% change from previous year		–4.1	–18.6	–25.8	44.9	4.1

source: Clarksons Research & BSA estimates for 2020 * estimate

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Iron ore market riddle

China remains major driver as falling stockpiles result in booming prices

Covid-19-caused drop in production sends China scrambling for stocks

Prices of iron ore, which is the principal ingredient for making steel, are primarily decided by the demand and supply factor, *writes Kunal Bose*. The world has experienced the effects of this factor more than once in recent times. The working of global steel industry that, in turn, is impacted by the behaviour of the world economy, is also an important iron ore price influencing factor. As the novel Covid-19 pandemic has spread across the world with alarming speed, infecting millions and leaving thousands dead, the World Bank — in the context of the deepest recession in decades — has forecast a 5.2% contraction in global gross domestic production (GDP) in the current year. The contraction will be unavoidable despite extraordinary attempts by all economies from the US to China to the 28-member European Union to counter the downturn with major fiscal and monetary support.

In spite of stimulus programmes claiming a large portion of GDPs of many leading economies, a 6% dip in world steel production in this year's first half to 873.134mt (million tonnes) from 928.425mt in the same period of 2019 could not be avoided. This, in the natural course of things, should have meant low demand and weak prices for iron ore. But defying the gravitational pull of the market, iron ore prices skyrocketed to six-and-a-half year high with the benchmark 62% fines imported into northern China are traded shy of $130 a tonne. The rates at which the raw material is traded are at their highest since January 2014. Gains in iron ore prices are around 50% since the beginning of 2020 making the ingredient behave like a boom-time commodity.

The answer to the riddle is to be found in China mopping up iron ore at a never-before-seen speed to meet the growing demand of steelmakers and also to shore up stocks that got largely used up earlier this year. Disruptions in supplies from Brazil and Australia last year, and again from Brazil this year — due to a slowdown in extraction and ore movement caused by the pandemic — resulted in stockpiles of the mineral at 45 Chinese ports at nearly four-year lows.

The rapidly changing China scene establishes once again how the world's second-largest economy — with more than half the share of global steel production — will remain the major mover of iron ore prices. China owns large iron ore resources estimated at 73bn tonnes, including basic reserve of about 23bn tonnes. However, that ore is mostly of inferior grades, so the country is overwhelmingly dependent on imports. That further underpins China's importance in global trade of the bulk commodity.

While the world has seen a major contraction in steel output till June, Chinese production was up 1.6% to 499.011mt from 491.959mt in the first six months of 2019. Nothing but the growing Chinese appetite for foreign origin ore has sent the ingredient price to the current high to the delight of miners from Australia to Brazil to South Africa. In stark contrast to what is happening with China forging steel, between January and June, production

India's largest iron ore miner speaks on expansion ambitions

Sumit Deb, chairman of India's largest miner NMDC tells Kunal Bose that the group is readying supporting infrastructure to become more than a 100mt iron ore production capacity group by 2030.

Q: *Iron ore is behaving like a boom time commodity in a recession situation. Will this trend continue for the rest of the year?*
A: Rises in iron ore prices have been on account of supply disruptions in Brazil. In the midst of a fall in iron ore demand everywhere except in one country since April 2020, Chinese buying has been up. Demand in China, which alone has a two-thirds share of seaborne trade in the commodity, has remained strong to more than offset the impact of low buying in the rest of the world.

India is a net exporter of iron ore but with a meagre share of 2% in its global trade. Consequently, it doesn't leave any significant impact on global ore prices, neither is it impacted much by external developments.

Domestic iron ore prices are determined by local demand and supply. Earlier NMDC reduced prices of ore fines and lumps twice in April and May to support domestic steel industry, particularly sponge iron units that needed support in the face of the pandemic. Now with the conditions becoming favourable with steel prices ruling high, NMDC has raised the prices. NMDC may further revise the prices in coming months if the performance of steel so warrants.

Q: *The novel Covid-19 pandemic has hit demand and production of all commodities.*

Sumit Deb, chairman of NMDC.

What has been its impact on NMDC and what steps are taken to keep things as normal as possible?
A: During the first two months of April–June quarter, production and dispatches of NMDC were down drastically due to the pandemic and consequent lockdown. NMDC had to contend with labour shortages and disruptions in supply chain. Muted demand in end use sectors (construction, infrastructure, automobile, etc.) caused lower dispatches. The primary focus for NMDC was to support domestic steelmakers. Consequently, NMDC took an informed decision to calibrate the price of Iron ore to support the economy. We must be in readiness to produce adequately big when the demand picks up. Incidentally our production till mid-August was 90% of output in the corresponding period of 2019/20.

Q: *How feasible will it be for NMDC to achieve this year's production target of 33mt?*
A: Post monsoon, steel demand should see a significant increase. New Delhi is committed to enhancing consumption of steel. The sectors that are primarily to drive steel demand are housing and construction of airports and metro rail. NMDC is well placed to capitalize on increased resultant demand for iron ore and meet this year's production target of 33mt.

Q: *India is targeting 300mt steel capacity by 2030-31. What will NMDC be like by then?*
A: NMDC is committed to retaining its position as the country's leading iron ore miner. It has set a target to enhance production capacity to 67mt by 2025 through expansion of existing mines and acquisition of new green/brownfield projects. The company is in the process of infrastructure development, including construction of slurry pipeline and doubling of rail line between project locations and nearest port. By 2030, NMDC capacity will exceed 100mt. Iron ore-rich Orissa and Jharkhand are the target states for acquisition of new projects. Incidentally, the two states lie in a zone that hosts more than 40% of the country's total crude steel capacity.

in India was down 24.2% to 43.127mt (56.930mt), the EU was 18.7% lower at 68.278mt (83.934mt), Japan suffered a 17.4% setback to 42.209mt and the US experienced a18.3% contraction at 36.198mt (44.313mt.)

China was the first in the world to go into lockdown to contain the virus. But reopening of the economy marked by Beijing issuing in phases 4.75 trillion yuan ($683) in local and national debts with the focus on infrastructure and construction projects helped in the economy rebounding surprising the world. The stimulus focus being such, steel production had to rise and on the back of it imports of iron ore. The country's crude steel production in July was 93.36mt, up 9.1% from the same month in 2019, according to National Bureau of Statistics.

Chinese production is rising in the midst of growing tight availability of top-grade iron ore for which the country is very largely dependent on supplies from Australia and Brazil. July iron ore imports at 112.65mt were up 24% year on year from 91.2mt and against 101.8mt in June. Imports by the country, which has close to 75% share in the commodity's seaborne trade, in the seven months to June jumped 11.8% to 659mt.

Bull run in iron ore

In the growing bullishness of iron ore, an interesting development is the fall of Australian coking coal price below the imported iron ore price in China. A trade official says: "This is the first time we have ever seen a phenomenon like that. But Australian coking coal demand is hindered by the import quota. ... China is less dependent on coking coal imports than iron ore. A growing surplus of seaborne supply has further weighed down coal prices." Iron ore and metallurgical coal in

that order are the principal raw materials when steel is made through blast furnace/ basic oxygen furnace route. Since China makes most steel using BF-BOF route and its own ore, which requires cost-enhancing beneficiation to be usable, which is not found good to make high grades of steel, it required to import 1.069bn tonne ore in 2019 against 1.064bn tonnes in the previous year.

China, which has surprised the world with its recovery on the upside and more may be in store, will no doubt end this year with record import of iron ore. S&P Global Market Intelligence has forecast "Chinese iron ore imports to rise 3.7%, or 40mt year over year in 2020 to reach 1.11bn tonnes. The growth in Chinese imports will further displace high-cost domestic iron ore production. We expect the pace of Chinese iron ore demand to slow in the second half of 2020, tempered by the harsh realities of a global recession and the resulting contraction in international trade." The agency also suggests iron ore use in China is getting a leg up with an expected 1% rise in pig iron production with steelmakers there becoming increasingly shy to use electric arc furnaces as high scrap prices are denting margins.

Commodities experts from S&P Global Platts and S&P Dow Jones writing for *Financial Times* recently have described the magnetic red dirt material as among the least volatile commodities this year. While other metals and mining equities have remained virtually flat, the S&P GSCI Ore Index has more than tripled. What certainly has helped the steel ingredient to come into the reckoning of investors is the end of opacity of prices decided annually between the user — Japan and then subsequently China — and supplier groups a decade ago by two liquid markets on the Singapore Exchange and Dalian Commodity Exchange. According to the S&P experts, "these financial markets are trading 1.2 times and 20 times physical seaborne market volumes, respectively."

What distinguishes iron ore from most commodities is that price influencing demand is decided by one single buyer — that is, China — while mines in Brazil and Western Australia's Pilbara region remain principal supply centres. Australia and Brazil accounted for 83% of Chinese imports of iron ore in 2019 and the trend continues this year. However, strong Chinese demand for the commodity has helped India to get a sliver of share of imports by the world's largest consumer of iron ore. In this year's first half, Chinese imports from India more than doubled to

The Simandou iron ore mine.

20mt from a year earlier. This was the highest since India's first half iron ore supply of 27.8mt to China in 2012.

Potential of Simandou

Now expect a new major source of iron ore emerging in the next five years or more in Guinea's Simandou, which holds massive deposits, for three reasons. First, the multi-year wrangling between deposit owners Rio Tinto, Israeli billionaire Beny Steinmetz and the authorities in the West African

nation over the right to open and operate mines at Simandou ended in 2019 creating condition for project development. Second, the good run of iron ore reflected in the commodity dominating the world's second largest miner Rio Tinto's first half earnings is an encouragement for the prospective developers from China and the Anglo-Australian company to start taking their Simandou projects forward. Third, for reasons of supply security and control over prices, China is keen to diversify supply sources.

For reasons of cost and logistical challenges of moving ore over very long distances to the port, Rio Tinto may go slow with its part of Simandou development. But its chief executive officer Jean-Sebastien Jacques says: "Under all scenarios Simandou will be developed with or without Rio Tinto... There is a huge incentive for China to make it happen now." Chinese mills will need increasingly large quantities of very high quality ore as they step up the making of special and high quality steels. What could be better for them than having their captive sources for the quality ore based in another country? Half of the Simandou deposit would be able to deliver annually over 100mt of top grades of ore. But iron ore from Simandou will not be available any day soon. Opening of mines there will take anything up to ten years, according to S&P Global Platts' Paul Bartholomew.

The richness of Simandou ore is, therefore, driving China's Assets Supervision and Administration Commission under whose oversight comes the major government owned enterprises to back the ambitious mining project. So Australian and Brazilian miners will be keeping a watch on the progress of Simandou mining project. Rio Tinto will perhaps consider developing its part of Simandou deposit after establishing the possibility of shrinking the capital intensity, operating cost and development timetable. Simandou deposit is split into four blocks. Blocks 1 and 2 are in possession of a consortium of Chinese and Singaporean companies. Rio Tinto and Aluminium Corporation of China (popularly known as Chinalco) own blocks 3 and 4.

Australian concern

The relationship between Beijing and Canberra has hit a low following Australia's demand for a comprehensive inquiry into the origin of coronavirus. Iron ore exporters in Australia are seeing in China's recent moves to develop new supply sources for the ingredient an act of reprisal for Canberra siding with the US on the sensitive inquiry issue. China has put duty on some products originating in Australia. But iron ore, which is Australia's principal export item, largely bound for China has been spared customs duties in order not to burden steelmakers with extra cost. For the time being at least considering volumes of imports involved, China will have no option but to let the material come freely from Australia. Analysts are in consensus that Australian exports to China this fiscal to end in June 2021 will increase. Defying threat perception, Australia is seeing investment in large iron ore projects and that will help the country to step up production for exports.

China's iron ore import profile will tell why that country will not disturb the present arrangement even while it starts buying more ore from sources other than Australia. During 2019, of Australia's total iron ore exports of 835.8mt, as much as 688.4mt went to China and the balance 147.4mt to the rest of the world. Brazil was the second-largest exporter with 227.7mt. Then come South Africa, India and others. China's iron ore imports from Brazil may start to take a much bigger share from October, say observers. The Brazilian economy depends heavily on iron ore and farm exports. The South American country has found an opening in Australia on which it hopes to be able to capitalize by offering importers "preferable terms and prices." Will India now revisit its export unfriendly duties to enable its exporters to sell more iron ore in China?

Challenging times for iron ore

Iron ore is facing extremely challenging times, as difficulties affect production and demand, and the situation is particularly severe for Brazil's Vale company, *writes Patrick Knight.*

Last year saw the impact of the collapse in January of the dam at the Brumadinho mine, in which more than 250 people downstream from the dam, lost their lives. Following this disaster, Vale was obliged to suspend, or cut production at about 15 other mines in Minas Gerais state, while similar dams were strengthened. This resulted in about 90mt (million tonnes) being cut from the production and export of ore in Brazil last year.

In 2019, Vale exported only about 302mt of ore, compared with the 385mt shipped the previous year. Some 313mt was exported by Brazil as a whole last year. The fall in Vale's shipments meant the company ceased being the world's number one ore exporting company, to be replaced at the top by Rio Tinto. As a result of this fall, Brazil's share of the ore traded worldwide fell from 25% to 20%.

This year, serious problems have been caused in Brazil by outbreaks of the coronavirus, both at mines in Minas Gerais state, and at the Carajas complex. Such outbreaks, which continue to intensify and spread in Brazil, have also affected operations at ports and railways.

At the beginning of the year, Vale said it expected to ship between 310–330mt this year, as output at Carajas was pushed up. But only 60mt was produced by Vale in the first quarter of the year, compared with the hoped for 90mt. Twenty-eight per cent less was produced by Vale in May this year compared with the same month of 2019, so prospects for the year do not look good.

So far, companies in Australia — Rio Tinto, BHP and Fortescue — have been able to compensate for the cut in supplies from Brazil. After a short-term fall in imports in the first quarter of the year, demand from China, destination of 65% of total world shipments and in normal times, destination of 70% of the ore shipped from

Brazil, has recovered well, so far at least.

Prices, which shot up to above $100 per tonne early this year, but which subsequently fell slightly, have now risen to more than £106 per tonne, the highest for a year. For various reasons, however, many analysts suggest the price of ore will end this year at between $80–85 per tonne.

What will happen from now on, as the impact from the coronavirus continues to increase in the world as a whole, is far from clear. Even though the virus seems to have been brought under control in China itself, as well as in most countries in Europe, it continues to grow elsewhere.

Brazil itself has now recorded the world's second-highest number of deaths from the virus, with more than 80,000 having occurred by late July. The disease is not expected to peak in the country for at least another month. Mixed messages from the Brazilian government, led by a president who until he caught the disease himself, referred to it as "the sniffles" and who gave priority to keeping the economy growing at the expense of lockdowns, means that Brazil is having the worst of all worlds.

The sales of motor vehicles, the leading market in Brazil for steel, have fallen by 50%. Only 1.3 million vehicles are likely to be made this year, rather than twice that number. The Chinese economy as a whole seems to have been little affected by the virus so far, despite a sharp, but very short lived fall in GDP in March and April. Analysts suggest China's GDP will fall by only about 1% this year, compared with 6–8% for most countries in Europe, as well as the United States and Brazil.

However, China's exports, most of which normally go to developed countries, all badly hit by the virus, have fallen sharply in recent months, and seem unlikely to recover soon. The country is facing a worrying surge in unemployment as a result.

Another factor is that many countries in the world, notably the United States, are also becoming increasingly concerned about China's behaviour on the world stage. Its decision to take full political control of Hong Kong, the recent killing of several Indian soldiers on the frontier of the two countries in the Himalayas, and the continued persecution of the country's Muslim population in northern states is provoking reaction.

China's decision to become more demonstrative on the world stage has, until now, been tolerated by countries anxious to continue to trade with China, to accept investments by Chinese companies and generally continue to do business with it. Until now, they turned a blind eye to Chinese excesses, but this attitude is showing signs of changing.

Brazil is a good example of dual thinking about China. Forty per cent of Brazil's exports, notably of iron ore, but also of farm produce, such as soya beans, maize, meat and a host of other commodities, go to China, and this trade has been a bright spot on the Brazilian economy. But at the same time, several ministers in the current right wing government, have made statements extremely hostile to China, following the US line.

So far, no restrictions have been put on trade between the two countries as a result of this contradiction. China continues to be a leading investor in Brazil, where it is involved in numerous infrastructure projects and in the key oil industry.

China has, on the other hand, taken exception to the criticism by Australia of its policy on Hong Kong, as well as its restrictive policy regarding China's telecoms company, Huawei. In this case China has acted, taking such measures to reduce its imports of beef, barley and some other products from the country. Australian iron ore, now vital to China, however, has so far been unaffected by any import restrictions. China ceased importing iron ore from India some time ago, as it increasingly prefers to use product of the highest quality, notably from either Brazil or Australia, in preference to its own low grade ores, or those from India. This is seen as a means of reducing pollution, which has become a serious threat in several Chinese cities. One of the most worrying of recent initiatives taken by China, has been the ambitious "belt and road" programme, which aims at facilitating increased exports from China to numerous countries around the world. The programme has involved China making major investments in a wide range of infrastructure projects, notably railways and at ports, mainly in third world countries in Africa and elsewhere in Asia. The economies of many countries in these regions are now being badly affected by the corona virus. The burden of the high cost of the interest being charged by the Chinese for their investments, has become a serious issue, as their economies take a dive. Measures may start to be taken by some countries to slow the advance of the "belt and road" programme, which involves considerable imports of Chinese steel and manufactured goods. Vale itself continues to make investments at the Carajas complex, where output at its new S11D mine is to rise from the current 90 million tonnes a year, to 150 million tonnes by 2024. The cost of producing ore from Carajas, and getting it along the now fully duplicated railway to the "Ponta da Madeira" port in Maranha state, is set to fall from $15 per tonne to $13.5 per tonne by 2024. The fact that Brazil is so much further from China than its main competitor Australia, is prejudicial for Brazil. But it is hoped that the cost of shipping each tonne of ore between the countries, will fall from $18.1 to $16.3 by 2024 as well. Faced by sharp falls in demand, the steel industry in Brazil is not the only one in the world to be affected by the fall in demand for consumer goods. The British government has promised to save its economy, expected to decline by up to 9% this year by massive spending on infrastructure. But it remains to be seen whether the British government will be prepared to bail out the country's fragile steel industry, much of it owned by either Chinese or Indian companies. Will consumers around the world, greatly frightened by a disease for which no vaccine is yet available, nor for which preventative medicine yet exists, return to their old spending patterns, as increasingly indebted governments are desperate for them to do? Or will the purchase of a new car, fridge, or washing machine be postponed by millions until it becomes clearer what the future holds? In the meantime, the move towards the greater use of scrap steel continues to advance. Industries in many countries are closing down large blast furnaces which use iron ore, and switching to making steel at electrically driven mills, so cease using iron ore to make steel.

DCi

2020 – a year of surprises for the petcoke market

Ben Ziesmer, Pedro Mackay & Rituraj Jha, Advisian

This year the petroleum coke market has been roiled by surprises. First, MARPOL 2020[1] regulation had less impact than expected. Then the global pandemic resulted in government-imposed quarantines and lockdowns that contributed to huge economic disruptions. Almost simultaneously, there was a historic crash of oil prices followed by unprecedented oil production cuts by OPEC+[2]. Finally, China unexpectedly allowed a cargo by cargo-based waiver of the 25% import tariff on petroleum coke from the United States (US). These events impacted petroleum coke production, trade flows and seaborne petcoke movements. We focus this discussion on petcoke exports from the United States, the major production centre of seaborne petroleum coke, to import markets in India and China. However, before delving into

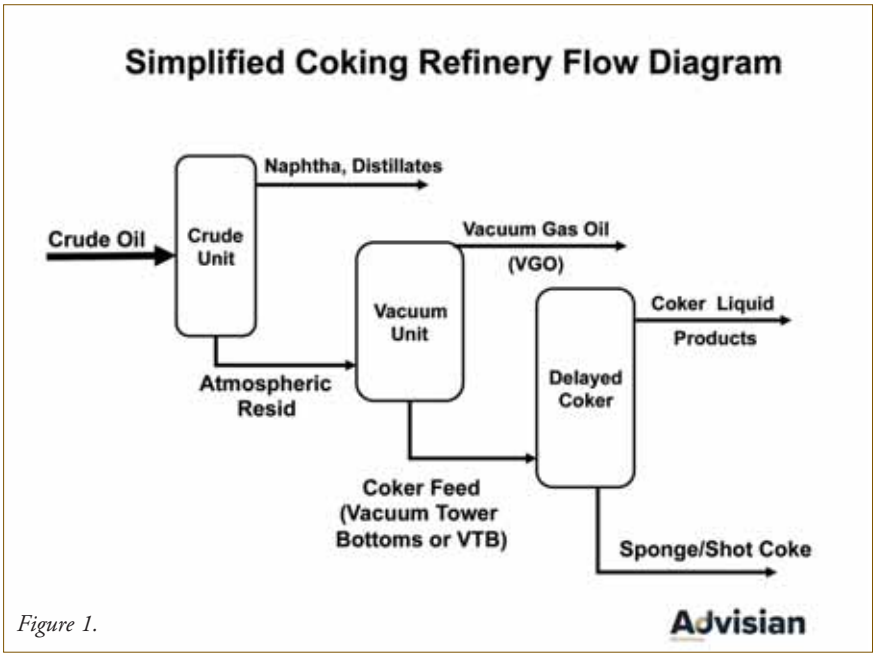

Figure 1.

1. MARPOL 2020 refers to the International Maritime Organizations' MARPOL (International Convention for the Prevention of Pollution from Ships) Annex VI, Regulation 14 rule limiting sulphur oxide (SO_X) emissions globally from seaborne vessels that went into effect 1 January 2020.

2 OPEC+ is a combination of the 13 members of OPEC (Organization of Petroleum Exporting Countries) and a Russian-led coalition of ten additional petroleum exporting countries.

these issues, let us give a brief background on petroleum coke.

Coking background

Petroleum coke is produced as a by-product in many — though not a majority — of oil refineries. Crude oil is first processed in an atmospheric distillation unit, followed by a vacuum distillation unit. The heavy residuum exiting the bottom of the vacuum tower (i.e. vacuum tower bottoms, or VTB) can be used to make asphalt, to produce residual fuel oil (RFO) by blending with some lighter material such as light cycle oil, or used as coker feed (see Figure 1 on p9).

Traditionally, cokers are installed in oil refineries to convert VTB and other heavy residual oils into higher-value light transportation products (e.g. gasoline, jet fuel, diesel fuel). Until recently, a coker almost invariably increased refinery profitability because the yield of high-value transportation fuels is maximized and the production of low-value RFO is minimized[3]. While the coking process has been in use since the 1930s, petcoke production has almost quadrupled over the last three decades because light transportation petroleum product demand grew faster than RFO demand worldwide.

Cokers have been, and continue to be, the preferred refining technology to allow refiners to reduce production of RFO per barrel of crude oil processed and bridge the gap between the growth in demand for light products and RFO demand growth. To summarize, the primary purpose of a coker is to reduce the production of residual fuel oil by converting heavy VTBs into high value transportation fuels (gasoline, diesel, jet fuel, etc.) with petroleum coke produced as a by-product of the coking process.

It is also important to recognize that the percentage of VTBs produced as a result of refining crude oil increases dramatically as the crude oil gets heavier (i.e. lower specific gravity). For example, about 10% (by weight) of light Arabian crude oil becomes vacuum tower bottoms, whereas, almost 40% of very heavy Mexican Maya or Alberta crude oils become vacuum tower bottoms. Thus, refineries that are designed to process heavy crude oils are much more likely to have coking capacity (or other VTB upgrading technology) than refineries designed to refine lighter crude oil.

Petroleum coke (petcoke) is unusual because it is used not only as a heat source (i.e. fuel) but also as a carbon source in metal production and chemical processes. Petroleum coke that is used as a carbon source requires better quality (e.g. low sulphur and metals content) and commands higher prices, driven by different factors than fuel-grade petcoke prices.

Green[4] petcoke is usually upgraded by calcination when it is used as a carbon source. Calcination is a process that uses heat to remove moisture and volatile matter from petcoke, improves critical physical properties, and converts green petcoke into an electrically conductive form of carbon. Green petcoke that has been calcined is referred to as calcined petroleum coke (CPC). The largest market for CPC is in the production of carbon anodes for aluminium smelting. Other uses for CPC are in the production of carbon electrodes for electric arc furnaces, titanium dioxide (TiO_2) production, and as

3. Since the early 1990s cokers have also been used in upgraders that produce various grades of synthetic crude oil (SCO) from bitumen or ultra-heavy crude oils. This type of upgrader exists in Venezuela where ultra-heavy Orinoco Belt crude oil is upgraded and is exported as lighter crude oils, and in Canada where upgraders are used to produce SCO from the bitumen derived from Alberta oil sands. Upgrading economics are driven by crude oil economics, not refining and coking economics.

4. Technically, all petcoke that has not been calcined is green petcoke (GPC). However, within the petcoke industry, the term GPC is usually only used for petcoke that is used as calciner feedstock.

a recarburizer (i.e. carbon raiser) in the steel industry. Almost 30% of the petcoke produced is sold into these higher value-added markets for higher quality petcoke; the remaining production is used as a fuel source.

Fuel-grade petroleum coke is used in a variety of industries (see Figure 2), primarily as a substitute for coal, but sometimes for fuel oil. Petroleum coke has higher calorific value (i.e. kcal/kg) and much lower ash content than coal. However, it is more difficult to burn, has higher sulphur content, and is more difficult to pulverize[5] so, it typically sells at a discount to coal. The cement industry is the largest consumer of petroleum coke because cement kilns are particularly well suited to burn petroleum coke, and cement kilns inherently capture approximately 90% of the sulphur oxides (SO_X) emissions resulting from burning petroleum coke. The 'other industry' category includes lime, brick, calcium carbide, and glass production plus gasification of petroleum coke. The 'long-term storage' category refers to petroleum coke produced as a by-product of upgrading bitumen (primarily Western Canadian oil sands) where the petcoke is placed underground as part of the reclamation process associated with the open cast (open pit) mining of bitumen.

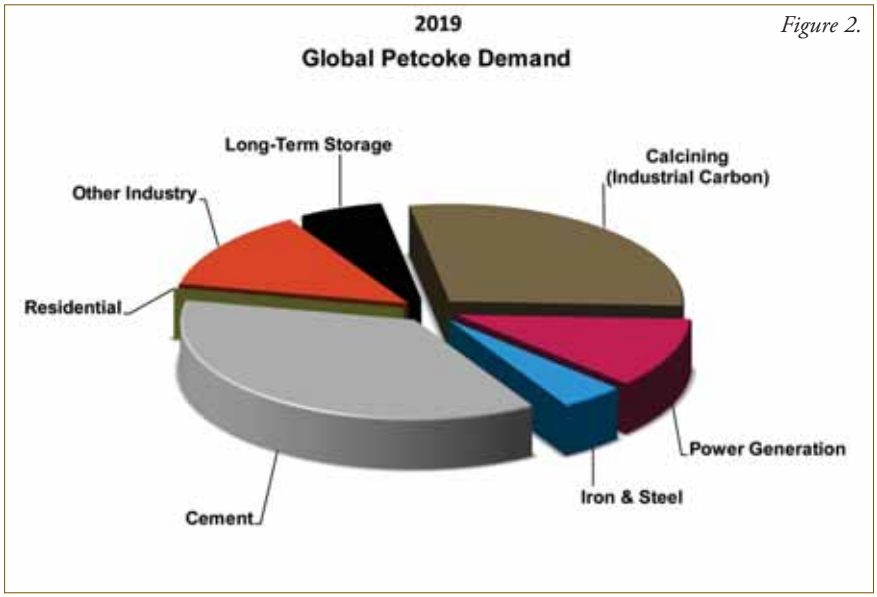

Figure 2.

Pre-MARPOL 2020 predictions

The International Maritime Organization's (IMO) new regulation (MARPOL 2020) was expected to have profound implications on the shipping industry as well as downstream petroleum refining, including potentially impacting the production of petroleum coke. Compliance with MARPOL 2020's new limit on SO_X emissions from ocean vessels can be satisfied by either installing a stack gas scrubbing system, which allows the ship to continue to use high-sulphur fuel oil (HSFO), or by consuming a compliant fuel with maximum 0.5% sulphur content. Very low-sulphur fuel oil with maximum 0.5% sulphur (VLSFO), marine gas oil (MGO), marine diesel oil (MDO), or liquified natural gas (LNG) are examples of compliant fuels.

Currently, the most popular scrubbing technology utilizes seawater, which is alkaline, to react with the SO_X in the exhaust gases. The seawater and the resulting captured sulphates are then returned to the sea (i.e. open loop operation)[6].

Prior to the January 1, 2020 effective date of MARPOL 2020, there was much speculation regarding the impact the new regulation would have on the oil refining and shipping industries. The petroleum coke market was specifically interested in its impact on petcoke production and quality. The regulation was significant because bunker fuel was the second largest market for HSFO, with its consumption in this capacity somewhere between 3.2 and 4.0 million bbl/day (184 and 230 million tonnes/year).

This was a difficult issue for the refining industry. Unlike regulations that required production of low-sulphur diesel or gasoline that clearly established what was being required by the industry, MARPOL 2020 compliance was less specific. It would likely necessitate some combination of increased low-sulphur bunker fuel production by the refining industry, and installation of SO_X scrubbers by shipowners. The lack of clear regulation mandates created an equally difficult compliance pathway for the shipping industry. For both groups, the easiest and least costly solution would be for the other industry to be responsible for all compliance investments. For example, 100% SO_X scrubbing required no refining industry action. Conversely, if the refining industry invested in production of 100% compliant fuels, then shipowners would not have to invest in SO_X scrubbing technology.

This dilemma led to a lack of decisive action by either industry. Pre-MARPOL 2020, refining industry analysis expected that profitability of SO_X scrubbers would lead to substantial investment by shipowners. However, the shipping industry's calculations indicated that SO_X was only profitable in select cases (e.g. large, new vessels, especially vessels such as container vessels, that move at relatively high speed). In early January 2020, shipping consultants estimated that vessels representing less than 20% of global HSFO bunker demand would have scrubbers on board by the end of the year.

Pre-MARPOL 2020, the general view was that sharply reduced demand for HSFO would push prices much lower (i.e. 30–40% discount to crude oil pricing), which would encourage cracking (i.e. non-coking) refiners to run a lighter crude slate to minimize production of HSFO. Increased demand for compliant fuel would push compliant MGO/MDO prices substantially higher. The shift to lighter, sweeter crude slates would increase the sweet-sour crude oil price differential. Consequently, coking refineries would move to heavier crude oils and purchase HSFO fuel, increasing petroleum coke production volume, while petcoke sulphur content would increase due to higher sulphur crude slates.

MARPOL 2020 impacts

Events have not occurred as predicted. Due to better-than-expected availability of compliant fuel, expected price premiums for compliant bunker fuel have not materialized, and HSFO prices have not decreased. These four factors likely

5. Coal (and petcoke) is typically pulverized to approximately the consistency of talcum powder to facilitate the pulverized (suspension) fuel combustion process used in the power, cement, lime and many other industries.

6. It is possible for SO_X scrubbers to be designed to operate in closed loop mode, which requires the vessel to carry reagent (e.g. lime) and store the reacted material (i.e. scrubber sludge) for appropriate disposal in port. Closed loop scrubbing is much more expensive to operate than open loop. Open loop scrubbing has been banned by some ports, necessitating vessels equipped with scrubbers to either operate in closed loop scrubbing mode or use low sulphur fuel while in these ports. Banning open loop operation at/near ports decreases the profitability of SO_X scrubbing.

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A two-day event for petcoke producers, traders, consumers, and market participants. Presenters will explore the current and future state of the petcoke industry. Advisian publishes the **Pace Petroleum Coke Quarterly**, the industry's premier source of petcoke market information since 1983

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contributed to the unanticipated availability of compliant bunker fuel:

1. More availability of very low-sulphur crude oil at relatively small price premiums, which facilitated the production of more VLSFO [very low-sulphur (i.e. compliant) fuel oil].
2. Increased Chinese exports of compliant MGO/MDO, presumably due to reduced domestic demand associated with the slowing Chinese economy
3. Significant stockpiling of compliant fuel ahead of the January 1, 2020 compliance date
4. Decreased bunker fuel demand due to the Covid-19-caused economic slowdown

The price discount for HSFO has been much less than expected. In late December 2019, futures prices indicated that the market was expecting about a 35% price discount for United States Gulf Coast (USGC) HSFO versus WTI (West Texas Intermediate) crude oil. Yet by the middle of January 2020, the discount was 25%; by the middle of February, the discount was only about 15%. In June 2020, the discount averaged only 12%.

Since the primary purpose of a coker is to convert vacuum tower bottoms (VTB) into valuable light products (e.g. gasoline, jet fuel) while producing petcoke as a by-product, the bigger the discount for HSFO to crude oil (light product pricing is highly correlated to crude oil pricing), the more profitable a coker is to operate. HSFO is approximately 70% VTB blended with 30% cutter stock to meet HSFO viscosity and gravity specifications. Thus, coking economics has not been nearly as strong as we and the refining industry expected. However, while coking economics in early 2020 were not as favourable as anticipated, US and European Union (EU) petcoke year-to-date (YTD) production through March 2020 (before significant Covid-19 impacts) was up 17% and 10% year over year, versus the first three months of 2019, respectively. This indicates that MARPOL 2020 caused refiners to produce more petroleum coke.

Only a small portion of vessels have retrofitted SO_X scrubbers so they can continue to use HSFO. We know some HSFO is being used by the power industry instead of natural gas, especially in Mexico and Saudi Arabia. Imports of unfinished residuum (i.e. coker feed) into the USGC have increased from an average of about 109,000 bbl/day in 2017–18 to an average of 316,000 bbl/day for January through May of this year. Nonetheless, what has happened to the HSFO that was used as bunker fuel remains somewhat of a mystery. At this point it is unclear how much of the smaller-than-expected impacts from MARPOL 2020 are due to fundamentals (e.g. more VLSFO production), how much is due to transition issues (e.g. inventory build), and how much is due to Covid-19 impacts.

A dispute in March 2020 between Russia and Saudi Arabia resulted in significantly lower oil prices and an economic environment that could potentially constrain the VLSFO–HSFO spread for an extended time. The two nations disagreed over crude oil production quotas and the amount of demand destruction for transportation fuels due to quarantine measures related to controlling the spread of Covid-19. A narrow spread VLSFO–HSFO spread hurts scrubbing economics for ocean vessels and makes it less likely that vessel owners will install scrubbers in the current environment. SO_X scrubber penetration in the shipping market is important to petroleum coke production because fewer SO_X scrubber installations means less demand for HSFO and likely more favourable economics for increased petroleum coke production.

For example, Scorpio Tankers and Scorpio Bulkers, two large owner-operators, have postponed scrubber installations for 19 tankers and 13 bulkers, respectively. Citing poor economics, including that scrubber payback times have jumped from about one year to four years in the best cases, installation is not expected until sometime in 2021. Scrubbers are also combating lower premiums on vessel daily hire rates for vessels that are equipped with SO_X scrubbers. Scrubbing premiums for Panamax vessels collapsed from about $6,000/day in January to $1,000/day mid-May 2020.

Cokers remain the most economical method for most refineries to convert high-sulphur vacuum tower bottoms into useable low-sulphur refined products (e.g. low-sulphur fuel oil, diesel, gasoline). We expected MARPOL 2020 would cause petcoke production to increase by 5–8 million WMT/year, mostly at refiners with access to the seaborne market. This potential petroleum coke production increase would have been significant as seaborne petroleum coke trade in 2019 was approximately 47mt (million metric tonnes). It would likely have pressured petcoke prices lower in the 2021–2025 timeframe.

We expected a significant increase in petroleum coke production — first as production by existing cokers was maximized, then as coking capacity additions attributable to MARPOL 2020 entered commercial service. Instead, the impact of MARPOL 2020 was far less than predicted, with only a few new cokers being built. Then, there was Covid-19.

Effects of Covid-19

The Covid-19 pandemic has complicated forecasting. In the short term, due to quarantines and lockdowns, there was a severe first quarter disruption in China and in the second quarter of 2020 globally. Generally, they are coming to an end and economies are gradually ramping up. However, the speed and extent of the economic recoveries is unknown. Forecasts of the recoveries are divergent and the potential for further setbacks is a lingering risk. Beyond short-term impacts, we believe that Covid-19 will result in some permanent demand destruction for refined products.

For example, Covid-19 required workforce shifts from business offices to home offices. The impact of reduced commuting on refined product demand will vary from region to region, hinging on factors such as modes of transportation. In the US, we expect the impact will be important, since a significant portion of commuting is by personal automobiles or light trucks. On the other hand, we expect minimal impact on refined product demand in Japan, where a small percentage of commuters use these modes.

Petroleum coke production

Petroleum coke production grew from 113 million WMT in 2010 to almost 140 million WMT in 2015. For the next three years, petcoke production levelled off. The primary cause for stagnant petroleum coke production was the global crude oil slate became lighter. Key factors included:

- Significantly increased production of tight light oil (shale oil) in the US and Canada: this was significant because tight light oil (TLO) has very little bottoms and produces very little petcoke per barrel of crude oil refined.
- Sharply decreased supply of heavy Venezuelan crude oils: crude oil production in Venezuela cratered, and sanctions by the US prevented many refiners from accessing the limited crude oil production.
- Limited availability of heavy Alberta crude oils: this was partly caused by supply restrictions that helped support prices and decreased the ability to move crude oil to market because of various

pipeline projects delays.

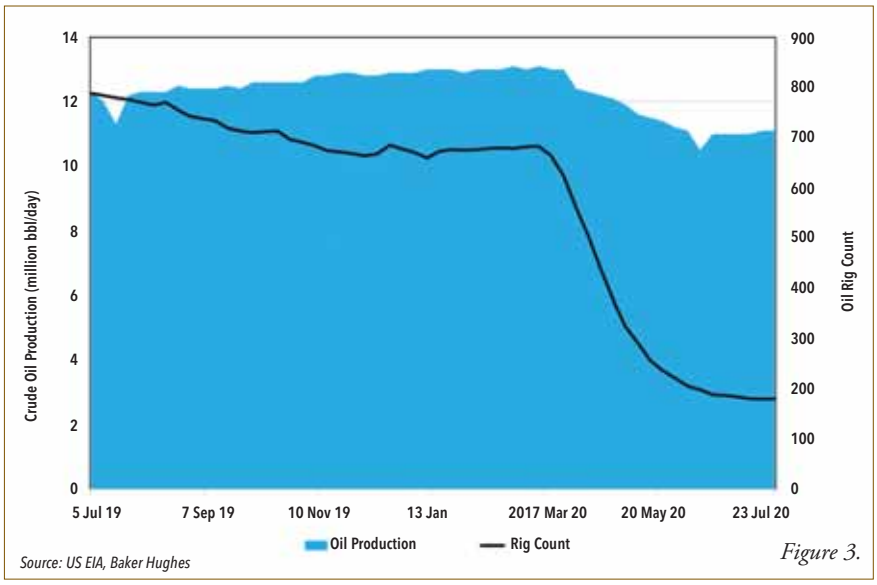
- Decreased production of heavy Mexican (e.g. Maya) crude oil: production depleted faster than expected.
- OPEC+ crude oil production cuts: OPEC+ producers preferentially cut heavy crude oil production to maximize revenues from reduced production.

Petroleum coke production declined by more than 1 million WMT in 2019 because poor coking economics caused refiners to reduce coker throughput, and, for refineries that had the capability, to divert coker feed (i.e. vacuum tower bottoms) to asphalt production. The issue of poor coking economics was especially important for USGC cokers as petroleum coke production in 2019 was down 8% Y/Y versus 2018.

Recently, OPEC+ announced its intention to maintain crude oil prices in the range $40–50/bbl. This creates a relative shortage of heavy crude oil, causing the price differential between light and heavy crude oils to shrink. These lower price differentials tend to make cokers less profitable, and light crude oils produce less petroleum coke per barrel of oil refined than heavy crude oils.

Although US oil rig counts are down (see Figure 3, above) dramatically because of low oil prices, the decline in crude oil production lags changes in drilling activity. It takes time for production from existing wells to decline.

Oil wells producing TLO (also known as shale oil) have a steep production decline; 70% of their lifetime production is within the first two years of production. Thus, we expect TLO production, which accounted for about 60% of US crude oil production in 2019, to decrease in the short term due to the current lack of drilling activity.



Source: US EIA, Baker Hughes

Figure 3.

OPEC+ announced its target to maintain oil prices in the $40-50/bbl range. If OPEC+ achieves this, some US shale oil reserves will not be profitable to develop, and future US TLO production will be restricted. Less TLO production tends to increase petroleum coke production because replacement crude oils produce more petcoke per barrel of crude oil.

Trade flow changes

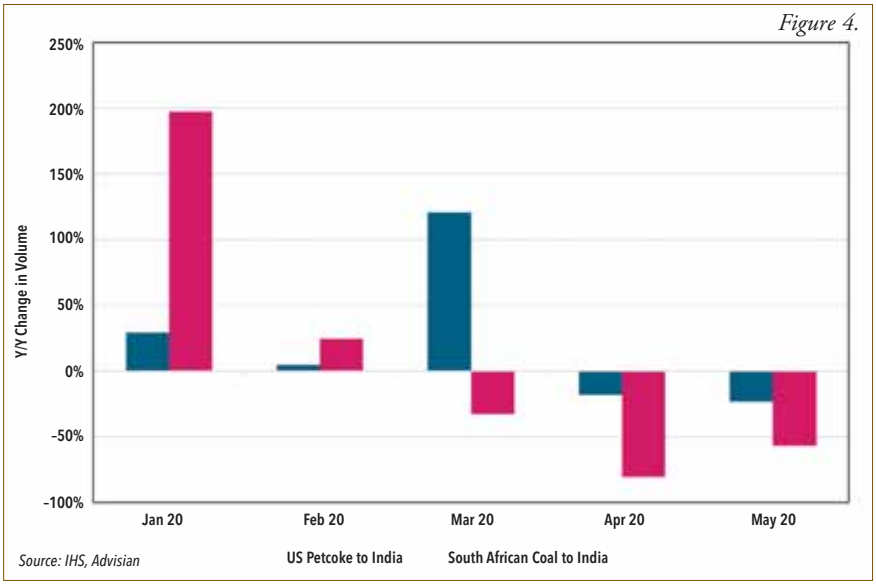
Several different factors including Covid-19, tariffs, MARPOL 2020, and freight rates have impacted trade flows for solid fuels (e.g. coal and petroleum coke). The impacts have been divergent for different counties. The following discussion will highlight China and India, the two biggest markets for seaborne coal and petroleum coke.

Petroleum coke exports to China dropped in February and March due to Covid-related impacts. However, China's coal imports increased 50% Y/Y (i.e. versus February and March 2019) because its production fell more than domestic demand due to the pandemic lockdown.

US petroleum coke exports to China surged in April by more than four times March's volume. This was due to China's exemption of the additional 25% tariff on US petcoke imports that was imposed in August 2018.

US exports of uncalcined (fuel-grade) petroleum coke to India were strong during the first three months of 2020 due to improved economics (i.e. attractive petroleum coke prices vs. coal on delivered $/MMBtu basis). See Figure 4, left. However, to control rising Covid cases, the Indian government imposed a nationwide lockdown from March 25 to April 14, followed by a phased reopening. Cement production in April fell by more than 85% Y/Y to approximately 4mt.

Figure 4.



Source: IHS, Advisian

Accordingly, petcoke imports into India for the cement sector declined significantly during April and May as cement buyers deferred their petroleum coke loadings from the USGC. Despite the easing of restrictions from Phase II onwards, demand from many sectors remained low.

Additional demand for fuel-grade petcoke in India is driven from the ramp-up of the petcoke gasifier train at the Reliance Jamnagar refinery. This increased demand is reducing domestic petcoke supply into fuel-grade markets such as cement manufacturing and is stimulating demand for petcoke imports into India.

Unlike China, India maintained domestic coal production during the lockdown; therefore, coal imports fell as demand from the power sector was reduced. South African thermal coal exports to India were strong (the nearly 197% Y/Y rise in January 2020 is primarily due to unusually low export volumes in January 2019) during the first two months of 2020, but came down significantly in March, April, and May due to the nationwide lockdown. YTD export volumes to India during the first five months of 2020 were down by about 23% Y/Y. See Figure 4 on p14.

Outlook

Focusing on the rest of 2020, low refining rates in the US (on year on year basis) are creating tightness in petroleum coke supplies. US refiners have reduced crude throughput rates in response to Covid-related fuel demand destruction. China, on the other hand, recovered sooner than expected from Covid's impact. Its domestic refiners took advantage of low crude oil prices and ramped up import volumes to record high levels. Indian cement buyers also restored their import activities from June onwards with increased economic activity and reduced availability of domestic petcoke. Supply of domestically produced petroleum coke in India is limited for several reasons including planned maintenance shutdowns, refineries running light crude oil, and sharply increased petcoke consumption by Reliance Industries Limited's huge gasification project.

The seaborne petroleum market is forecast to be short in 2020 as demand is recovering faster than production. The shortfall will probably cause some consumers, especially in Asia, to revert to coal. While petroleum coke production is forecast to further decline in 2020 due to Covid-19 impacts, it is expected to rebound in 2021 as the global economy recovers from Covid-19 and MARPOL 2020 eventually improves coking economics. DCi

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Ben is a contributing editor to Advisian's *Pace Petroleum Coke Quarterly*©. He has an in-depth background in the power sector, including experience in procurement, operations, environmental compliance, and engineering. He is the operational lead for the Advisian petroleum coke practices and has been the project manager for numerous studies involving the fuel-grade petroleum coke market, environmental issues, and power generation.

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Pedro has 24 years of experience working in various energy-related fields such as oil exploration, solid fuel purchasing and trading including petroleum coke and coal, ocean freight chartering, consulting in the petroleum coke industry, and raw materials purchasing in the coke calcining industry. Through his career, Pedro has held responsibilities focused on purchasing and supply chain aspects related to solid fuels for cement plants and raw materials for calciners, solid fuel trading, ocean shipping, and consulting. He holds a bachelor's degree in Mechanical Engineering from the University of Texas at Austin and a Master's in International Management from Thunderbird.

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Advisian (previously Jacobs Consultancy Inc.) has published the *Pace Petroleum Coke Quarterly*© since 1983. The report has been published monthly since January 1985 and is considered the worldwide authoritative source for petcoke market information.

Damen signs contract with Port of Antwerp for delivery of two IMO Tier III-compliant RSD Tug 2513s

On 8 July, Damen Shipyards Group was awarded a contract by the Port of Antwerp to deliver two RSD Tugs 2513 after an intensive tender process. After a legal stand-still period of 15 days, the award became final. The vessels are part of Damen's Next Generation Tugs series and are built with the latest technologies in regards to safety, sustainability, efficiency and reliability.

Artist's impression of the new tugs.

The Next Generation Tugs combine elements of Damen's proven track record in tugs with state-of-the-art innovations leading towards a most efficient vessel; the RSD Tug 2513 produces considerably lower emissions than an equivalent tug. Examples include Damen Safety Glass — shatterproof glazing similar to that used in cars — and a highly ergonomic human machine interface (HMI).

The RSD Tug 2513 is a dedicated ship-handling tug both compact and — with 70 tonnes bollard pull — powerful. It has two bows, which means optimal performance in both bow and stern assisting operations.

As a result of the always bow first approach, Damen has been able to incorporate a higher freeboard than would usually be possible on a tug of this size — meaning no water on deck, improved seakeeping and increased safety.

Both Damen and the Port of Antwerp have a focus on sustainability and innovation. These ambitions became apparent in this tender. For example, the Port of Antwerp selected to have the vessels fitted with Damen's in-house developed, fully certified Marine NO_X reduction system, making them IMO Tier III compliant.

The Port of Antwerp has also selected to have the vessels outfitted with FiFi 1 firefighting capabilities. Damen offers numerous options for its vessels; in this way the shipbuilder is able to deliver standardized, proven vessels, tailored to the individual requirements of its clients.

"We attach great importance to creating a sustainable port," Celine Audenaerdt, technical manager Port of Antwerp said. "In our role as operators we wish to set a good example by investing in greening our fleet. We are systematically replacing our tugs by modern type, more environmentally friendly tugs. Buying the two Damen tugs fits in this framework. The new tugs have more fuel-efficient engines and a more efficient propulsion, which significantly reduces fuel consumption. In addition, we are developing two new prototypes for hydrogen and methanol propulsion."

"We are very proud to deliver the first Damen tugs — and also the first azimuth driven tugs — to the Port of Antwerp to match their sustainable and operational ambitions. I must also congratulate the Port of Antwerp team with their continuous focus on lowering emissions and their courage to invest in the latest technologies," says Vincent Maes Damen area sales manager Benelux. "It is a pleasure to work with such a customer."

Damen Shipyards Group

Damen Shipyards Group operates 36 shipbuilding and repair yards, employing 11,000 people worldwide. Damen has delivered more than 6,500 vessels in more than 100 countries and delivers around 175 vessels annually to customers worldwide. Based on its unique, standardized ship-design concept Damen is able to guarantee consistent quality.

Damen's vision is to become the most sustainable and digital shipbuilder in the world. To achieve this, the focus is on going 'back to the core': on standardization and series construction; the traits that have made Damen great and that are essential to make shipping greener and more connected.

Damen's focus on standardization, modular construction and keeping vessels in stock leads to short delivery times, low 'total cost of ownership', high resale values and reliable performance. Furthermore, Damen vessels are based on thorough R&D and proven technology.

Damen offers a wide range of products, including tugs, workboats, naval and patrol vessels, high speed craft, cargo vessels, dredgers, vessels for the offshore industry, ferries, pontoons and superyachts.

For nearly all vessel types Damen offers a broad range of services, including maintenance, spare parts delivery, training and the transfer of (shipbuilding) know-how. Damen also offers a variety of marine components, such as nozzles, rudders, winches, anchors, anchor chains and steel works.

Damen Shiprepair & Conversion (DSC) has a worldwide network of eighteen repair and conversion yards of which twelve are located in North West Europe. Facilities at the yards include more than 50 floating (and covered) drydocks, including the longest, 420 x 80 metres, and the widest, 405 x 90 metres, as well as slopes, ship lifts and indoor halls. Projects range from the smallest simple repairs through Class maintenance to complex refits and the complete conversion of large offshore structures. DSC completes around 1,300 repair and maintenance jobs annually, both at yards as well as in ports and during voyage.

Vistrato's Covid-19 Guide — a first in co-operation between INTERCARGO and DBTG to ensure safety at the ship/shore interface

Vistrato Limited, a specialist in online dry bulk training, has produced a comprehensive 'COVID-19 Guide for Ship/Shore Interactions' for ships and terminals handling solid bulk cargoes during the current global pandemic. This handy online guide is focused on minimizing face-to-face contact between ship and shore personnel during loading/unloading operations while still ensuring compliance with mandatory documentary exchanges and procedures.

In a unique joint effort, both INTERCARGO (International Association of Dry Cargo Shipowners) and DBTG (International Dry Bulk Terminals Group) have teamed up with Vistrato to support and distribute this visually engaging guide throughout their membership.

As a result of this collaboration, the trio aims to improve awareness around the need to avoid unnecessary face-to-face interactions between ships and terminals during dry bulk operations.

The guide has been reviewed and highly praised by terminal and port operators, ships' agents, masters and officers. It facilitates the dry bulk sector in implementing the IMO recommendation (Circ. Letter 4204/Add.6) which encourages the use of electronic solutions in order to reduce the risks posed by interactions and document exchanges between ship and shore personnel at the ship/shore interface.

The shipping of solid bulk cargoes is subject to a range mandatory checks and exchanges as required by the BLU Code and IMSBC Code. While some of these exchanges are carried out in advance of the ship's arrival, others are normally carried out jointly by master or chief officer and terminal representative on board after the ship has berthed.

The use of the Vistrato guidelines, together with compliance with flag state and port state Covid-19 protocols, will help in ensuring that the loading/unloading of solid bulk cargoes continues to be carried out properly, safely and in compliance with IMO regulations.

New Damen ASD Tug 2810 for Louis Meyer named at Damen Shipyards Gorinchem

Naming ceremony takes place just four months after contract was signed

On 14 August, the naming ceremony was held at Damen Shipyards Gorinchem for the *Peter Wessels*. The new Damen ASD Tug 2810 handed over to Neue Schleppdampfschiffs-reederei Louis Meyer GmbH & Co. KG (Louis Meyer) which is based in Hamburg. Even by Damen standards this was exceptionally fast. The contract for the new vessel was signed exactly four months earlier, on 14 April.

This was made possible by Damen's long-standing and highly regarded policy of both offering a wide range of standard designs that can then be customized to meet the exact needs of each customer, and of building for stock to guarantee fast deliveries.

This particular vessel had been built for stock at Damen Song Cam Shipyard and then transported to Europe to meet just such a need as this.

The 28-metre ASD Tug 2810 is one of Damen's most popular vessels, with over 150 sold since its introduction. With 60 tonnes of bollard pull, they are also highly manoeuvrable, and are built to a rugged design well known for its reliability and durability. They can be found working in ports and harbours around the world. The *Peter Wessels* features a number of options, most notably an aft winch which equips it for coastal towage of barges. It also has been fitted with a sewage treatment plant, a boiler and heated windows.

Louis Meyer, established in 1907 and now under the management of the fifth generation of the founding family, will be chartering the ASD Tug 2810 to Emder Schlepp-Betrieb GmbH (ESB), which operates from the busy Port of Emden, Lower Saxony. The arrival of the *Peter Wessels* will take its fleet up to five vessels and will be its first by Damen.

For Louis Meyer this is its second Damen tug, having taken delivery of a Damen ASD Tug 2411, named the *Jan*, in June 2019. This was an even faster delivery with the contract being signed almost exactly a year prior to that for the *Peter Wessels*, on 11 April 2019.

Damen sales manager Joschka Böddeling commented, "We are very pleased to have been working with Louis Meyer again, and so soon. The fact that they have added two Damen vessels ships to their fleet in such a short space of time is very gratifying. We look forward to working with them again in the future. The *Peter Wessels* has very much been a ship of the Coronavirus era, with the contract signed remotely and the naming ceremony taking place under strict safety conditions. But it is proof that life did go on despite everything and our thanks go out to all involved."

"For us it was nice to work with another family business on the *Peter Wessels*," added Edvin Kohlsaat, Managing Director at Louis Meyer. "So it was a simple decision to return to Damen where they take our ideas into account and deliver high quality. We are confident that the *Peter Wessels* will be a great asset to ESB and their operations in Emden."

The *Peter Wessels* has now been handed over to her owners and commenced work in Emden.

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Damen Shipyards Group operates 36 shipbuilding and repair yards, employing 11,000 people worldwide. Damen has delivered more than 6,500 vessels in more than 100 countries and delivers around 175 vessels annually to customers worldwide. Based on its unique, standardized ship-design concept Damen is able to guarantee consistent quality.

Damen's vision is to become the most sustainable and digital shipbuilder in the world. To achieve this, the focus is on going 'back to the core': on standardization and series construction; the traits that have made Damen great and that are essential to make shipping greener and more connected.

Damen's focus on standardization, modular construction and keeping vessels in stock leads to short delivery times, low 'total cost of ownership', high resale values and reliable performance. Furthermore, Damen vessels are based on thorough R&D and proven technology.

Damen offers a wide range of products, including tugs, workboats, naval and patrol vessels, high speed craft, cargo vessels, dredgers, vessels for the offshore industry, ferries, pontoons and superyachts.

For nearly all vessel types Damen offers a broad range of services, including maintenance, spare parts delivery, training and the transfer of (shipbuilding) know-how. Damen also offers a variety of marine components, such as nozzles, rudders, winches, anchors, anchor chains and steel works.

Damen Shiprepair & Conversion (DSC) has a worldwide network of 18 repair and conversion yards of which twelve are located in North West Europe. Facilities at the yards include more than 50 floating (and covered) drydocks, including the longest, 420 x 80 metres, and the widest, 405 x 90 metres, as well as slopes, ship lifts and indoor halls. Projects range from the smallest simple repairs through class maintenance to complex refits and the complete conversion of large offshore structures. DSC completes around 1,300 repair and maintenance jobs annually, both at yards as well as in ports and during voyage.

Indian Register of Shipping (IRClass) launches vessel for Unichart Navigation

The *ROKNOOR-32*, a General Cargo vessel, built under the classification of the Indian Register of Shipping (IRClass), was successfully launched from the Delta Shipyard in Chattogram, Bangladesh. Ordered by Unichart Navigation Limited, *ROKNOOR-32* is the first in the series of five vessels and is also the first Bangladesh flag vessel being constructed under IRClass.

The launch follows closely on several other vessels which were built under IRClass' classification and successfully delivered during this unprecedented global pandemic. It underpins IRClass' dedication and proven track record to fulfil clients' needs, ensuring that work carries on even during these unpredictable times.

Executive Director of Delta Shipyard, Mr. Syed Monzur Hossain said: "We will like to thank IRClass for all the support provided during this pandemic. The timely approval of plans allowed the construction to proceed smoothly and the team's unsurpassed attention to detail ensured that any issues were resolved early on in the process."

ROKNOOR-32 is approximately 82.5m long with the capacity of 3,200dwt and is designed to meet the latest IMO conventions and codes for worldwide operations.

Amit Bhatnagar, Regional Manager East Coast of India and Bangladesh for IRClass commented: "I am delighted with our team in Bangladesh who have worked tirelessly during this period to facilitate the successful construction and launch of the vessel. The team has been very committed from the start and quickly adapted to the 'new normal' of safety measures, implemented to allow safe operations for both our clients and surveyors."

PD Ports opens multi-million pound bulk terminal at Teesport, UK

The UK's PD Ports is celebrating the official opening of a multi-million pound bulk handling facility at Teesport that marks an important milestone in the revival of the Tees Valley following the collapse of the SSI Steelworks in 2015.

Simon Clarke MP (Member of Parliament), Minister for Regional Growth and Local Government, officially opened Teesport Bulks Terminal during a virtual ceremony on 12 August.

PD Ports' £9.2 million investment to renovate and refurbish its former Steel Export Terminal delivers a modernized warehousing facility that is firmly positioned to handle continued international trade growth and support post-Covid economic recovery, as well as further economic growth over the longer term.

Colleagues from PD Ports and Glencore UK gathered at the socially distanced ceremony to officially unveil the Teesport Bulks Terminal.

The 300,000ft^2 terminal comprises seven walled bays, primed to store a range of bulk products such as soya and grain and directly connected to covered rail access to provide an environmentally sustainable and cost-effective solution for domestic exports.

The investment has created 44 new jobs in the local region of Teesside, and builds on the £1bn of investment PD Ports has attracted to the region over the last decade, in addition to the UK government's own £70 million investment to regenerate the Tees Valley and its ongoing commitment to the levelling-up agenda.

"The opening of the Teesport Bulks Terminal marks an important milestone in the continued revival of the Tees Valley," said Clarke, during his opening speech.

"This new terminal will increase trade, create new jobs for the region and help boost the UK's economic recovery as we emerge from the worst effects of the coronavirus pandemic.

"Teesside is leading the way in an era of international investment and economic renewal and as a proud Teessider, I couldn't welcome this more."

PD Ports' CEO, Frans Calje, says completion of the Teesport Bulks Terminal signifies the resurgence of bulks handling in the Tees Valley and demonstrates the region's economic recovery post SSI.

"In 2015, disaster struck the Tees Valley as the steelworks collapsed after more than 150 years of steelmaking. Overnight the River Tees and this region lost one of its main component parts and we, as PD Ports, lost a third of our business.

"Thanks to an ongoing journey of diversification, we have been able to rise, almost symbolically, from our own ashes into something that is now far larger in 2020 than it ever was in 2015.

"We now employ more people than we ever did before in the Tees Valley and instead of being reliant on what we once were we are now in charge of our own destiny.

"With the opening of this facility we are celebrating the relationship of two like-minded businesses and the realization that by working together we can be far greater than going it alone."

Global natural resource company Glencore Agriculture UK backed PD Ports' investment and UK Managing Director, James Maw, explained how the opening of the facility is an important milestone for the Glencore business as well as for the Tees Valley.

"Our business was getting tired and so we had to radically think about how to revitalize Glencore UK," said James. "That planning and strategy led us to Teesside and PD Ports in late 2016.

"PD Ports has proven its adaptability in transitioning from steel products to a wide range of bulk products and I have to commend the work they have done, alongside key customers, in delivering a remarkable change for PD Ports and the Tees Valley. It is providing a future for the Port and the region as a whole.

"The Teesport Bulks Terminal will provide new opportunities for both import and export as well as providing the efficiency, reliability, flexibility and a level of service that will ensure that our customers remain our customers."

Glencore will utilize three bays at the Teesport Bulks Terminal to store its agribulk products destined for UK distribution — a long-term commitment that demonstrates the resilience of the UK economy and continued international confidence for trade and investment in the UK.

Gran Rosario global leader in export grain

A recent report issued by the Rosario Stock Exchange (BCR) noted that ports in the Gran Rosario region of Argentina had exported a total of 79mt (million tonnes) of grains, flours and oils, which makes it the leading port complex for these commodities in the world. In second place was New Orleans, which reported outbound traffic of this type amounting 64.45mt, and the Brazilian Port of Santos with 42.65mt in third place.

Within Argentina, Rosario is responsible for handling 78% of Argentina's grain, flour and oil exports, with second placed Bahía Blanca a long way behind with 11%.

Argentina is the third largest global exporter of agribulk, with 98.4mt exported in 2018/2019. Brazil and the US are in the first two places.

The Gran Rosario port complex covers 70km of the Paraná River from Arroyo Seco to Timbúes. In this area, there are no fewer than 31 export terminals, of which 21 specialize in export grains, oils and by-products.

In 2019, these terminals combined led the way globally in the export of both soya and corn. For example, in terms of soya beans and by-products, exports amounted to 41.43mt, equivalent to 87% of all Argentina's exports of these commodities. As for grain, Rosario was responsible for 81% of the national total, exporting 29mt.

Wheat exports remain the second highest globally, behind the Columbia-Snake customs region, in Oregon, United States. Last year, these totalled 6.9mt, equivalent to 61% of the national figure.

However, in terms of barley exports, it is the ports south of Buenos Aires that dominate the Argentine market.

In 2019, Gran Rosario reported 2,632 vessel calls, a record in the past 20 years.

Barry Cross

Callao receives call from largest ever bulk carrier

On 5 August, Callao's North Multipurpose Terminal handled its — and Peru's — largest bulk carrier in recent years. The Marshall Islands' flagged *MN Alcor*, which was inbound from Vancouver, is 229 metres long and can carry consignments of up to 96,700 tonnes. On its Callao call, it carried a shipment of 76,112 tonnes of import bulk wheat, which was offloaded to seven warehouses.

On its first day in port, unloading throughput amounted to 1,622 tonnes per hour.

BC

Almería – Spain's leading exporter of dry bulk

In the first two quarters of the current year, Almería Port Authority (APA), whose traffic is heavily orientated towards dry bulk, exported 1.4mt (million tonnes) of cargo. This is 3.3% down on the first half of 2019.

Dry bulk traffic during this period actually fell 9% to 1.18mt, although Almería, which also manages traffic at the nearby Carboneras harbour, is now Spain's leading export facility for dry bulk. Commodities shipped out are cement, crushed marble, limestone and gypsum, the latter mineral being especially important given that the local province is Spain's leading production area for gypsum.

APA previously also strong in imported dry bulk, reported total imports in the first two quarters amounting to 291,647 tonnes, a drop of 75.8%. This dramatic downturn is due to the inactivity of the Endesa Thermal Power Plant, which no longer imports coal through its Carboneras terminal.

BC

Covid-19 hits Indian coal traffic

In India, coal volumes handled at the country's 12 major state run ports declined for four consecutive months to the end of July. In the first four months of the current financial year (April to July), they handled a combined 33.11mt (million tonnes) of thermal coal and 13.51mt of coking coal compared to the same period in 2018/2019. In percentage times, this represented respective falls of 30% and 32.26%.

The 12 ports concerned are Deendayal (formerly known as Kandla), Mumbai, JNPT, Mormugao, New Mangalore, Cochin, Chennai, Kamarajar (previously called Ennore), V O Chidambarnar, Visakhapatnam, Paradip and Kolkata (which includes Haldia). Together, they handled 705mt in 2018/2019.

However, they have all been negatively impacted by Covid-19, with Chennai, Cochin and Kamrajar reporting volumes declines of over 30% in April to July, while JNPT and Kolkata suffered a drop of over 20%.

Thermal coal remains the backbone of India's electricity generating programme, providing 70% of all electricity produced. Coking coal is used in the country's steel industry.

In terms of global coal production, India is the third largest producer behind both China and the US, with at least 123 billion tonnes of reserves.

BC

Port of Montreal named a Marine Industry Trusted Partner by the Chamber of Marine Commerce

The Port of Montreal is the first Quebec port to be named a Marine Industry Trusted Partner. Awarded by the Chamber of Marine Commerce, this recognition aims to promote best practices in this period of pandemic so as to ensure the health and safety of society as a whole.

Right from the start of the pandemic, the Montreal Port Authority has taken many actions in its core mission to supply the public, in full compliance with the health standards needed to fight Covid-19. The MPA has deployed a series of health measures for Port of Montreal workers and, together with its partners, is currently finalizing a rapid identification tool for containers carrying essential health and food products that will be implemented shortly.

To qualify as a Trusted Partner, the MPA had to follow every protocol issued by the Chamber of Marine Commerce to all marine industry stakeholders, making it possible to provide a fully secure area for marine workers and to curb the spread of COVID-19 on a broad scale.

Dunkerque Port acclaimed by French customers for service quality

On June 25, the AUTF (*), the French shippers' trade association (representing importers and exporters from all over France) revealed its satisfaction index of the shippers' perception of maritime transport. This was based on a survey carried out by Eurogroup Consulting, and was conducted with around 50 decision-makers.

The Port of Dunkerque is clearly approved in the survey:

- If 41% of the participants in the panel are 'very satisfied' or 'satisfied' with French port communities in general — for Dunkerque, the figure is as high as 88%;
- 80% of the participants believe that the level of service quality in the Dunkerque port community is improving, while 13% consider it stable.

The measures implemented in recent years such as reverse charge VAT, the H24 customs clearance services in advance of unloading, the opening of the Cargo Community System (CCS) and even "the pooling of Terminal Handling Charges (THC)" have been prime movers in the continuous improvement initiative for the handling of goods.

Similarly, during the Covid-19 pandemic, the Port of Dunkerque as a whole took every step required to ensure that port operations were able to continue as normal while preserving the health of employees present on the quays.

In this period marked by major economic uncertainty, the Port Community of Dunkerque is delighted by the results of the survey and would like to warmly thank the shippers for their renewed confidence.

About Dunkerque Port

The largest French port complex (Calais-Dunkerque); the ninth largest port on the Channel and North Sea Range and France's third-largest port, Dunkerque-Port has built a reputation in many sectors: it is the largest passenger port in Europe (Calais-Dunkerque hub); France's largest energy hub; the country's largest LNG terminal; the leading French port for containerized fruit and vegetable imports; the largest French port for ore and coal imports; France's largest rail port; the region's largest waterway port; and the third-ranking French port for grain traffic. Dunkerque Port is also a sustainable port. It is the trading port of the new Hauts-de-France Region, the largest agricultural region of France, the leading region for the rail industry, and the leading region for the car industry. In 2019, total traffic was 53 million tonnes.

(*) AUTF : Freight Transport Users' Association

Checking under the hood

Inspection, analysis & sampling

Jay Venter

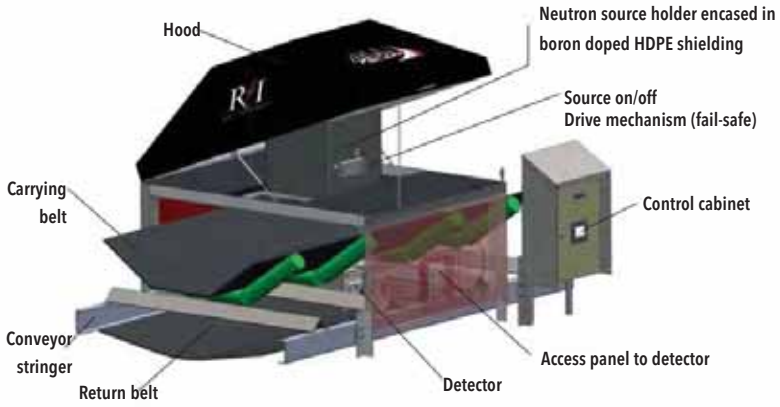
High demand for Real Time Instruments' Online PGNAA Analyser

Australian-headquartered online technology company, Real Time Instruments (RTI), believes that strong demand for its AllScan Online PGNAA Analyser reflects a renewed focus on quality and processing efficiency by the mining and mineral processing sector.

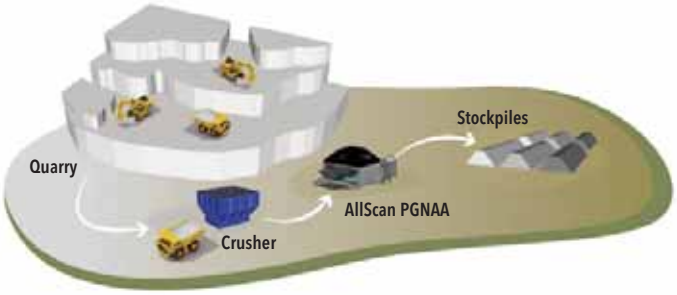
C.E.O James Asbury said that "over the last three years demand for the AllScan has escalated, particularly in the coal, iron ore, cement and copper industries. We've sold, installed and commissioned analysers in many countries including Australia, Mozambique, USA, India, Brazil, Kenya, China, and Chile.

Twenty analysers have been purchased by the iron ore industry for a variety of quality control and processing efficiency purposes. For example analysers have been installed on the ROM belt to monitor the iron content and overall quality of the ore direct from the mine. Others have been installed after the de-sanding circuit primarily to monitor the performance of the de-sanding modules in filtering and removing gangue material. The majority, however, have been installed on belts feeding stockpiles to facilitate sorting and blending and to provide an accurate determination of iron content in the final product.

The cement industry has purchased over 11 analysers recently. There are two main applications for PGNAA technology in cement production. The AllScan is used in stockpile management to improve pre-blending performance through better utilization of quarry materials. The AllScan is typically installed on the conveyor between the crusher and the stockpile.



Combining state-of-the-art nuclear technology (PGNAA) with ground-breaking spectral modelling (Dura-G™) AllScan delivers accurate, minute-by-minute elemental analysis and reporting of key process parameters.



The AllScan is typically installed on the conveyor between crusher(s) and stockpile(s).

The AllScan continuously reports the elemental composition of the material on the conveyor belt. This information is used to keep track of the pile build-up and may optionally be used to direct haul trucks to different sections of the quarry in order to best exploit the quarry. The online data from the AllScan is used to build homogenous stockpiles with a lower variation in chemistry.

Another application for the AllScan in cement is to optimize the feed to the Raw Mill. The analyser is used in conjunction with raw mill quality control software and placed on the conveyor downstream of the feeders and upstream of the raw mill. Data from the AllScan is used to reduce the variability in the raw mix product, and ultimately the kiln feed.

Over 38 AllScan analysers have recently been utilized in the coal and power industries in various countries. RTI has installed the AllScan at various locations along the coal value-chain from at the mine, at the preparation plant, transhipment points, and at the end-user including coal-fired power stations. Collectively, the analysers are used for various purposes including monitoring ROM coal so as to direct extraction operations, monitoring the quality of feed coal to the wash plant to allow operators to better control of washability parameters, and measuring the quality of product coal from the wash plant.

The AllScan is a new-generation online

elemental analyser that uses PGNAA (prompt gamma neutron activation analysis) technology to accurately measure the chemical composition of most bulk materials. The analyser combines practical operational features with sophisticated hardware and software resulting in an analyser that is easy to install, calibrate, and maintain, and above all, is extremely accurate.

Avoid disputes and frustration by using an independent sampling firm

Over the years, steel mills and foundries around the world have been forced to cut costs in order to remain competitive in the current global market, *writes Robert Kozicki, President at Andrew S. McCreath & Son, Inc.*

Most mills maintain finished product testing in order to assure quality and to reduce the liability of a defective product leaving the mill. However, in order to reduce costs, the continuous internal testing of as-received raw materials has been sacrificed. This can result in situations where the mill has the need to verify raw materials but no longer has the equipment, technical knowledge and skills to do so internally.

Ultimately, an employee is told to "go grab a sample" of XYZ which is sent out to a contract lab. The staff member is neither aware of, nor has he/she been trained on the sampling procedures required by the appropriate ISO or ASTM standards for the sampling of the particular material, nor has the proper equipment to take the sample.

The staff member 'grabs' a sample comprised of five to ten 'rocks' and the so-called 'sample' is then shipped to an independent lab for testing. The results from the lab come back confirming that the material is out of the specs of the contract. The supplier of the raw material disputes the results, possibly citing that the sample was not collected correctly. The mill then contracts a qualified and independent third-party sampling agency to come in to take the sample and retest. Possibly weeks or months later, the whole dispute is settled and business continues.

If this scenario seems all too familiar to you, then you know how frustrating it can be for parties on both sides of the dispute. The foresight to have a qualified and independent third-party agency take the sample initially can save both sides considerable time and money in the long run. By contracting an independent testing laboratory like McCreath, which has its own dedicated sampling arm with personnel specifically trained in the use of the ISO or ASTM standards and having the specialized equipment to comply with those standards, both parties can have a high degree of confidence in the final results.

Many companies unfortunately do not understand that the results produced from testing can only represent the exact sample that was taken. It is the principal of 'garbage in, equals garbage out'. Any sample taken must be collected systematically by the proper equipment and be completely representative of the entire consignment. Don't get frustrated and waste precious time and money. Contract a qualified and independent sampling agency to sample your raw materials when needed. It will pay off in the long run.

About Andrew S. McCreath & Son, Inc

Today, while continuing its 140+-year tradition of supporting both the steel and foundry industries, McCreath also services the minerals, coal and petroleum coke industries.

McCreath's chemists leverage both classical analytical techniques and state-of-the-art instrumentation, so customers can expect swift, accurate results, every time.

In addition to a robust laboratory, McCreath employs dedicated field operations teams across the Eastern United States. Its field staff is equipped with the tools and expertise to handle all surveying, sampling and inspection needs; typically within 24 hours.

Laboratory

McCreath Laboratories is a Pennsylvania based, ISO 17025:2017 Accredited family of independent testing laboratories. Leveraging both classical analytical techniques and advanced instrumentation, the company's expertise lies in the physical and chemical analysis of ferroalloys, raw materials and solid fuels.

Sampling

Proper sampling and sample preparation procedures are critical for accurate analysis. This ensures the test sample, when analysed, provides an accurate representation of the lot sampled.

McCreath's field engineers have decades of sampling experience and are proficient with both ASTM and ISO methods.

Ensuring that the sample is representative of the bulk material is the company's foremost concern.

Inspections

Contractual conformity is critical in today's ore, alloy and solid fuel markets.

McCreath's impartial inspection teams verify condition, quantity and quality of goods.

Acting as an agent, McCreath can provide real time updates during loading or discharge and intervene when required. Its field engineers are accomplished at identifying an extensive array of materials, which is what the company believes gives it an edge on the competition.

PSB Inspection: specialized surveyors, broad spectrum of experience

Three-year anniversary for PSB Inspection

In February 2020 PSB Inspection, headquartered in Vlaardingen, the Netherlands, celebrated the company's three-year anniversary. The organization was established as a completely private company in 2016 and has been fully operational since 1 February 2017.

Shortly after its establishment, it won the trust of a number of large international trading companies and industrial users of solid (bio) fuels.

ISO 17025 accreditation

As of the 14 May 2020, PSB Inspection is accredited according to ISO-17025 under number RVA L660 for the following activities:

- sampling coals;
- sampling coke;
- sample preparation coal;
- sample preparation coke;
- analysis of proximate analyses; and
- analysis of ultimate analyses.

Services

The services that PSB Inspection can offer are:

- inspection of solid fuels;
- inspection of biomass fuels;
- inspection of metals and minerals;
- draught survey of sea vessels;
- calibration of inland vessels (barges);
- sampling and sample preparation of solid fuels, metals and minerals;
- sampling and sample preparation of solid biomass;
- temperature controls; and
- technical support in the field of solid fuels, biomass, metals and minerals.

Business growth and regions

PSB Inspection's continuing growth is due to the continued investment in its staff and facilities, including the latest developments in laboratory technology and instrumentation. It is therefore able to provide inspection and analysis services and operate all over the world; in the Americas, Asia, Asia Pacific, Africa and Europe (ARA).

The speciality of PSB Inspection

The trading in solid fuels, metals, minerals and biomass products has many different types, each with specific characteristics and problems.

Therefor, PSB Inspection has a team of specialists, each specialized with regard to inspection and sampling of the various products. Quality and precision are the company's top priorities and its team's specialties.

For solid fuels, such as different types and origins of coal for power generation, coke for the metal industry and petroleum coke for various industries, the company has various specialists available. Moreover, its team also consists of professionals specialized in the biomass industry and metals and minerals.

PSB Inspection performs all sampling and sample preparation in accordance with the most recent International Standards ISO and /or ASTM standard. Moreover, it has further tightened these norms and standards by means of internal rules. Therefore, the company can guarantee the quality and certainty for all parties involved, supplier and recipient.

PSB Inspection is also regularly appointed as 'Umpire Lab', where samples are received from the loading and unloading port. The judgement and the results as assessed by PSB Inspection are considered binding.

RCI Asia Assayers prolongs ISO 17025 accreditation

RC Inspection Asia Assayers

The RC Inspection Group announced on 25 June that its laboratory, RC Inspection Asia Assayers, based in Mongolia, has prolonged its ISO 17025 (TL 110) accreditation.

The laboratory has been accredited since 2015, enabling the group companies to carry out fully independent qualitative and quantitative evaluation of the chemical elements of metals listed on the LME.

This accreditation broadens the reach of this advanced analytical science laboratory by certifying the quality of the data acquisition and analysis processes used across a range of techniques and capabilities.

ISO 17025 accreditation

The ISO 17025 accreditation is the international standard by which a laboratory's commitment to quality is evaluated and established.

The evaluation includes an assessment of the laboratory's compliance with the Technology Program Requirements. This accreditation demonstrates that RC Inspection Asia Assayers has successfully completed the ISO evaluation process once again

ISO 17025 not only considers management and technical expertise, but also emphasizes continual product and process improvement.

Analytical Services

The group's laboratories are strategically based in the Netherlands, Mongolia, Ukraine and Colombia. They are equipped with the most modern and advanced instruments to drive accelerated turn-around times and up-to-the-minute reporting, through a service-driven approach and innovative use of technology. They provide unique analytical science problem solving and testing capabilities to a wide range of customers across many industries. The RC Inspection Group made a strategic decision to seek ISO 17025 accreditation for all its laboratories, to ensure and continue to provide the highest level of quality to its clients.

Bulk material sampling systems from the James A. Redding Company

For over 60 years, the James A. Redding Company has been designing, producing, and supplying bulk material sampling systems and components. The company has installed over 900 systems around the world, providing customized sampling systems that meet all current sampling standards. James A. Redding's experienced staff works closely with clients in designing systems that meet the requirements of each individual situation from new installations, improving existing systems, or retrofitting new systems in existing facilities. Qualified field service technicians are available to assist in installation and startup and can also provide expertise in particular sampling techniques. With close to 70,000 square feet of manufacturing space, the James A. Redding Company is fully equipped to build the largest of systems and all the components needed to meet customer needs.

James A. Redding's two-stage sampling systems.


James A. Redding's 'Nine-Iron' swing samplers.

Engineering

The James A. Redding Company has over 60 years of experience designing sampling systems. With state-of-the-art software, like Autodesk Inventor, its design team can provide 3D modelling, drawings, detailed plans, and layouts.

Sampling systems

Two-stage sampling systems

For large flow applications, the extracted sample from the 'Nine-Iron' swing sampler is fed by a belt feeder to a crusher. The crushed product is resampled by a secondary swing sampler to meet the need of the customer requirements and applicable ASTM standards. The extracted sample is deposited into a single container or a pre-selected container on a multi-position sample collector. The rejected material is returned to the main conveyor, rejects storage area, or a customer designated area.

Three-stage sampling systems

Three-stage sampling is required when the quantity of primary sample is too large for economical crushing and to obtain an adequate final sample extraction. The additional stage re-samples the primary increment to reduce the pre-crushing sample to a manageable quantity; this is a factor of high tonnage and in some cases larger particle size.

- optional equipment;
- cross-the-belt secondary sampler;
- cross-the-belt final sample;
- multi-positional collectors; and
- nuclear analyser feed.

Auger sampling systems

A true sample of a truck or railcar of coal can only be obtained prior to unloading. Once it is unloaded, the individual load mixes with other coals, and loses its specific characteristics. Auger sampling systems designed by James A. Redding Company produce a true sample from the container, thus retaining its identity. Each Redding auger sampling system is designed in accordance with the applicable ASTM standards and is rugged enough to maintain its reliability.

- optional equipment;
- hydraulic drip pan;
- split sample augers;
- customized control room; and
- sample processing enclosure.

'Nine-Iron' swing samplers

The counterweighted, stainless steel cutter rests at its normal parked position, just off the edge of the customer's conveyor belt. When activated, the electromechanical drive rotates the cutter through its swing in a perfect arc, extracting a cross-sectional sample cut that represents the material on the moving belt. A wiper blade mounted on the rear of the cutter and two contour idlers adapt the customer's belt to the cutter's radius to help ensure that all sampled material is deposited into the stainless steel sample chute. The cutter follows through and is stopped by the brake motor in its original parked position, just off the edge of the conveyor belt. This stopping point ensures that all the primary sample is ejected into the stainless steel sample chute. A unique control design, using two targets and two proximity switches, facilitates stopping the cutter at the proper position, while ensuring that the cutter does completely exit the conveyor belt.

The 'Nine-Iron' sampler features and benefits

- models for all belt sizes;
- user-friendly sampling;
- minimal system height;
- easy retrofit;
- flexibility; and
- low cost.

Sampling components

James A. Redding Company offers a full line of sampling components:

Baffle plate samplers

How it works:

From the parked position the baffle plate cutter moves into the falling stream of material at 18 inches per second. As it passes through, the cutter collects a sample of material, and distributes it onto a transfer belt feeder. The rejected material passes through the sampler and continues through the existing chute work.

Belt feeders

James A. Redding belt feeders offer a wide range of design options:

- fully skirted belts;
- 35° troughing idlers;
- V-return idlers (optional);
- easy access top covers;
- hinged top covers with prop rod (optional); and

❖ heavy-duty design.

Final sample collectors

The best final sample collection is accomplished with non-corrosive, airtight containers that are located as close as possible to the final sampler. By using this method, the moisture integrity of the sample is retained.

Sample crushers

Crushing is usually part of a sampling system where on-line sample preparation is required. Sampling standards dictate the required reduction of material size and volume. Crushing is also the primary source of possible moisture loss in the extracted sample. James A. Redding Company sampling systems minimize moisture loss by sealing the path of the sample, and sizing the crusher drive to achieve the lowest practical rotor speed. Hammermill crushers are used in the majority of cases.

Sample augers

How the sample auger works: as the truck or train car approaches the auger system, an operator remotely positions the auger over the load. The auger is then lowered into the material, collecting the predetermined amount of sample and depositing it in the auger's sample hopper. The auger is then swung into position with the sample hopper in the primary sample bin. The operator then remotely opens the hopper gate and distributes the sample into the sample reduction system.

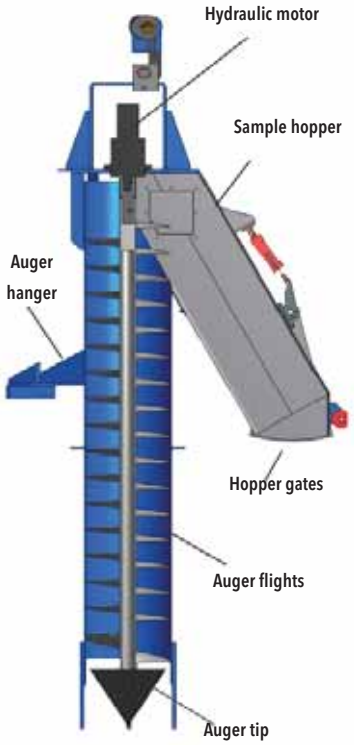
Secondary sample belt feeder

The company's WJS swing samplers are incorporated onto its belt feeders. Like its Nine-Iron primary swing sampler, the WJS swing sampler extracts a sample directly from the moving belt feeder.

How it works: in its normal park position, over the moving feeder belt, the stainless steel cutter rests. When activated, the gear reduced electro-mechanical drive rotates the cutter through its 360° swing in a perfect circle, extracting a cross sectional cut of material from the moving belt feeder.

An adjustable wiper on the cutter ensures that all of the material is deposited into the stainless steel final sample chute. The cutter follows through and is stopped by the motor brake in its original parked position.

James A. Redding's sample augers.



Global inspections by CIS Commodity Inspection Services

CIS Commodity Inspection Services, established in 1989 in the Netherlands and run globally by a committed team of experienced professionals, offers a wide range of inspections, both qualitative and quantitative, as well as technical and consulting services.

In addition, CIS Commodity Inspection Services can oversee on the customer's behalf all or any part of a commercial transaction or operation related to the buying, selling, trading and moving of raw materials, commodities, industrial plant equipment, and consumer goods. CIS acts as the customer's eyes and ears, wherever in the world their interests are.

CIS is dedicated to the elimination of risk, serving all industries and many government and international aid organizations.

CIS Commodity Inspection Services conforms to the quality management system standard ISO 9001:2015. CIS Commodity Inspection Services is a Superintendent and Surveyor Member of Grain and Feed Trade Association (GAFTA), a registered Superintendent Member of the Federation of Oils, Seeds and Fats Associations (FOSFA) Ltd and a member of IFIA (International Federation of Inspection Agencies), a trade association for inspection agencies and organizations that provide inspections, testing and certification services internationally.

Inspections

In today's global business environment, consumers, producers, international traders, and aid and purchasing organizations increasingly rely on independent inspections of their shipments to ensure that suppliers fulfil their contractual obligations.

Cargo supervision allows the interested party to have reliable knowledge that the quality, quantity, packing and marking have been inspected and that they conform to contractual specifications.

CIS ensures that the final settlement for a cargo represents its true value with regard to quality and quantity in accordance with the conditions agreed upon in the contract.

Its many services cover the following agricultural products:

❖ dry bulk cargo;
❖ liquid bulk cargo;
❖ bagged cargo; and
❖ raw products.

Analysis

Laboratory testing and analysis play a crucial role in commercial transactions and in assessing international quality standards for products and materials.

At key locations CIS Commodity Inspection Services has established laboratories specialized in grain and feedstuff testing. The list of locations is growing steadily. The laboratory at Berkel and Rodenrijs, the Netherlands, acts as the group's knowledge centre offering testing services for grain and feedstuff. The laboratory is equipped with the latest state-of-the-art equipment and offers swift determination of important parameters such as protein (Kjeldahl), falling number, wet gluten, gluten index and grading.

CIS Commodity Inspection Services has entered into a strategic partnership with neutral and independent Chemical laboratory Salamon & Seaber Ltd. established at London, UK, conducting analysis of Mycotoxins, heavy metals and pesticide residues on its behalf.

Pattern approval (metrology)

For measuring equipment used in the Customs Union, a Metrology certificate is compulsory. This so-called 'Pattern

Approval' can be issued for any kind of measuring equipment. Internationally recognized certification currently exists which facilitates the issuing of a Metrology certificate.

With over 20 years' experience in this kind of certification, CIS Commodity Inspection Services offer a fast and reliable service with a strong focus on industrial applications in the gas & oil and chemical industries.

GASC and CIS

CIS announced in February 2020 that it has signed an agreement with The General Authority for Supply Commodities (GASC) for testing, inspection and certification of their local (Egyptian) and international procurements of agricultural commodities. CIS look forward to a strong and long-lasting business relationship with GASC.

New SGS geochemistry lab opens in Townsville, Australia

SGS announced on 11 August 2020 that it has opened its new purpose-built geochemical laboratory in Townsville, Queensland, Australia. The laboratory will offer increased capacity, improved client services, in-house analysis and new analytical technologies for metals and mining groups, operating exploration of greenfields and brownfields.

The new SGS laboratory opened at the Townsville premises in the second week of August 2020. This ISO 9001 accredited facility will offer increased sample processing capacity for sample preparation, fire assay and chemical analysis, ensuring faster and more efficient turnaround times.

SGS will also be introducing X-ray fluorescence analytical services at this laboratory, as well as new Field Analytical Services and Testing (FAST) services.

The new geochemistry laboratory will offer:

- sample preparation – low and high grade;
- fire assay for Au and Pt, Pd (ICP-MS);
- atomic absorption spectrometry (AAS);
- ultratrace and trace element analysis by ICP-AES and ICP-MS;
- classical chemistry;
- X-ray fluorescence;
- pXRF (Portable X-ray Fluorescence);
- carbon and sulphur analysis;
- gravimetric and bullion analysis;
- concentrate analysis;
- Mobile Metal Ion (MMI™) analysis;
- client data access via QLAB online services;
- quarantine-approved site facilities;
- secure sample storage and management; and
- future technology, including FTIR.

SGS has been providing quality analytical and minerals trade services to support the mining and exploration industry in Queensland for over 30 years. A range of services for the minerals, trade and environmental sectors will also be provided from the new premises, offering a total service package. No matter where you are, what you want to analyse, what limits of detection, turnaround times, precision or accuracy you require, SGS can fulfil all your geochemical analysis and assaying needs.

About SGS

SGS is an inspection, verification, testing and certification company. With more than 89,000 employees, SGS operates a network of over 2,600 offices and laboratories around the world.

The company's core services can be divided into four categories:

Inspection: SGS's comprehensive range of inspection and verification services, such as checking the condition and weight of traded goods at transshipment, helps customers to control quantity and quality, and meet all relevant regulatory requirements across different regions and markets.

Testing: the company's global network of testing facilities, staffed by knowledgeable and experienced personnel, enable customers to reduce risks, shorten time to market and test the quality, safety and performance of your products against relevant health, safety and regulatory standards.

Certification: SGS enables customers to demonstrate that its customers' products, processes, systems or services are compliant with either national or international standards and regulations or customer defined standards, through certification

Verification: SGS ensures that products and services comply with global standards and local regulations. Combining global coverage with local knowledge, unrivalled experience and expertise in virtually every industry, SGS covers the entire supply chain from raw materials to final consumption.

Knight Energy Services – over 135 years servicing the solid fuels industries

Knight Energy Services (KES) is part of the Alfred H Knight Group. First established in 1881, it is a totally independent, family owned business spanning its fourth generation of the Knight family.

As a group, it has been servicing the solid fuels industries for over 135 years with independent weight determination, inspection, supervision and analytical services.

KES operates testing laboratories in strategic locations worldwide with regional hubs located in the America, Europe and Asia. Its dedicated team of experienced personnel organize inspection activities to ensure compliance with internationally recognized standards.

KES has vast experience in dealing with a diverse range of biomass materials.

Biomass

KES has vast experience in dealing with a diverse range of biomass materials. The company treats each material individually, delivering a personalized service that assures its clients their material is in the best hands.

Biomass (plant material and animal waste) are some of the oldest sources of renewable energy. Industrial biomass can be grown from many varying types of plants including miscanthus, switchgrass, hemp, corn, poplar, willow, sorghum, sugarcane, bamboo, and a variety of tree species, ranging from eucalyptus to palm oil.

Inspection sampling and port services

With a high level of port experience, KES can provide support at each stage of the supply chain. Its global network spans from North America, to Western and Southern Europe, the Baltic region and Southeast Asia.

The company's fully trained personnel offer the following services:

- draught surveying;
- barge gauging;
- cargo superintendence;
- load port surveys;
- discharge port surveys;
- field testing;
- auto sampler bias testing; and
- sampling.

Testing services

KES provides ISO17025 accredited fuels and process residues testing service, offering the following services to its clients:

- biomass content;
- physical testing; fines, sizing, sub particle sizing, dimensions, durability and bulk density;
- moisture content;
- ash, ash composition and ash fusion testing;
- proximate analysis; moisture, ash, volatile content, fixed carbon;
- ultimate analysis; carbon, hydrogen, nitrogen, oxygen, sulphur;
- gross and net calorific value;
- chlorine, fluorine, bromine and iodine;
- major elements in fuel; and
- trace metals in fuel.

Coal & coke

Alfred H Knight Solid Fuels has been servicing the global coal and coke industries for over a century. In this time it has built a strong network of project managers and senior inspectors positioned to service its clients worldwide.

Operational teams support its inspectors, ensuring that certified reports are relayed in a prompt and efficient manner. Experienced inspectors operate at load and discharge ports and key points in the logistic chain such as mine and processing sites.

KES provides the following principle weight, quality inspection and surveying services:

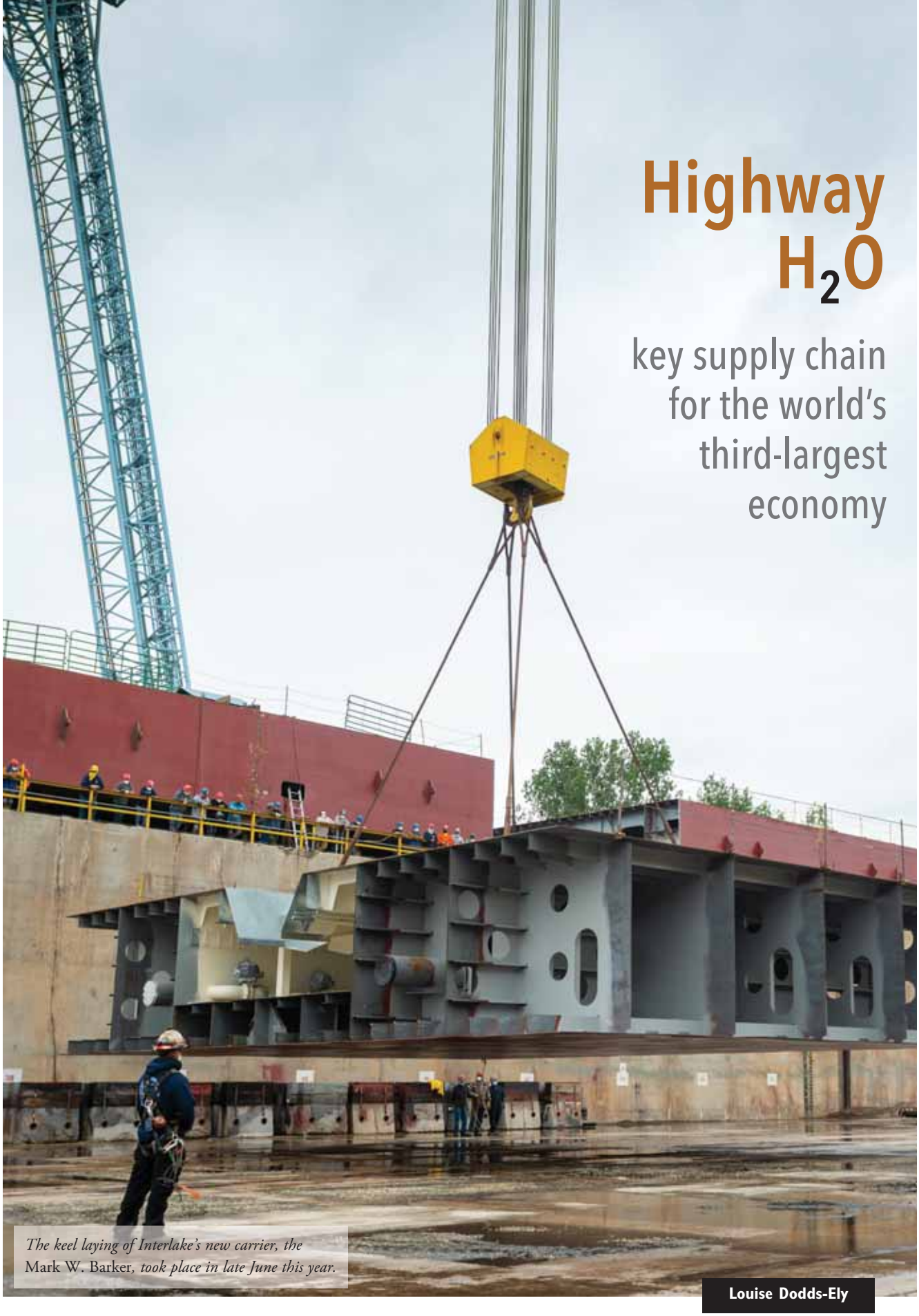
- draught surveys;
- barge gauging;
- hold inspection;
- supervision;
- temperature monitoring;
- manual sampling;
- supervision of automated/mechanical sampling;
- bias testing;
- sample preparation; and
- blending supervision.

DCi

Alfred H Knight Solid Fuels has been servicing the global coal and coke industries for over a century.

Highway H_2O

key supply chain for the world's third-largest economy



The keel laying of Interlake's new carrier, the Mark W. Barker, *took place in late June this year.*

Louise Dodds-Ely

The Great Lakes — St. Lawrence Seaway System is a deep draught waterway extending 3,700km (2,340 miles) from the Atlantic Ocean to the head of the Great Lakes, in the heart of North America. The St. Lawrence Seaway portion of the System extends from Montreal to mid-Lake Erie. Ranked as one of the outstanding engineering feats of the twentieth century, the St. Lawrence Seaway includes 13 Canadian and two US locks.

The Great Lakes and St. Lawrence River have been major North American trade arteries since long before the US or Canada achieved nationhood. Today, this integrated navigation system serves miners, farmers, factory workers and commercial interests from the western prairies to the

THE GREAT LAKES & ST. LAWRENCE SEAWAY SYSTEM

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Virtually every commodity imaginable moves on the Great Lakes Seaway System. Annual commerce on the System exceeds 200 million net tonnes (180 million metric tonnes), and there is still ample room for growth. Some commodities are dominant:

- iron ore for the steel industry;
- coal for power generation and steel production;
- limestone for construction and steel industries;
- grain for overseas markets;
- general cargo, such as iron and steel products and heavy machinery;
- cement, salt and stone aggregates for agriculture and industry; and
- components for the wind power industry.

The primary carrier vessels fall into three main groups: the resident Great Lakes bulk carriers or 'lakers'; ocean ships or 'salties'; and tug-propelled barges. US and Canadian lakers move cargo among Great Lakes ports, with both nations' laws reserving domestic commerce to their own flag carriers. Salties flying the flags of other nations connect the Lakes with all parts of the world.

Opened to navigation in 1959, the St. Lawrence Seaway part of the system has moved more than 2.5 billion metric tonnes of cargo in 50 years, with an estimated value of more than $375 billion. Almost 25% of this cargo travels to and from overseas ports, especially Europe, South America, the Middle East, and Africa. From Great Lakes/Seaway ports, a multi-modal transportation network fans out across the continent.

More than 40 provincial and interstate highways and nearly 30 rail lines link the 15 major ports of the system and 50 regional ports with consumers, products and industries all over North America.

Management of the Seaway

The Great Lakes/St. Lawrence Seaway was built as a binational partnership between the US and Canada, and continues to operate as such.

Administration of the system is shared by two entities, the Saint Lawrence Seaway Development Corp. in the US, a federal agency within the US Department of Transportation, and The St. Lawrence Seaway Management Corporation in Canada, a not-for-profit corporation (ownership of the Canadian portion of the Seaway remains with the Canadian federal government.)

US Saint Lawrence Seaway Development Corporation (SLSDC)

The Saint Lawrence Seaway Development Corporation (SLSDC) is a wholly owned government corporation created by statute on 13 May 1954, to construct, operate and maintain that part of the St. Lawrence Seaway between the Port of Montreal and Lake Erie, within the territorial limits of the United States. Trade development functions aim to enhance Great Lakes/St. Lawrence Seaway System utilization without respect to territorial or geographic limits.

The mission of the Corporation is to serve the US intermodal and international transportation system by improving the operation and maintenance of a safe, reliable, environmentally responsible deep-draught waterway, in co-operation with its Canadian counterpart. The SLSDC also encourages the development of trade through the Great Lakes Seaway System, which contributes to the comprehensive economic and environmental development of the entire Great Lakes region.

The SLSDC headquarters staff offices are located in Washington, DC. Operations are located at the two US Seaway locks (Eisenhower and Snell) in Massena, NY.

Canadian St. Lawrence Seaway Management Corporation (SLSMC)

The St. Lawrence Seaway Management Corporation — successor to the St. Lawrence Seaway Authority — is a not-for-profit corporation responsible for the safe and efficient movement of marine traffic through the Canadian Seaway facilities, which consists of 13 of the 15 locks between Montreal and Lake Erie. The Corporation plays a pivotal role in ensuring that the waterway remains a safe and well-managed system, which it shares with its American counterpart, the SLSDC. The Corporation's mandate promotes efficiency and responsiveness to the needs of shipping interests, ports, marine agencies, and provincial and state jurisdictions.

The two Seaway entities coordinate operational activities particularly with respect to rules and regulations, overall day-to-day operations, traffic management, navigation aids, safety, environmental programmes, operating dates, and trade development programmes. The unique bi-national nature of the System requires 24-hour, year-round co-ordination between the two Seaway entities.

SLSMC: Seaway holding up well under trying conditions

"Throughout the 2019 navigation season, the Seaway demonstrated its resilience under very difficult conditions as it continued to function as a safe and reliable transportation artery serving a vast array of clients. From farmers eager to realize the sale of their crops, to municipalities dependent upon ships for the supply of road salt, to steel mills processing, millions of tonnes of iron ore, the Seaway overcame many challenges to ensure that essential cargoes continued to reach their destinations." These are the words of Terence Bowles, President and CEO of the St. Lawrence Seaway Management Corporation (SLSMC, or 'Corporation'), who is continuing to steer the Corporation through unprecedented times.

Due to the Covid-19 pandemic, there was no formal ceremony when the season opened on 24 March this year. The opening of the Montreal/Lake Ontario section was also delayed by a week, to 1 April, in order to support the International Joint Commission's (IJC) effort to move more water out of Lake Ontario and provide some relief from the threat of shoreline flooding.

Reliable operations during pandemic

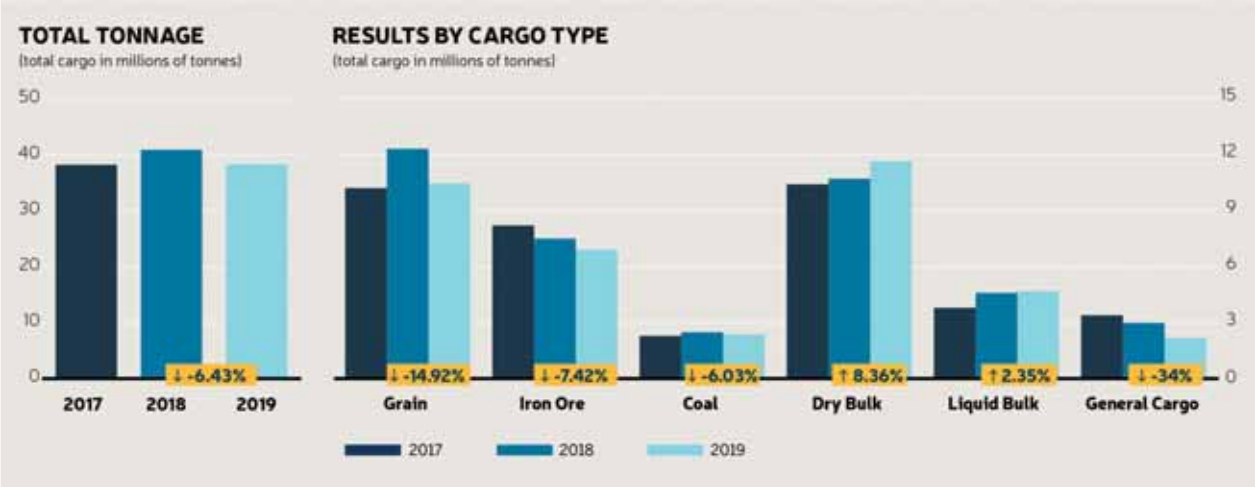
The St. Lawrence Seaway Management Corporation (SLSMC) has been able to operate the Seaway's locks reliably during the pandemic, thanks in large part to an emergency plan it developed after the SARS outbreak in 2003 and the H1N1 crisis in 2009. This proactive measure allowed the Seaway to act quickly when Covid-19 began to spread.

Technology implemented by the SLSMC over the past 20 years also helped in the Seaway's response to the pandemic. The use of hands-free mooring in the locks, "basically vacuum pads that attach to the ship and secure it, as the ship is raised or lowered in the lock," said Terence Bowles, president and CEO of the SLSMC, "ensures no close contact is required between ship crews and Seaway staff."

"The Seaway is keeping essential cargoes moving smoothly, continuing to serve as a vital supply chain supporting our economy," said Bowles.

Highway H_2O has more than 25 port partners in Canada and the US who move over 200mt of essential materials and finished products each year, including grain,

Traffic results



Seaway traffic in 2019 totalled 38.4mt (million tonnes), a decrease of 6% or 2.6mt compared to 2018, when Seaway tonnage was at a ten-year high. Trade tensions, difficult navigational conditions due to very high water flows within the St. Lawrence River, combined with adverse weather conditions impacting grain harvests, all served to restrain total cargo volumes.

"There is little doubt that trade tensions certainly were felt within the shipping industry, and we earnestly hope that the forthcoming implementation of the CUSMA [Canada-United States-Mexico Agreement] will provide a catalyst for improvements within the trading arena," said Terence Bowles, President and CEO.

sugar and salt, as well as iron ore, steel and petroleum products.

"It helps us reach out and feed the world," said Deb DeLuca, executive director of the Duluth Seaway Port Authority in Minnesota. "The wheat that passes through our port is very high in protein content, and it's great for bread and pasta making. It's highly sought-after in Italy and North Africa for those purposes."

Duluth moved roughly 1.5mt of grain last year, including wheat grown in Minnesota, North and South Dakota, and eastern Montana. About 80% is shipped overseas.

"It's an absolutely critical part of the local economy," said DeLuca. "Shipping has been one of the economic drivers of our community since the 1800s."

Marine shipping has become even more crucial during the pandemic.

There has been a dramatic surge in Canadian grain exports as other countries try to preserve their own food supplies, said Tim Heney, CEO of the Thunder Bay Port Authority in Ontario.

"It's opened up a greater demand in Europe for Canadian grain," he said. "The decline in the Canadian dollar as a result of the pandemic, and crashes in world markets, has also given Canada an advantage. We've seen strong demand and a lot more ocean vessels have come to the port to take advantage of that trade."

Thunder Bay is western Canada's entry point to Highway H_2O, exporting grain from Saskatchewan, Manitoba and Alberta to international markets.

"It's a huge grain port," he said. "And we're probably running about 50% of capacity, so it has a lot more room to grow."

With about 8,000 Seaway-sized vessels in the worldwide fleet, there is also ample capacity to respond to increased demand; another advantage Highway H20 cites in comparison to road and rail transport.

"A lot of our carriers were ready to go as soon as we could open for the season," said Bruce Hodgson, director of market development for the SLSMC. "Unlike other modes, we have a huge capacity of ships that can meet a defined need … that reserve is ready to act."

As the global economy begins to open up, Highway H_2O is positioning itself for a possible post-pandemic bubble that may require even more marine shipping.

"At present, we're pretty close to normal cargo volumes," said Bowles. "We function so smoothly that most people just don't realize how much cargo we continuously move safely and efficiently. During a busy week, we can move the equivalent of almost 100,000 truckloads of cargo.

"We're very dependable, and we respond very quickly to any of these emergencies. What's more, we have the capacity within our existing locks to double our cargo volume, so we are an outstanding transportation system with the potential to do even more."

Modest drop in cargo throughput

There was a modest drop in cargo activity, compared to the same period in 2018, when Seaway tonnage reached a ten-year high. This drop is unsurprising, considering the hurdles that the SLSMC and SLSDC have had to overcome. Overall tonnage totalled 38.4mt (million tonnes), with a knock-on effect on revenues. The SLSMC ended the year with revenues of $78 million, plus revenue generated from lands administered by the Corporation of $5.9 million.

This total meant that it was possible to cover, in full, the required $54.4 million in manageable costs, as well as contribute $29.5 million to asset renewal.

Working hard to avoid flooding

Said Bowles in the SLSMC's *2019-2020 Annual Corporate Summary*, released on its website in early July, "The delayed opening marked a continuation of the substantial challenges we faced during the 2019 navigation season in managing ship traffic in the midst of record-breaking water flows. Throughout the season, the IJC sought to bring down water levels on Lake Ontario which was receiving very high volumes from the upper Great Lakes. The Corporation, in cooperation with the U.S. Saint Lawrence Seaway Development Corporation, worked collaboratively to support the IJC's International Lake Ontario St. Lawrence River Board (ILOSLR) in its efforts to provide flooding relief to shoreline communities.

The end result was that we were able to keep cargo moving throughout 2019, even with record-breaking volumes of water being moved out of Lake Ontario between June and December. With flows at the Moses-Saunders dam rising as high as 10,400m³ (sufficient to fill four Olympic-sized swimming pools per second), Seaway navigation was safely sustained thanks to the implementation of special safety measures, contributions from Environment Canada Climate Change, Canadian Hydrographic Services, and the diligence of Seaway employees, ship captains and pilots.

The St. Lawrence Seaway Management Corporation's staff performed admirably in the midst of very trying circumstances. Together with members of the broader marine community, we succeeded in keeping essential cargo moving, demonstrating just how resilient the St. Lawrence Seaway can be in the face of great adversity.

2019 navigation season

In 2019, the St. Lawrence Seaway opened its 61st navigation season on 22 March for the Welland Canal (Niagara Section) and on 26 March for the Montreal/Lake Ontario (MLO) Section.

High water levels and flows in the St. Lawrence River presented challenges once again in 2019. The Corporation and the U.S. SLSDC worked collaboratively throughout the year with stakeholders, including water flow regulators, to identify possible measures that would support efforts to lower Lake Ontario water levels, while sustaining safe navigation. As a result, the MLO Section was able to remain open for the full navigation season, closing on 31 December (providing a total of 281 days of navigation).

In the Welland Canal, a pilot project was introduced to extend the navigation season until 8 January. Several commercial vessels took advantage of this opportunity, with the last vessel clearing Lock 1 on 7 January at 19:45 (providing a total of 293 days of navigation).

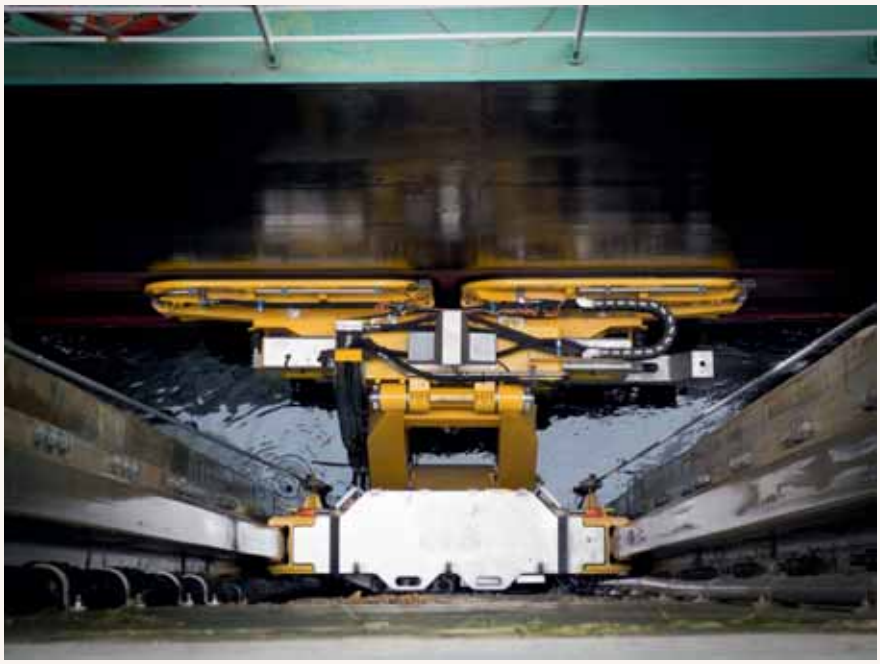
Marine safety and security

During the 2019 navigation season, there were seven commercial vessel incidents in which damage to a vessel occurred,

SLSMC receives Project of the Year Award for Hands-Free Mooring

In December 2019, the SLSMC was awarded the innovative project of the year award by the Québec Order of Engineers (Montérégie Region) for its Hands-Free Mooring project. The award reflects the professionalism of the Corporation's engineers and their commitment to high quality work, overcoming challenges, and the importance of teamwork.

Benoit Nolet, the lead engineer of the "Transit of the Future" project commended the team members for their creative and innovative spirit, and consistently meeting the high objectives set out for this project.



translating to a rate of 0.12 incidents per 1,000 transits, a significant decrease from 2018. The vessel incident rate is well below the target of fewer than five vessel incidents per 1,000 transits.

Sixty glorious years

Says Bowles, "As the Seaway celebrated its 60th anniversary in 2019, we marked this significant milestone in a number of ways. Having just emerged from the most transformative era in the Seaway's history with the completion of our modernization programme, Transport Canada Minister Marc Garneau and I dedicated a plaque at the St. Lambert Lock, honouring the many Seaway employees who have been instrumental to the Seaway's success since its opening in 1959. I also took part in a number of other events throughout the year, including the U.S. SLSDC's celebration in Massena (NY) on September 24th where I had the opportunity to commend the strong relationship that exists between the two Seaway Corporations, while sharing the stage with U.S. Secretary of Transportation Elaine Chao and the SLSDC's Deputy Administrator, Craig Middlebrook."

Emergency preparedness

Recognizing the value of emergency preparedness, the Corporation held a series of training exercises throughout 2019.

Boom deployment training was conducted across the MLO and Niagara Sections to enhance spill containment readiness. In the MLO Section, personnel took part in a confined space emergency evacuation exercise. Together with firefighters from the Ville de Châteauguay, personnel took part in an elaborately staged scenario simulating the evacuation of a victim out of an 87-foot deep well shaft.

Reliable infrastructure and asset renewal

Maintaining a safe, reliable and cost-effective transportation system is vital to the Seaway's competitive position — and a total of $71.2 million was spent during the year. The Corporation uses a well-established Asset Management System to optimize value from its assets and contribute to a sound long-term planning process, ensuring that capital expenditures lead to consistently high levels of system availability.

Over the course of the 2019 navigation season, the system availability rate which incorporates delays attributable to the Seaway was 99.58%, once again exceeding the 99.00% target.

Examples of major projects executed over the course of the 2019/20 fiscal year include:

- **Niagara Section (Welland Canal):** Reach 7 Bank Repair Program – Areas with advanced deterioration and erosion were identified leading to slopes being stabilized and repaired, and rip-rap stone installed to protect the banks in the future. Lock 4 West – Valves 7 and 8 were rehabilitated, entailing their removal, structural repair and recoating, and subsequent reinstallation. Lock 5 West – Mitre gates 3 and 4 were rehabilitated and aligned to restore bearing surfaces and ensure watertight seals. Lock 8 – New stop logs were fabricated (stop logs are used when dewatering the lock for maintenance purposes)
- **MLO Section (Montreal/Lake Ontario):** St. Lambert Lock 1 — concrete repairs to the vertical wall surfaces. St. Lambert Lock 1 — re-tensioning of diagonal braces on gates 7 and 8. Côte-Ste-Catherine — reconstruction of Bridge 19 which provides access to the lock and the dike. Côte-Ste-Catherine Lock 2 and Beauharnois Lock 3 — reconstruction of the upper approach walls and installation of new fenders. Côte-Ste-Catherine Lock 2 — reconstruction of the protective covers

for gear mechanisms at gates 5 and 6. Beauharnois Lock 3 — installation of new electrical panels and cables in four electrical rooms. Iroquois Lock 7 — replacement of the top wooden defence beams on lock sector gates, using a new type of material.

Health and Safety

From 1 April 2019 to 31 March 2020, the Corporation reported four lost time injuries. The fact that contractors working onsite recorded '0' incidents also represents a significant achievement. When compared to other industries in the same peer group, the Corporation's safety record represents a world class performance. The overall long-term trend continues to demonstrate consistent gains toward the Corporation's goal of 'zero harm'.

Every year, with the help of Regional Health and Safety Committees, the Corporation strives to eliminate work accidents by implementing mitigation measures to deal with the main areas of risk. A key activity in promoting safe working practices and preventing accidents is the 'Safety Intervention', where a supervisor engages with workers to make adjustments to work procedures that will enhance safety.

Throughout the past year, over 3,800 safety interventions were carried out. Findings point to a direct correlation between the number of interventions and a positive impact on the Corporation's safety performance.

Looking to the future

"One of the strongest indications of future business growth prospects for the Seaway is the continued investment by various carriers in new purpose-built ships designed for Seaway use," says Bowles. One example of this is the recent keel laying ceremony of the *Mark W. Barker*, the first US-flagged Great Lakes bulk carrier built in more than 35 years. Details of this can be seen on p43 of this article.

The SLSMC's strength lies in its ability to adapt to an ever-changing operating environment, and it is continuously exploring ways to increase its operating efficiency. One angle that is being closely examined is an updated system to provide comprehensive voyage planning. "We are looking at what information is available from various service providers along the Seaway to improve traffic scheduling, while increasing efficiency and productivity. We also continue to examine a multitude of other opportunities, including the use of all-season buoys and virtual buoys to improve navigation, and thus our cost competitiveness," says Bowles.

SLSDC maintains co-operation and efficiency throughout the System

Saint Lawrence Seaway Development Corporation (SLSDC) is a wholly owned government corporation created by statute on 13 May 1954, to construct, operate and maintain that part of the St. Lawrence Seaway between the Port of Montreal and Lake Erie, within the territorial limits of the United States. Trade development functions aim to enhance Great Lakes/St. Lawrence Seaway System utilization without respect to territorial or geographic limits.

The mission of the Corporation is to serve the US intermodal and international transportation system by improving the operation and maintenance of a safe, reliable, efficient, and environmentally responsible deep-draught waterway, in co-operation with its Canadian counterpart, the St. Lawrence Seaway Management Corporation (SLSMC). The SLSDC also encourages the development of trade through the Great Lakes Seaway System, which contributes to the comprehensive economic and environmental development of the entire Great Lakes region.

The SLSDC headquarters staff offices are located in Washington, D.C. Operations are located at the two US Seaway locks (Eisenhower and Snell) in Massena, N.Y.

New Seaway tugboat arrives in Massena, New York

On 20 July, the SLSDC announced the arrival of its new tugboat, the *SEAWAY GUARDIAN*, in Massena, New York. The vessel had been on a three-week journey through the Gulf of Mexico, around Florida, and up the Atlantic seaboard from the Gulf Island Shipyards in Houma, Louisiana, where it was constructed.

The *SEAWAY GUARDIAN* will be the first new American-built tugboat to join SLSDC since the Seaway opened 61 years ago.

"The St. Lawrence Seaway is important because it provides access for American raw materials, manufactured goods and agricultural products to be exported all over the world. Many thanks to the Wisconsin-based crew that sailed the new tug on its long journey from the shipyard to the Seaway. The *SEAWAY GUARDIAN*, the first new American-built, American-crewed tugboat to join the Saint Lawrence Seaway Corporation in 61 years, will be a great addition to the Seaway's fleet," said US Secretary of Transportation Elaine L. Chao.

Construction of the *SEAWAY GUARDIAN*, which is capable of operating in difficult ice conditions, began in 2018. The keel was laid on June 26, 2018 and the vessel launched on September 12, 2019. Sea trials in the Gulf of Mexico were completed in June of this year and the tug began its delivery voyage to SLSDC's marine base in Massena on July 2.

The *SEAWAY GUARDIAN*'s primary missions will be buoy maintenance and ice management. It will also assist in firefighting and emergency operational response on the St. Lawrence Seaway. The new tug cost $24 million to construct as part of the SLSDC's Asset Renewal Program. The tug will replace the 62-year-old vessel, *ROBINSON BAY*, which the SLSDC will maintain as back-up for the foreseeable future.

Saint Lawrence Seaway Development Corporation announces Port Winners of 2019 Season 'Pacesetter Award'

On 6 May, the U.S. Saint Lawrence Seaway Development Corporation (SLSDC) announced that five U.S. ports in the Great Lakes St. Lawrence Seaway System received the agency's Robert J. Lewis Pacesetter Award for registering increases in international cargo tonnage shipped through their ports during the 2019 navigation season. "The St. Lawrence Seaway and its ports are vital to America's freight transportation network, job creation and economic growth," said U.S. Transportation Secretary Elaine L. Chao.

"Congratulations to the five Great Lakes ports being recognized as Pacesetter Award recipients for their achievements during the 2019 Seaway navigation season," said SLSDC's Deputy Administrator Craig H. Middlebrook. "The dedicated teams of professionals at our ports work hard to move increasing amounts of cargo safely and efficiently."

The five ports earning the Pacesetter Award for 2019 are: the Port of Chicago (Ill.), The Port of Duluth-Superior (Minn.), the Port of Green Bay (Wis.), the Port of Monroe (Mich.), and the Port of Oswego Authority (N.Y.). (See 'Port of Duluth gains second consecutive Pacesetter Award' on p18 of the May 2020 issue of *Dry Cargo International*.)

The SLSDC Pacesetter Award was established in 1992 to recognize the achievements of U.S. ports whose activities resulted in increasing international tonnage shipped through the St. Lawrence Seaway, excluding Canada, in comparison to the previous year. More than 237,000 jobs and $35 billion in economic activity are supported annually by movement of various cargoes on the Great Lakes St. Lawrence Seaway System.

The Port of Monroe, one of the winners of the Pacesetter Award.

The Société du parc industriel et portuaire de Bécancour: secure logistics hub

The Société du parc industriel et portuaire de Bécancour (SPIPB) — which can trace its origins back to the 1960s — is mostly known for being world-renowned in the accommodation of investments and the development of responsible industrial and port activities. It is also known for its strategic location on the south shore of the St. Lawrence River in Bécancour, midway between Québec and Montréal. Indeed, the SPIPB promotes the economic development of the province of Quebec by developing and operating an auto-financed industrial park and port facilities.

Handling more than 2.3mt (million tonnes) of cargo each year and housing several huge multinational companies on its territory, the SPIPB is constantly maintaining the highest safety and contingency measures to mitigate risk, so that in this way it can ensure a safe work environment for its workers. The safe management of industrial and port activities being a priority at Bécancour, the City and the SPIPB manages in partnership safety measures within the territory and ensures the provision of emergency

services of superior quality and efficiency.

To ensure the safety of the population and companies, the City manages:

- the co-ordination of emergency measures by a mixed municipal/industrial committee including citizens and government organizations;
- a state-of-the-art fire station situated at the entrance of the industrial park;
- a firefighter team trained to act in specific situations to the industries;
- a water rescue service ready to act at any time and in any conditions; and
- an emergency radio service with a dedicated frequency for the SPIPB.

In addition, each plant and each project in development must:

- provide their emergency measures plan and their list of hazardous materials;
- participate in the elaboration of emergency measures by being active in the mixed municipal/industrial committee;
- implement an internal emergency measures management team as well as a fire brigade when required; and
- maintain a safety management system including external verification and a citizen committee when applicable

At the end of 2019, the SPIPB had the opportunity to test its emergency plan, having organized a large-scale emergency simulation together with the City, a few industries located in the industrial park and the civil security. This major simulation helped communicate to all of partners, the importance of being well organized in regard to emergency procedures and showed that communication is the key factor to successfully manage a unfortunate event. As this simulation has been a success, the SPIPB is currently working on the next scenario to maintain the current dynamic it was able to reach.

Nowadays, the SPIPB is adapting to the new sanitary context, innovating and pushing its creativity to ensure the good health and well-being of all its workers. Having had a strong emphasis on emergency measures for many years, the experience that it has gained is definitely making it easier for the SPIPB to adapt rapidly, along with all of its partners, to the new reality.

Covid-19 affects Port Milwaukee cargoes, though cement and grain are rebounding strongly amid ongoing investment plans

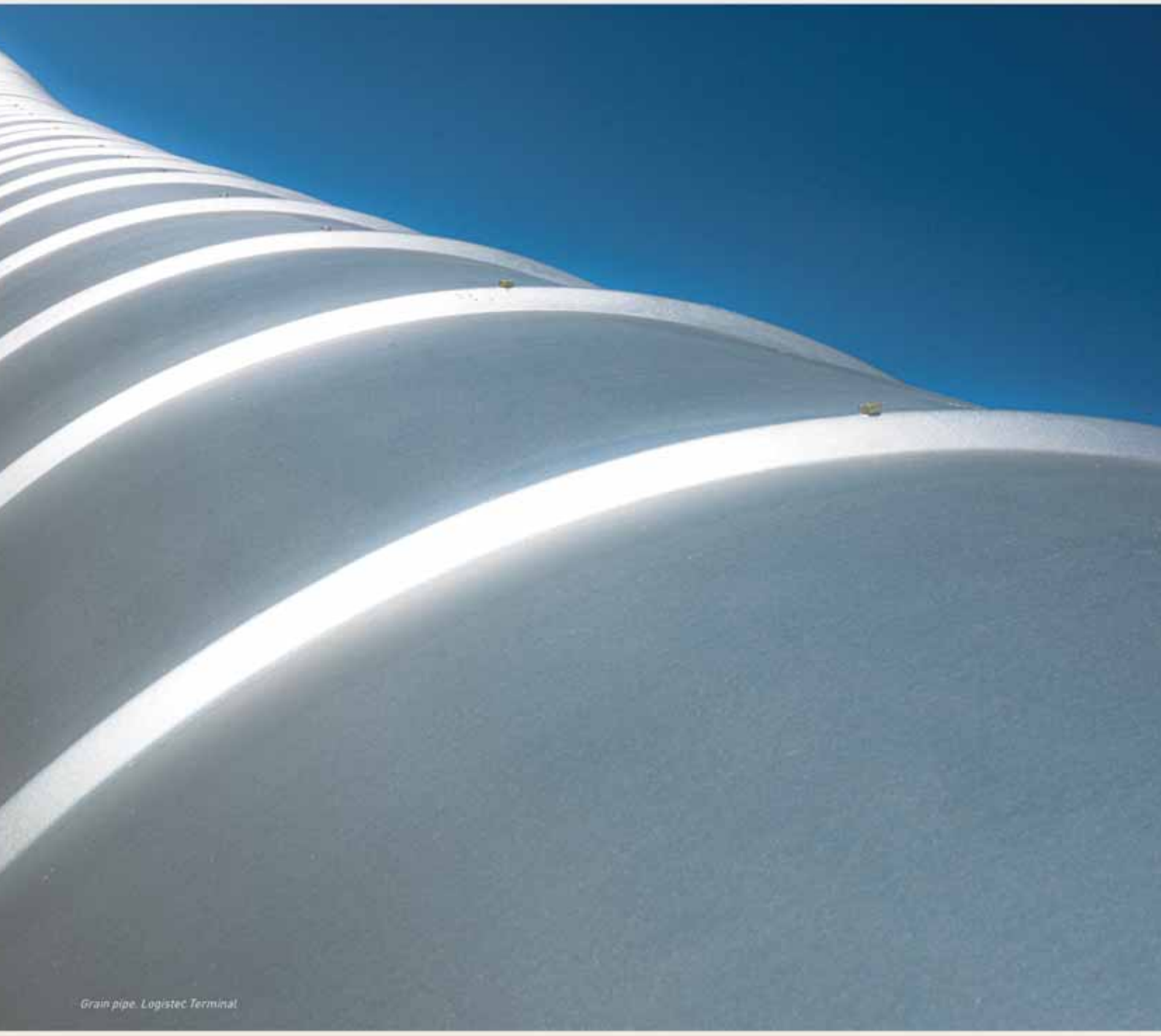
Port Milwaukee has a strong focus on dry bulk handling and dedicates over 50 acres to support these commodities. The port provides multi-modal capabilities, including access to 'Seawaymax' (Handysize) berths, two class one railroads (Canadian Pacific & Union Pacific), direct interstate connectivity, and the Mississippi River Inland System, making Port Milwaukee an ideal load centre for dry bulk in the Midwest region.

The volume handled at Port Milwaukee in 2019 was robust with a growth of 29% over 2018. Primary bulk cargoes handled include salt, cement, grain and limestone. Cargo throughput started out strong in 2020 with a growth of 15% ahead of the same time period last year. During the second quarter, however, overall dry cargo throughput retreated 11% compared to the same period in 2019 due to economic conditions during the Covid-19 pandemic. One bright spot is the uptick in activity with cement and grain, which the port anticipates to continue through the rest of 2020 and into 2021.

As an important bulk handling port on the Great Lakes, Port Milwaukee is focused on future investment and growth in this sector. An example of this is the $31m public/private planned investment for the development of an Agriculture Marine Export Facility. In partnership with the DeLong Company this project will handle Dried Distilled Goods with Solubles (DDG) and other Wisconsin agribusiness products. This facility is the first of its kind on the Great Lakes and is projected to contribute over $40m in exports to overseas markets via Port Milwaukee.

PORT MONTRÉAL

Ship different



Grain pipe. Logistec Terminal

We're safeguarding the flow of essential goods and services.

Learn more about our updated safety measures at https://www.port-montreal.com/en/covid-19.html

As the COVID-19 pandemic confines people to their homes, the Port is working tirelessly to keep everyone connected to vital goods and services. This involves ensuring the health and safety of all involved, from sailors and longshoremen to our employees, delivery personnel, and clients. We are going above and beyond government safety guidelines on all our sites. Rest assured, we will sail through this crisis together.

Port of Montreal – diversification and efficiency

A seaport in the heart of North America. The Port of Montreal is a hub of world trade and the economic engine of Greater Montreal.

Montreal is a North American ocean port at the heart of the continent and a hub for international trade that contributes to the well-being of its clients and partners and to the economic development of Greater Montreal, Quebec, Ontario and Canada while respecting the environment.

A diversified, highly efficient and innovative port that exerts mobilizing leadership and offers competitive value-added services, making it a partner of choice in the supply chain. The Port of Montreal strives for and values passion and employee excellence in order to create the best experience possible for its clients. It constantly reinvents the way in which it does business and encourages agility in order to demonstrate its leadership in the industry.

The Montreal Port Authority (MPA) is a sustainable organization that places great importance on the environment, on its neighbouring communities and on its contribution to the economy, and acts in accordance with rules of conduct dictated by honesty, transparency and accountability.

The port is the largest port in Eastern Canada. It handles all types of goods and operates in many industries.

CUMULATIVE TRAFFIC 2020–2019 JUNE (METRIC TONNES)

All traffic	2020	2019	Variation	
			Tonnes	%
General cargo				
Containerized	7,476,038	7,556,215	–80,177	–1.06%
Non-containerized	33,800	57,217	–23,416	–40.93%
Total	7,509,838	7,613,431	–103,593	–1.36%
Bulk cargo				
Dry	3,513,345	4,537,872	–1,024,527	–22.58%
Liquids	6,666,739	7,281,909	–615,170	–8.45%
Total	***17,689,922***	***19,433,213***	***–1,743,291***	***–8.97%***

Inbound traffic	2020	2019	Variation	
			Tonnes	%
General cargo				
Containerized	3,841,139	3,944,170	–103,031	–2.61%
Non-containerized	13,134	35,843	–22,709	–63.36%
Total	3,854,273	3,980,013	–125,740	–3.16%
Bulk cargo				
Dry	2,593,915	3,385,430	–791,515	–23.38%
Liquids	2,352,626	3,058,497	–705,871	–23.08%
Total	***8,800,815***	***10,423,940***	***–1,623,126***	***–15.57%***

Outbound traffic	2020	2019	Variation	
			Tonnes	%
General cargo				
Containerized	3,634,899	3,612,045	22,854	0.63%
Non-containerized	20,666	21,374	–707	–3.31%
Total	3,655,565	3,633,419	22,146	0.61%
Bulk cargo				
Dry	919,430	1,152,442	–233,012	–20.22%
Liquids	4,314,112	4,223,412	90,701	2.15%
Total	***8,889,107***	***9,009,272***	***–120,165***	***–1.33%***

Last updated : Monday, 10 August 2020 04:00

Coping with Covid-19

The Port of Montreal is still fully up and running, with its teams and those of its many partners mobilized to maintain the supply chain. Despite the inevitable slowdown that has been felt on the docks since April, the Port of Montreal continues to receive ships in its 19 diversified terminals and to streamline the movement of goods thanks to its efficient and fluid intermodal system. Above and beyond day-to-day operations, port optimization development projects have resumed since the reopening of construction sites in mid-May. Adopting all the health and safety measures necessary under the circumstances, project management teams and contractors are back at work on the main construction sites launched by the MPA, including: the redevelopment of Bickerdike Terminal, completion of Viau Terminal, the rehabilitation of docks 25 and 27, and the construction of the Port of Montreal's Grand Quay tower.

All of these projects will not only make it possible to be ready to accommodate the growth in diversified traffic at the Port of Montreal in the mid and long term, but also to contribute to the economic recovery through major investments in port infrastructures that are happening now.

The MPA is also making progress on its largest project, construction of the Contrecoeur container terminal. Negotiations with private operators are under way, the environmental process is being finalized, and some groundwork could be ready to start in 2020. It should be noted that this major project, which is scheduled to come on stream in 2024, will create 5,000 jobs during construction and 1,000 jobs at the operational level.

With substantial growth in recent years, including a sixth record year in 2019, the Port of Montreal has long been a major investment vector in Greater Montreal. On top of its role as a catalyst for trade, the pursuit of port projects will enable the Port of Montreal to play an important role in the upcoming economic recovery caused by the health crisis.

Facing strike action

At the time of writing, the MPA was experiencing strike action at the port. The action, carried out by the Syndicat des Débardeurs C.U.P.E. Local 375, comes as the union representing longshore workers and management have tried to negotiate a collective agreement over nearly the past two years. The main sticking point is working hours, according to the union.

Port activities are essential to keep the economy running smoothly and, in some cases, to ensure public health and safety. A prolonged stoppage or slowdown in port operations is unwelcome, not only for the logistics and supply chain but also for the businesses and citizens who benefit from the movement of goods.

The Port of Montreal is therefore closely monitoring the situation and hopes that the stevedores' employer, the Maritime Employees Association, and the Syndicat will be able to reach an agreement quickly.

Hamilton-Oshawa Port Authority: keeping supply chains moving and safeguarding the future

The Hamilton-Oshawa Port Authority (HOPA Ports) oversees the Ports of Hamilton and Oshawa and offers innovative port and marine assets on the Great Lakes, developing multimodal spaces to support Ontario's industry and facilitate trade.

The majority of the cargo that moves through the port of Hamilton is dry bulk. These cargoes support many local industries such as steel-making, construction, and Hamilton's $1 billion agri-food industry. At the Port of Oshawa dry bulk makes up just over half of the cargo that moves through the port. A new grain terminal completed by Sollio Ag and QSL completed last autumn has added direct export capacity for farmers across the Durham region.

In addition to robust marine and road networks, HOPA Ports is also served by two class-1 railways. In recent years HOPA Ports has continued investments to improve port infrastructure and strengthen these multimodal connections. Included in these investments is HOPA's $35.5 million Westport Modernization Project which will see upgrades to the existing Westport rail network to provide more cargo handling capacity, and rail service to more individual development parcels.

Recently HOPA Ports and Max Aicher North America (MANA) announced their partnership that will enhance Canadian supply chain assets at a critical time for the Canadian economy. HOPA Ports and MANA will be cooperating on the future development of a portion of MANA's Hamilton harbourfront property.

In the course of modernizing its existing Hamilton facility, MANA has confirmed a 60-acre portion of its site as surplus to its operational needs. The site is served by marine, rail and road transportation, and the property includes open space for outdoor storage, and more than eight acres of warehouse buildings.

While MANA will retain ownership of the property, HOPA Ports will take on active management of the site, and will begin marketing the space immediately. HOPA Ports has an established track record of developing marine-served industrial spaces. It is a segment of the commercial-industrial real estate market were HOPA Ports offers a distinct skill-set. The property will be managed under HOPA Ports' subsidiary Great Lakes Port Management, established to manage non-port-owned multimodal industrial properties in Ontario's Greater Golden Horseshoe.

Throughout the Covid-19 crisis, and as the Canadian economy turns toward restart mode, the need for robust and reliable supply chain assets has become ever more apparent. The MANA property is highly valuable for its location and multimodal connections, allowing it to support a wide range of potential customers and industries.

The Ports of Hamilton & Oshawa have safely sustained their roles as vital components of the national transportation network throughout Covid-19. So far this season more than 1.6 million metric tonnes of cargo has transited the Port of Hamilton aboard 108 vessels. The Port of Oshawa has received eight vessels, carrying a total of 94,000 metric tonnes of cargo. "We're proud of the role the HOPA Ports network has played in keeping Canada's supply chains moving. At the same time, our port neighbours need to have confidence that as a gateway for global trade, we're taking every precaution to keep our communities safe," said Vicki Gruber, HOPA Ports Harbour Master & Manager of Port Security.

Keel laid and name revealed for new Great Lakes bulk carrier

On 23 June, Fincantieri Bay Shipbuilding and The Interlake Steamship Company hosted a ceremonial keel laying, celebrating the historic start of assembly on the first US-flagged Great Lakes bulk carrier built in more than 35 years.

The keel is the foundation of the ship, and after more than nine months of engineering and pre-fabrication work of its modular sections by the Fincantieri Bay Shipbuilding (FBS) team, the keel was laid within the shipyard's large graving dock in Sturgeon Bay, Wisconsin. More than a dozen team members from Interlake, along with the shipbuilders of FBS, stood in a socially-distanced manner to watch.

Modern ships are now largely built in a series of pre-fabricated, complete hull sections rather than being built around a single keel. The event recognized the keel laying as the first joining of modular components, or the lowering of the first modules into place in the graving dock. This tradition dates back to the times of wooden ships and is said to bring luck to the ship during construction as well as the Captain and crew later in life.

During the ceremony, Interlake's Chairman James R. Barker, proudly revealed the new vessel would bear the name of his son and second-generation leader of the company, Mark W. Barker.

"This ship is more than the steel assembled here by Fincantieri Bay Shipbuilding," said James R. Barker, who has led the family-run company for more than three decades. "This ship represents Interlake's determination to be an active and responsible participant in all aspects of Great Lakes trade."

"This ship is being named for my son, Mark W. Barker, to recognize the many contributions that he has made to the company, the industry, and to our community. In addition, this naming reflects the successful management team that he

New investment, new confidence at the small-but-growing Port of Oshawa

Just over a year after the ports of Hamilton and Oshawa amalgamated, the Port of Oshawa is attracting investment, and building new awareness of its critical role as a gateway to the Greater Toronto Area.

Ian Hamilton, President & CEO of the amalgamated Hamilton-Oshawa Port Authority (HOPA Ports) believes Oshawa is just beginning to fulfill its potential. "I'm not at all surprised that we've seen so much activity at the Port of Oshawa in such a short time period," said Hamilton. "Located on the doorstep of the Toronto region, the port is critical infrastructure for the industries that will fuel southern Ontario's recovery and long-term success."

Starting this week, on the port's west wharf, the dilapidated former Petrocor tank facility is being decommissioned and removed. HOPA Ports acquired the lands in late 2019, and has moved swiftly to improve the efficient functioning and appearance of the area, fulfilling a long-held goal of the City of Oshawa and residents. The parcel will be incorporated into the port's footprint, allowing for increased cargo handling capacity and traffic flow.

The port has also begun to attract the attention of new investors and tenants.

In spring 2020, a new grain export terminal, constructed by Sollio Agriculture and QSL, entered its first full season of service. The new facility gives Durham Region grain producers a local option to market their grain for export, whereas previously their product may have been trucked all the way to Hamilton or east to Quebec.

More recently, Parkland Corporation has agreed to a Notice of Permission to evaluate investment in a modern liquid bulk transfer facility on the port's east wharf, to serve the regional market.

"Parkland already plays a leading role meeting the fuel needs of Ontario residents," said Ryan Krogmeier, Senior Vice President of Supply, Trading, Refining and Health, Safety and Environment at Parkland. "As we continue to pursue high-quality growth opportunities and extend our supply advantage, an import terminal in Oshawa would complement our existing transloading facilities in the Greater Toronto Area."

The import terminal would represent an incremental expansion of Parkland's strategic supply infrastructure in Ontario. The terminal would strengthen the company's ability to reliably and cost efficiently supply its almost 700 Ontario retail, commercial and wholesale locations, including the Pioneer, Ultramar and Sparlings brands.

"We have a track record of prudent capital investment in opportunities that advance our strategy," added Krogmeier. "We believe we can leverage the Port of Oshawa's marine and rail infrastructure and focus our potential investment on tank construction, wharf connectivity and load-out capabilities to efficiently extend our supply advantage."

Starting in August 2020, Parkland will use the seven-month due diligence period to complete engineering design plans, prepare for various regulatory filings and conclude economics.

"Parkland is a responsible operator with extensive experience operating commodity transload terminals in Ontario. The company operates a terminal at the Port of Hamilton where it has maintained an exemplary record of safety and environmental performance," said HOPA's Ian Hamilton.

For its part, HOPA Ports is focused on ensuring the port has the critical supply chain infrastructure to serve the near-term needs of jump-starting economic sectors like construction and manufacturing.

"Following the amalgamation, we took a fresh look at what was necessary to modernize the port's aging assets. HOPA Ports has identified approximately $25 million in work such as dock reconstruction, lighting and dredging that are essential for the port to fulfil its trade-enabling mission," said Hamilton. "The population of the GTHA will soon surpass eight million people. We've got to be thinking about the transportation network and industrial supply chains needed to sustain a population of that size."

has put together," Barker told the crowd. "Finally, it reflects that we are a family company and our commitment to staying one."

The naming and keel laying also signifies that Interlake and Fincantieri Bay Shipbuilding are well under way on this historic project.

"Our workforce is very proud to construct what will become a "homeport ship," says Fincantieri Bay Shipbuilding's Vice President and General Manager Todd Thayse. "This large-scale bulk carrier is being built on the Great Lakes and will operate right here on the Great Lakes, which creates a sense of local and regional pride. Today's ceremony with Interlake and the naming of the vessel really brings this ship to life. We are excited and appreciative for Interlake's continued confidence in the quality of our work."

During the keel laying ceremony, there is a coin-setting tradition of having the youngest apprentice place newly-minted silver and gold coins under the keel upon which the ship will be constructed. Luke and Eli Barker, sons of Mark W. Barker and

Luke and Eli Barker with the coins that went on to be placed under the keel; these coins will become part of the ship's artifacts.

third-generation members of the family company, were chosen as the symbolic "young apprentices." The brothers collected coins from various Interlake officials and tucked them in a bag, which they nailed into an oak block upon which the keel was set. When the ship is finished, the owners and others are presented with the block and coins, with both pieces becoming a part of the ship's artifacts.

"It is truly amazing to have a ship that is built here in Wisconsin and made from steel from Indiana that came from iron ore mined in Minnesota with US crews, US workers, and US miners all doing this for our great Country," said Mark W. Barker, President of Interlake. "This is just an amazing story that I am absolutely privileged and so proud to be a part of as we continue the long tradition in this country of building, running and operating the US fleet."

The new *River*-class, self-unloading bulk carrier is believed to be the first ship for US Great Lakes service built on the Great Lakes since 1983. Measuring 639 feet in length (78 feet W, 45 feet H, 28,000dwt), the ship will transport raw materials such as salt, iron ore, and stone to support manufacturing throughout the Great Lakes region.

The Interlake Steamship Company, Fincantieri Bay Shipbuilding and Bay Engineering jointly designed the bulk carrier, complete with advanced vessel and unloading systems automation. Scheduled for completion in mid-2022, the carrier is

being built by FBS's nearly 700 skilled trade workers and will generate business for partnering contractors, vendors and suppliers. Major partners for the project include: American Bureau of Shipping (ABS); ArcelorMittal, Bay Engineering (BEI); EMD Engines; Caterpillar; EMS-Tech, Inc.; Lufkin (a GE Company), Kongsberg and MacGregor.

About Fincantieri Bay Shipbuilding

Located in Sturgeon Bay, Wisconsin, Fincantieri Bay Shipbuilding (FBS) is highly respected in the industry for the construction, conversion and repair of large ships — tracing its rich history back more than 100 years. The diversified FBS portfolio includes all types of vessels including articulated tug-barge units, dredges and dredging support equipment, automated loading carriers, ferries and offshore support vessels. On the repair side, FBS is expert at managing critical deadlines in the repair and sustainment of bulk carriers and other ships of the Great Lakes winter fleet.

Shipbuilding facilities at the 63-acre plant include a large graving dock, a US Navy-certified drydock, and lifting capacity to meet the most demanding requirements. Erection buildings are climate-controlled and equipped with sophisticated computer-aided manufacturing equipment. Fincantieri's skilled workforce has extensive shipyard construction experience, in-house engineering, and a management team focused on client satisfaction and on-time delivery.

Fincantieri Bay Shipbuilding is an operating unit of Fincantieri Marine Group (FMG), the United States division of global shipbuilding giant Fincantieri.

About Fincantieri

Fincantieri is one of the world's largest shipbuilding groups and has built more than 7,000 vessels in over 230 years of maritime history. It is an expert in cruise ship design and construction and a reference player in all high-tech shipbuilding industry's sectors, from naval to offshore vessels, from high-complexity special vessels and ferries to mega-yachts, ship repairs and conversions, systems and components production and after-sales services. Fincantieri operates in the United States through its subsidiary Fincantieri Marine Group (FMG). This company, which serves commercial and government customers in the USA, including the U.S. Navy and Coast Guard, has three shipyards (Fincantieri Marinette Marine, Fincantieri Bay Shipbuilding and Fincantieri ACE Marine) located in the Great Lakes.

About The Interlake Steamship Company

As the largest privately held US-flag fleet on the Lakes, Interlake has been carrying the bulk cargoes that have been fuelling the region's economy together with its predecessors for more than 100 years. A second-generation, family run company, Interlake is propelled by a long-term vision to make its fleet of nine vessels the most efficient and environmentally responsible in the shipping industry.

The company has invested more than $100 million to modernize and improve its ships to safely and reliably transport 20 million tonnes of raw materials annually, including iron ore and flux stone for the steel industry, stone for the construction industry, coal for power generation and salt for de-icing needs on roads and highways. Interlake employs about 400 men and women who live and work in the region and the cargoes they deliver help generate and sustain more than 103,000 jobs in the eight Great Lakes states.

Lake Carriers' Appreciation for House Appropriations supporting the Great Lakes

Bulk vessel transiting the Soo Lock.

The House Appropriations Committee has approved $123 million for construction of the Soo Lock. This would be the largest single year amount received so far in a fiscal year for one of the largest infrastructure projects ever in the Great Lakes region. The Lake Carriers' Association applauds the House Committee for the approval of the "Energy and Water Development and Related Agencies Appropriations Act, 2021."

The legislation includes more than $123 million to support the ongoing construction of the new deep-water navigational lock in Sault Ste. Marie, Michigan. The lock project has a very good chance of competing for additional funding as well with the Committee adding $59.2 million for construction of "locks not on the inland waterways system." This funding is crucial for the U.S. Army Corp of Engineers to maintain construction timelines with the goal of completing the new lock project possibly within as few as seven years.

The current 62-year-old deep-water Poe Lock, the only one large enough to handle 1,000-foot US-flag ships, has experienced numerous outages over the past years as ageing components have begun to fail. The Poe Lock is a single point of failure for the entire Great Lakes maritime system as well as a large portion of American manufacturing, and construction. It is a critical infrastructure link connecting Lake Superior to the rest of the Great Lakes-St. Lawrence Seaway.

The new 'super lock' (fitted with new hands-free mooring technology), under construction, will ensure redundancy and insure against a national economic disaster should the Poe fail. The key link in the supply chain will be significantly fortified through the addition of a second large lock capable of accommodating the largest Great Lakes bulk carriers, ensuring a smoother, more efficient flow of maritime cargoes. Dredging began in May.

"It's difficult to overstate just how vital the Soo Locks at Sault Ste. Marie are to the Great Lakes region, our people, and our economies," said Rep. Kaptur, Chairwoman of the House Appropriations Subcommittee on Energy and Water Development. "As a life-long resident of Toledo, home to one the busiest commercial ports in the Great Lakes, our city — like many Ohio cities along Lake Erie — rely heavily on commercial shipping. Our cities receive goods like iron ore, which pass through the Soo Locks on their way from ports on Lake Superior, and which is then used by northern Ohio workers to forge the best iron and steel in the world. As Chairwoman of the House Appropriations Subcommittee on Energy and Water Development, investing in the Soo Locks has been among my highest priorities, I'm glad to have secured this critically needed funding."

"We praise Chairwoman Kaptur and the entire House Committee on Appropriations for their continued support of the new lock in Sault Ste. Marie, Michigan. Efficiently funding the U.S. Army Corps of Engineers so the project can remain on track is crucial to the overall health of the Great Lakes Navigation System," stated Lake Carriers' Association President, Jim Weakley.

In addition to the lock funding, the bill provides an additional $17 billion in emergency funding to accelerate work on Army Corps projects around the county, putting Americans back to work and improving water infrastructure while reducing the current backlog.

About Lake Carriers' Association

Since 1880, Lake Carriers' has represented the US-flag Great Lakes fleet, which today can move more than 90 million tonnes of cargoes annually that are the foundation of American industry, infrastructure, and power: iron ore, stone, coal, cement, and other dry bulk materials such as grain, salt, and sand.

Port of Indiana-Burns Harbor – major link in vital supply chain

Photos courtesy of Port of Indiana-Burns Harbor.

Ships come through the St. Lawrence Seaway directly to the Port of Indiana-Burns Harbor where the cargoes are unloaded and shipped by rail, truck, or barge to their destinations. Like river ports, Port of Indiana-Burns Harbor also receives barges via the inland waterways system. Outgoing cargoes can be placed on ships which navigate the Seaway to access global markets through the Atlantic Ocean, barges that travel the river system, or truck or rail for more local markets.

A wide variety of dry bulk products move through the Port of Indiana-Burns Harbor. The list includes but not limited to, scrap steel bound for NLMK Indiana, a steel mini-mill at the port; import and export grain cargoes via Cargill; limestone for Carmeuse; and fertilizer, sugar, lime and salt bound for Frick Services, Inc.

Several other large handlers of bulk products include Mid-Continent Coal and

2019 BULK CARGO TONNAGES

	(tonnes)
Grain	97,400
Fertilizer dry	70,500
Salt	119,000
Scrap Steel	89,000
Coke	188,000
Coal	58,500
Magnesite	61,000

METRO PORTS

BULK TERMINAL OPERATOR

Port of Indiana-Burns Harbor

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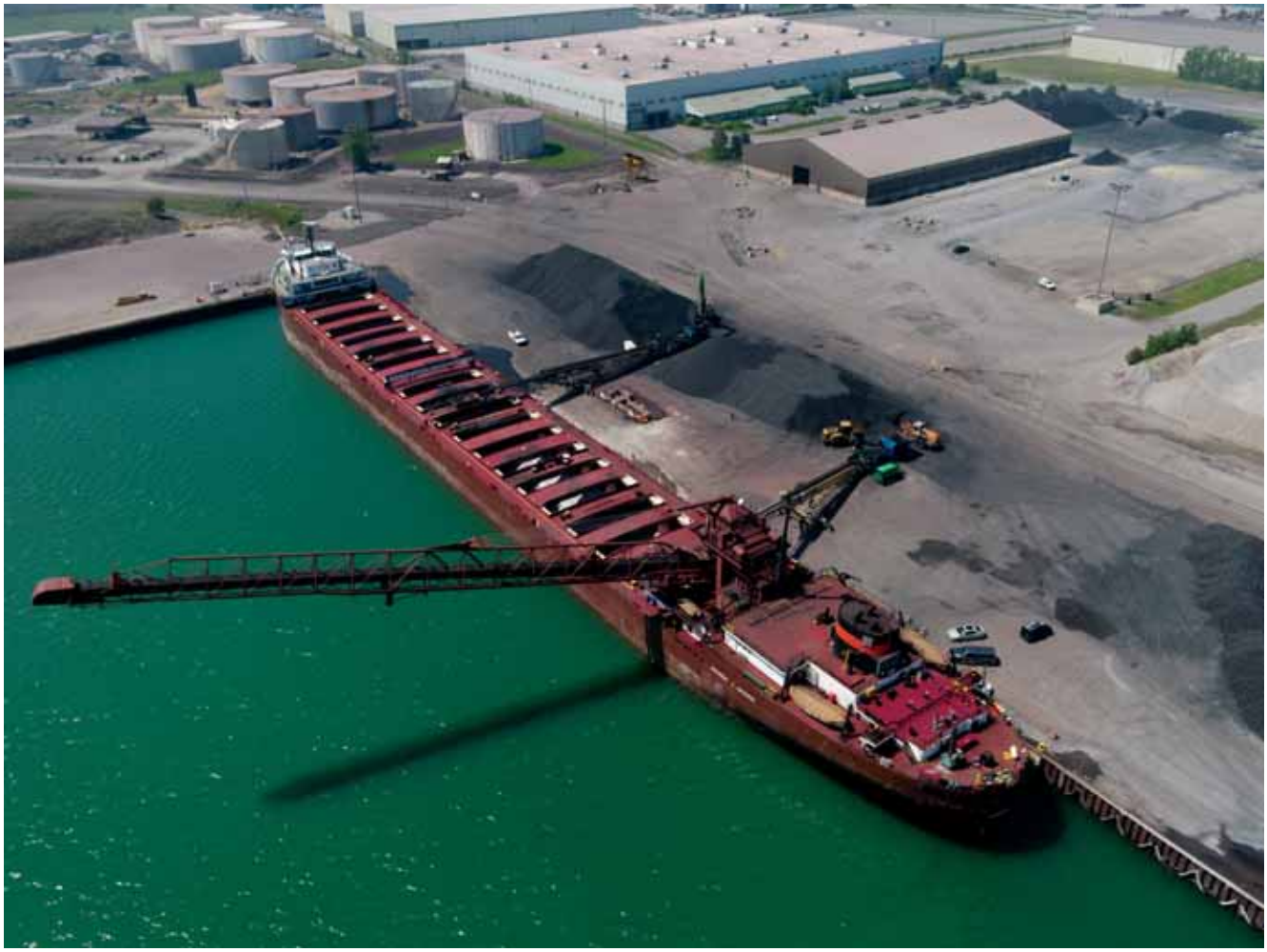


Coke Company, which handles a wide variety of import/export coal and coke products, and Phoenix Metal Services, LLC., whose core services include handling steel slag.

High-tech equipment in use

Metro Ports, the marine terminal bulk operator at the Port, uses equipment such as Liebherr and Sennebogen material handlers, a full complement of front-end loaders and radial stacker conveying equipment. The port's longtime break-bulk stevedoring company, Federal Marine Terminal (FMT), uses equipment such as Kobelco & Manitowoc cranes with capacity up to 170 metric tonnes and forklifts ranging from 8000 to 95,500 pounds in capacity.

Safeguarding the environment

Port of Indiana-Burns Harbor employs water cannons to minimize airborne emissions and straw waddles to screen storm water. The port tarps most cargoes that will be stored outdoors. It also utilizes inside storage to the maximum extent possible and is seeking funding to build another warehouse for that purpose. The port conducts ongoing testing to make sure these methods are successful.

In addition, all three Ports of Indiana facilities recently earned Green Marine Certification this year. Green Marine is a voluntary programme whose members seek to go above and beyond in protecting and preserving the natural environment in which they operate. The Port of Indiana-Burns Harbor received certification in 2014. Adding the two river ports, Port of Indiana-Jeffersonville and Port of Indiana-Mount Vernon, extends the benefits of the Green Marine certification process to the Inland Waterway System.

Cargo volumes remain stable in the face of Covid-19

As with all ports, Port of Indiana-Burns Harbor faces the traditional challenges that include the economic cycle, trade conflicts and changing trade patterns and all the factors that impact these patterns.

While there are mixed results among US Great Lakes ports, the Covid-19 outbreak has not impacted the total waterborne cargo volumes at the Ports of Indiana. The Port of Indiana-Burns Harbor had a variety of activity during the month of June, with ships arriving via the St Lawrence Seaway, hopper barges transiting the Inland Waterway and deck barges carrying shipments from other Great Lakes ports. While steel manufacturing and steel related sectors have been heavily impacted, the deepwater port welcomed 16 waterborne general cargo shipments in July, including a steady flow of wind turbine components from around the globe.

Throughout the pandemic, Burns Harbor port officials have distributed hand sanitizer and face masks to the longshoremen & operating engineers in effort to protect all personnel while keeping vital goods on the move.

Investing for the future

At the Port of Indiana-Burns Harbor, where steel and agriculture products are top commodities, $20 million is being spent to enhance intermodal facilities with rail and truck marshalling yards. Work under way from this FASTLANE grant include two new railyards, 4.4 miles extension to the port's 14-mile rail network, construction of a new 2.3-acre cargo terminal with multimodal connections, improvements to the dock apron and approximately 1,200-foot dock expansion, and a new six-acre truck marshalling yard.

The marshalling yard will reduce truck emissions and the two new berths will help grow marine transportation; the most environmentally friendly method of moving cargo. Rail is second cleanest and the two new railyards will expand the port's rail opportunities.

Canadian Coast Guard icebreaking services help keep shipping safe

The CCGS Samuel Risley *escorts the barge* Maumee *and* Victory *tug (photo: Graham Grattan).*

The Canadian Coast Guard (CCG) provides icebreaking support, escort, and ice management services to support the safe and efficient movement of people, ships, and goods across Canadian waters. Shipping on the Great Lakes remains active during the winter months, and the CCG supports the shipping industry to keep cargo moving.

Coast Guard icebreaking service is an economic enabler. Icebreaking is an important government service that helps the Canadian and United States economies.

The Coast Guard also plays an important role in public safety, breaking ice to prevent the formation of ice jams, which can cause flooding.

The United States Coast Guard District 9 and Canadian Coast Guard, Central Region have developed a long-standing partnership in building an inter-operable, bi-national Coast Guard service in the Great Lakes. The CCG works closely with the shipping industry requesting icebreaker assistance and the United States Coast Guard (USCG) to plan icebreaking operations.

The CCG's icebreaking programme extends to the skies over the Great Lakes. Its helicopters allow crews to conduct ice reconnaissance missions. The information gathered from the flights assists both Coast Guards and the shipping industry in planning their routes and schedules.

Since the beginning of the Covid-19 pandemic, the CCG has continued to provide its essential services, including icebreaking on the Great Lakes. This includes working closely with partners at the USCG.

- The CCG is committed to the health and safety of its members.
- As part of its enhanced operating procedures, the CCG is not allowing non-essential staff access to any facility or vessel, and it is screening all crew members before they board any vessel.
- Protocols also provide instructions on how to isolate and conduct a thorough cleaning and disinfection of any facility or vessel where an employee with symptoms of Covid-19 has been identified.
- The CCG has and continues to work to secure supplies of Personal Protective Equipment for staff.

Canadian Coast Guard icebreaking operations

On the Great Lakes, icebreaking services are provided by the Canadian Coast Guard and the United States Coast Guard working together as one team. Last season alone, both Coast Guards directly assisted 522 ship transits on the Great Lakes. These services are critical to keeping the Canadian economy moving, and facilitating trade on the shared waters year round.

Although the St. Lawrence Seaway, Welland Canal and Sault Ste. Marie Locks are closed during the winter months, shipping is still active on the Great Lakes. The Canadian Coast Guard has two icebreakers assigned to the Great Lakes for the entire winter season: the *CCGS Griffon* and *CCGS Samuel Risley*. They are also supported by additional Coast Guard vessels during the icebreaking season.

Icebreaking requests are co-ordinated by CCG's Regional Operations Centre in Montreal, along with the USCG. Daily operational conference calls are held for industry representatives to meet with Coast Guard officials and receive updates from both countries about the extent, concentration, and thickness of the ice.

The Coast Guard's Marine Communications and Traffic Services in Sarnia and Prescott, Ontario, are in contact with mariners 24-hours-a-day providing

Canadian, U.S. Coast Guard leaders work together to ensure icebreaking operations in the Great Lakes/St. Lawrence Seaway

The Canadian Coast Guard and the United States Coast Guard are committed to ensuring vital icebreaking operations in the Great Lakes region including the main connecting navigable waterways, Georgian Bay and the St. Lawrence River from Tibbetts Point, New York, to as far east as Cornwall, Ontario.

"With our partners at the United States Coast Guard we are truly one team supporting the safe, economical and efficient movement of ships in the heart of North America," said Julie Gascon, Assistant Commissioner of the Canadian Coast Guard's Central and Arctic Region. Referring to the updated icebreaking Memorandum of Understanding signed between the two parties in January 2018, she said, "Our updated Memorandum of Understanding allows us to better share information, equipment and personnel between countries. By working together we ensure scheduled vessel traffic can move through the shipping channels and into and out of community harbours."

"Our partnership with the Canadian Coast Guard is crucial for our mutual success on the Great Lakes and surrounding waterways," said Rear Admiral Joanna Nunan, Commander, U.S. Coast Guard Ninth District. "We need to work together to provide seamless service to our communities and keep commerce flowing."

The icebreaking MOU authorizes the exchange of personnel on Coast Guard icebreakers. Temporary exchanges, when conditions allow, will enhance familiarity with each other's procedures when co-operating in shared waters, often on joint missions.

Icebreaking is one of the multiple mission areas where the collaborative Canadian/US partnership has grown. Similar agreements also exist for search and rescue, environmental response, maritime security and marine communications and traffic services.

information, managing marine traffic, and responding to calls for assistance.

Winter maritime search and rescue operations are coordinated by the Joint Rescue Coordination Centre in Trenton, Ontario. Coast Guard icebreakers and other vessels may be called upon to help. Aircraft from the Department of National Defence and USCG are also involved in maritime search and rescue operations, as necessary.

Additional Coast Guard duties on the waterways during the winter months

In addition to icebreaking for the shipping industry, both the CCG and the USCG work to prevent the formation of ice jams and flooding. Problems occur when ice accumulates and blocks the flow of a river. Coast Guard ships are also at the ready to respond to environmental incidents and other urgent issues or emergencies.

All ice surface users should plan their ice activities carefully, use caution on the ice, and avoid shipping lanes and icebreaking operations. Broken and fragmented ice tracks and ridging left behind by passing icebreakers or commercial vessels may not freeze over immediately. This can result in hazardous conditions for ice users. In addition, newly fallen snow will obscure ship tracks. Unsafe ice conditions can persist long after icebreakers have left the area.

The CCGS Samuel Risley *escorts the barge* Maumee *and* Victory *tug (photo: Graham Grattan).*

Second consecutive record year for the Port of Trois Rivières

As part of the 17 Canadian Port Authorities and active since 1882, the Port of Trois-Rivières is an important player in regional, national and international economic development for major industrial sectors such as the aluminium industry, forestry and agri-food. The respect of the highest environmental standards and harmony with the community are essential for the Port of Trois-Rivières.

Strategically located halfway between Montreal and Quebec City, the Port of Trois-Rivières welcomes 55,000 trucks, 11,000 railcars and more than 250 merchant and cruise ships annually originating from over 100 different ports in more than 40 countries around the world. It handles over four million metric tonnes of traffic, has an annual economic impact of nearly $220 million and supports more than 2,000 direct, indirect and induced jobs.

The Trois-Rivières Port Authority (TRPA) mission is to meet the objectives of the Canada Marine Act through sound management of public infrastructures under its responsibility, by fostering commercial activities and regional and national development. This involves:

- restoring, maintaining and developing the marine infrastructures needed to promote and safeguard Canada's competitiveness and trade objectives.
- setting up an intermodal transportation system that meets users' needs at a reasonable cost, and providing a high level of safety and environmental protection.
- providing effective support for the achievement of social and economic objectives at the local, regional and national levels by fostering commercial activities.

The port's vision is to be an innovative urban port, generating growth, at the heart of a competitive supply chain.

In the port's 2019 report, Danielle St-Amand, Chairwoman of the Board and Gaétan Boivin, President and chief executive officer spoke about the year just gone. They noted the effects of the Covid-19 pandemic, and praised the exemplary work of the port's partners and workers, as well as the organization's employees and management. "Everyone has contributed in their own way to implement the best preventive and protective measures. Our port community is very tightly woven and we are moving forward despite these exceptional conditions," they said.

Focusing on 2019, this was a second record year, with a total of 4.2mt (million metric tonnes) transiting the port, surpassing the previous year's record of 3.8mt by 10%. While liquid bulk remained stable at 0.3mt, which is comparable to the average for the last five years in this sector, solid bulk traffic increased from 3.2 to 3.6mt. General cargo was also stable at 0.3mt, representing a 36% increase over the average of the last five years.

Under the port's On Course for 2030 development plan, two innovation and environmental investment funds were launched, with $2.5 million, spread over five years, available to users and clients to make the port more competitive while respecting the environment.

Of particular note was the agreement reached with Hason Steel Products. The facility built on the Bellefeuille Street site, and owned by the port, allows the company to assemble its oversized products for export via the port facilities. Hason has customers all over the world, so the City of Trois-Rivières and the Port of Trois-Rivières will benefit from this important international influence.

"Without a doubt," say St-Amand and Boivin, "we have just completed an exceptional year and it puts us in a very

Of particular note was the agreement reached with Hason Steel Products.

good position to continue the deployment of the On Course for 2030 plan."

First vessel of the year

The *Ellensborg* was the first ocean-going vessel from a foreign port to reach the Port of Trois-Rivières non-stop.

The vessel arrived at the port on 7 January, after a 25-day Atlantic crossing. A cargo of 11,000 metric tonnes of zinc was on board and was unloaded by Somavrac.

During the 53rd ceremony marking the arrival of the first vessel of the year at the Port of Trois-Rivières, the captain and chief engineer of the *Ellensborg* were presented with a giclée reproduction of the painting *Un Port une équipe*, produced by Mauricie artist Caroline St-Pierre.

A total of 260 vessels docked at the port, including 25 cruise ships.

The Port's community

Logistec

Logistec has acquired a 25-tonne forklift truck and a lifting beam in order to increase its productivity as well as its flexibility in the handling of various general cargoes for its customers.

G3 Canada Limited

As part of its commitment to building a more effective route between Canadian farms and international markets, G3 Canada Limited has proudly continued its role with local producers, brokers and truckers by facilitating the receipt of over 271,000 tonnes of grain at the grain terminal arriving by truck and destined for overseas markets.

Alcoa

In 2019, Alcoa renewed its fleet of railcars. Of the 55 cars previously in use, 85 new cars were acquired and modified to provide a daily link between the port terminal and the Deschambault plant.

Somavrac

Recognized for its custom service, Somavrac has enabled the port to reach record tonnage in road salt handling. Terminal 13 has been at the heart of numerous transshipment operations from ocean-going vessels to laker vessels.

Workforce

The Port of Trois-Rivières is fortunate to rely on the contribution of 1,000 workers whose jobs are directly related to its various operations. These men and women include longshoremen, supervisors, mechanics, operators, truckers, security guards, technicians and many others. On a daily basis, they make it possible to carry out the various activities that make up the logistics chain. Without them, the Port of Trois-Rivières would simply not exist.

The Logistec terminal at the Port of Trois Rivières.

The Government of Quebec supports improvements to the port's infrastructure

The Québec government has confirmed financial assistance of $2,492,595 to the TRPA for the construction of an outdoor storage space, a multipurpose shed and a warehouse for oversized equipment.

This new value-added warehouse allows Hason Steel Products to operate a receiving, warehousing and assembly unit for its oversized parts and to export them overseas, in addition to creating some 40 quality jobs.

"As a key player in the development of the Trois-Rivières industrial-port zone, we are proud of this new partnership with Hason. Thanks to this project, the Port and the City of Trois-Rivières will benefit from increased international exposure, which will bring significant benefits to our community. The Government of Québec, the City of Trois-Rivières, Innovation and Economic Development Trois-Rivières and the industrial-port zone's stakeholders have made a vital contribution to the realization of this major project," said Boivin.

Coping with Covid-19

As an essential service, the Port of Trois-Rivières is continuing to operate, and has taken the necessary precautions to safeguard both its own colleagues and port users. This includes:

- The Trois-Rivières Port Authority (TRPA) has mandated teleworking for all administrative office employees who can perform their work remotely in order to limit the spread.
- The TRPA prohibits crew members of foreign-flag vessels from leaving the vessel, except as necessary for the proper carrying out of loading or unloading operations.
- For workers required to go on board or be in contact with crew members, social distancing measures are imposed.
- The Seamen's Club shall be closed until further notice.
- No person other than security guards may enter the main gate building.
- All persons accessing the port area (e.g. truckers) must answer a series of questions to confirm the absence of Covid-19 related symptoms.
- Each stevedoring partner has implemented measures to ensure that operations continue with minimal interaction and exchange of paper documents.
- Non-essential groupings, particularly in closed environments, are avoided. In collaboration with its partners, workstations and rest areas are regularly cleaned and disinfected.

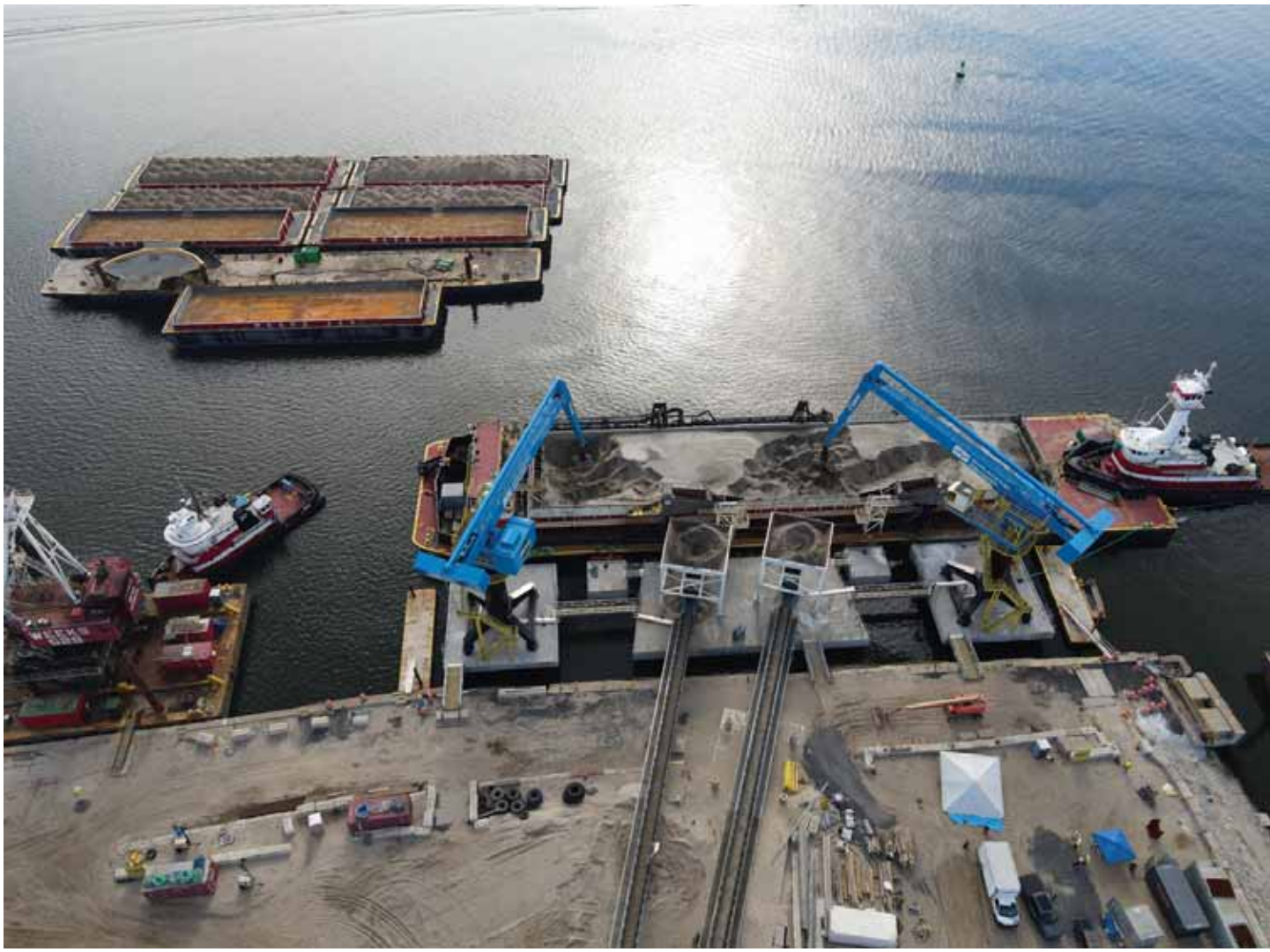
In accordance with Transport Canada's directive, all foreign commercial vessels entering Canadian waters are required to report the health status of their crews, including the reportable Covid-19.

On arrival in port, before boarding or commencing vessel operations, any employee authorized to board must have confirmation from the vessel's authorized representative that there are no symptoms of Covid-19. In the absence of this confirmation, workers may not board the vessel.

Whenever possible, all documents that may need to be presented to, received from or signed by the vessel, should be exchanged electronically or reduced to essentials. DCi

East Side Story

bulk handling on the East Coast of North America



Lowering CAPEX and OPEX and increasing production with E-Cranes

The global bulk material market is projected to grow at a modest but steady rate during the next four to six years due primarily to growing infrastructure projects across the globe and increased demand for production of steel, mining, chemical and agricultural products.

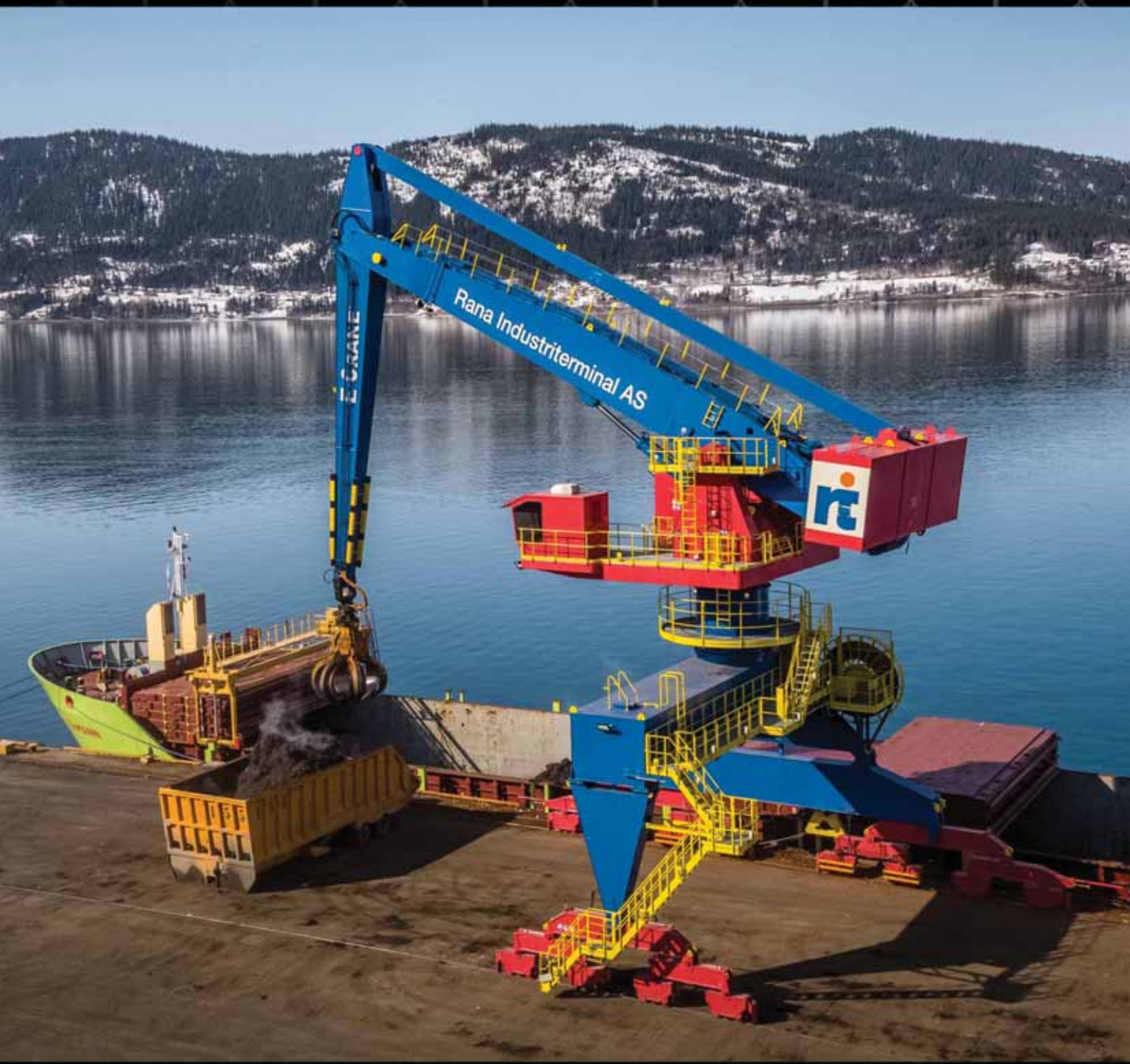
The East Coast of the United States has many industries that require efficient handling of dry bulk materials and scrap. These materials include minerals, ores, coal, petcoke, woodchips, sand, gravel, ash, salt, chemicals, grain, scrap and others. Also, the terminals on the East Coast have a wide variety of waterway work because ports can handle large bulkers down to small barges.

Traditional equipment found on the East Coast for handling these products are many times mechanical wire rope supported cranes and hydraulic excavators converted from digging to material handling. In today's more sophisticated world, these solutions are not good enough. Now we are seeing owners of older equipment realizing there is a better way to increase production and reduce operating costs. Even owners of 'newer' equipment are realizing the significant savings in OPEX when operating E-Cranes designed specifically for barge and ship-unloading applications.

A proven solution for Bulk Handling includes the balanced hydraulic crane or E-Crane® ('E' stands for Equilibrium). The E-Crane is purpose built for dedicated tasks including:

- offloading Panamax/Handymax-sized vessels;
- barge loading/unloading;
- shiploading/unloading;
- feeding hoppers; and
- stockpiling.

E-CRANE®
QUILIBRIUM
GRAVITY IS THE NEW ENERGY



1800 Series E-Crane
42m outreach and lifting 22 tons @30m
Outperforms the world's biggest material handlers

The unique E-Crane concept provides environmentally friendly, energy efficient equipment with a low CAPEX investment, high reliability, low OPEX, long service life and extremely safe operation.

Several of E-Cranes' East Coast clients are realizing new 'value-added' benefits with the unique operating principal of the E-Crane.

North American Aggregate is enjoying the benefits of fast cycle times, high productivity, simple service, and conservation of real estate at its Cranford NJ sand operation. In co-operation with the engineers from E-Crane, dual 1500 Series, Model EH9359 machines are routinely unloading the dredge *Eleanor* on a regular basis.

Likewise, an innovative solution was created, in conjunction with engineers from Weeks Marine that includes a floating E-Crane/3000 Series C/Model EC19421. This high capacity crane will be operating on a on a custom-built barge for general stevedoring work.

Ridgewood Infrastructure and Savage Joint Venture acquire Carolina Marine Terminal

On 1 June, Transportation Infrastructure Partners, a joint venture between Ridgewood Infrastructure, LLC (Ridgewood) and Savage (Savage), announced the acquisition of Carolina Marine Terminal, Inc. (CMT). CMT, a multi-modal marine dry good bulk port facility in Wilmington, NC, provides mission-critical transport, logistics management, and product handling services to a diverse and outstanding customer base.

Last quarter, Ridgewood, a major infrastructure investor in the US, and Savage, a global transportation and materials handling company, established Transportation Infrastructure Partners to jointly acquire and operate essential transportation and logistics infrastructure throughout the United States. CMT is Transportation Infrastructure Partners' first acquisition. Savage will be the operator of investments made by the joint venture, including CMT.

"We are pleased to be initiating this joint venture with the acquisition of CMT," said Ryan Stewart, Managing Director of Ridgewood Infrastructure. "CMT's deep-water port, storage facilities, access to major rail and highway routes, and highly efficient operations combine to provide the company with a sustainable competitive advantage."

Kirk Aubry, President and Chief Executive Officer of Savage, said: "CMT has earned a reputation for delivering best-in-class stevedoring, storage, and distribution services. In the years ahead, we'll continue to focus on providing innovative, cost-effective solutions to CMT's growing base of customers."

"We're thrilled to have Transportation Infrastructure Partners as the new owner of CMT," said Mike McCarley and Kevin Walker, the former owners and founders of CMT. "We're delighted that our customers and employees will be working with a group of the calibre of Savage and Ridgewood. We're excited to watch them build upon our success and take CMT to the next level."

About Transportation Infrastructure Partners

Transportation Infrastructure Partners is a joint venture between Ridgewood Infrastructure and Savage focused on acquiring and operating critical transportation and logistics infrastructure throughout the United States. Savage will be the operator of investments made by the joint venture.

About Ridgewood Infrastructure

Ridgewood Infrastructure invests in essential infrastructure in the US. In addition to Transportation Infrastructure Partners, some of Ridgewood's recent investments include the Vista Ridge Regional Water Supply Project, a long–term contracted 142–mile water pipeline, which is expected to supply the city of San Antonio, Texas with approximately 20% of its fresh water; Undine LLC, which owns and operates regulated water and wastewater utilities in several major U.S. markets; and SiEnergy, which is among the largest and fastest growing regulated natural gas local distribution companies in Texas, serving approximately 25,000 customers.

Ridgewood Infrastructure is part of the affiliated Ridgewood Companies, a leading real asset investment manager with $6 billion in total capital and commitments focused on investments in infrastructure and energy.

About Savage

Established in 1946, Savage moves and manages critical materials for customers using rail, trucks, and marine vessels, and through the design, construction, and operation of terminals and other industrial facilities across North America and internationally. The company's purpose is to 'enable Customers and Partners to Feed the World, Power Our Lives, and Sustain the Planet'. Savage provides comprehensive services across customers' supply chains in the agriculture, energy and chemical, and environmental sectors.

Rio Grande Valley benefits from opportunities offered by Brownsville

The Port of Brownsville is a deepwater seaport in Brownsville, at the southernmost tip of Texas. Opened in 1936, the port is connected to the Gulf of Mexico by a 17-mile-long ship channel. With approximately 40,000 acres, the Port of Brownsville is also the largest land-owning public port authority in the nation.

The Port of Brownsville is the only deepwater seaport directly on the US–Mexico border.

Port observes anniversary

On 16 May 2020, the Port of Brownsville observed its 84th anniversary.

Opened in 1936 to the excitement of thousands of local residents, the Port of Brownsville signified a new hope for economic prosperity in the Rio Grande Valley region.

Thanks in part to the vision and commitment of Louis Cobolini, an Italian immigrant who set his sights on the port's potential, the 17-mile-long Brownsville ship channel has welcomed foreign travellers and businesses to its shores.

Located on the southernmost tip of Texas and near neighbouring Mexico, the possibilities for international commerce were as rich as the Rio Grande Valley's soil.

In the port's early years, agricultural exports brought citrus fruits from local groves and shipped Texas cotton across the ocean seas.

The *Brownsville Herald* archives indicate that in 1937, nearly one year after the initial opening, British freighter *Antigone* called on the nascent port to load 4,000 tonnes of scrap metal from Brownsville Iron and Metal company and ship it to Japan. The *Antigone* was the first British flagged vessel to call on the Port of Brownsville.

Since then, the port has established itself as the premier ship recycling and scrap metal location in the United States and is home to the nation's principal U.S. Navy aircraft carrier dismantling programme.

In addition to the ship recycling operations, the port has developed a versatile marine terminal operation for both liquid and dry cargoes. Petroleum products, steel breakbulk materials, aggregates, minerals and windmill components are some of the many commodities handled at the port today.

An economic impact study by Martin Associates released in 2019 reports the port is responsible for more than 51,000 jobs and $3 billion in annual state economic activity, with more than 8,500 regional workers directly employed by activities of the port. The port continues to seek opportunities to grow and its leaders know investing in infrastructure is key to its future success.

In 2019, construction of a new Liquid Cargo Dock 6 and improvements to Liquid Cargo Dock 3 and the Bulk Cargo Dock were finalized and are currently in operation. The port also added two new additional mobile harbour cranes to its inventory to meet the increasing workload of scheduled windmill and steel projects.

With more than $40 billion worth of projects currently in the works, the Port of Brownsville is transforming the Rio Grande Valley by creating positive investment opportunities and jobs. DCi

Bobcat completes new M-Series Stage V loader range

With the launch of the new S550 and S590 models, Bobcat has completed the company's M-series range of Stage V compliant skid-steer and compact track loaders.

Like the S450, S510 and S530 skid-steer and T450 and T590 compact track loaders launched earlier this year, the S550 and S590 combine compact dimensions with Stage V engine technology, telematics connectivity, new bold Bobcat styling with 3D decals and a two-year warranty as standard.

In contrast to the previously launched M-series models with Stage V engines, the new S550 and S590 have a number of advanced features as standard:

- **selectable joystick controls:** low effort joystick controls make it easy to operate even with advanced features;
- **high flow:** improves productivity and extends versatility with Bobcat attachments;
- **Attachment Control Device (ACD):** for managing the attachment functions from the joystick;
- **two-speed drive:** improves productivity and fuel efficiency
- **Deluxe Panel:** with more language selections, keyless function and DPF management; and
- **versatile duty tyres:** with bi-directional design, improves lifetime significantly.

The new S550 and S590 skid-steer loaders will be produced in the Bobcat plant in Dobris in the Czech Republic and are available to order with immediate effect, for delivery early in 2021.

SJC & ACD as standard

One of the most important new standard features on the S550 and S590 is the previously optional Bobcat Selectable Joystick Controls (SJC) system. Based on easy-to-use, low-effort joysticks, the SJC system provides the operator with Bobcat-exclusive features and fingertip switches. This automatically configures the loader as a tool carrier for working all day with the widest possible selection of attachments, as well as providing increased operator comfort and unmatched joystick control of the loader itself.

With the SJC system in place, the S550 and S590 now offer the ACD (Attachment Control Device) system as standard. Using Can-Bus communication to recognize the attachment on the machine, the ACD system automatically sets up the joystick controls and the output flow to ensure the best performance when using attachments

on the new S550 and S590 loaders.

High-flow hydraulics for advanced attachments

Another addition is the availability of High-Flow Hydraulics as standard on the S550 and S590 Stage V models. This further expands the exceptional versatility of these machines, allowing them to be used with advanced higher flow attachments such as sweepers, planers and wheel saws.

Jiri Karmazin, Loaders Product Manager at Bobcat, commented: "The new S550 and S590 models complete our M-Series Stage V loader range. By bringing together the next generation Stage V engine technology with features such as Bobcat SJC controls and high flow hydraulics as standard, these models are ready configured as versatile tool carriers for use with an even wider range of Bobcat attachments."

Higher torque and performance

The next generation of Bobcat D24 engine with Bosch Fuel Injection System improves overall machine performance, providing a higher power output of 50.7kW (68 HP) and higher torque. The new engine technology results in lower fuel consumption for the same kind of work, while fulfilling the strictest Stage V emissions regulations. This ensures the S550 and S590 are ideal for use on the most power-demanding jobs.

With the engine installed transversely in the machine frame, the S550 and S590 continue to offer the same compact dimensions, allowing them to fit and turn around in confined spaces.

The next generation engine is equipped with diesel particulate filter (DPF) after-treatment technology, which works automatically without any interaction needed during normal operation. The use of DPF technology allows the new loaders to be employed in emission-regulated zones such as city centres.

In addition, the auto-idle feature reduces the engine speed to low idle when the joysticks are in the neutral position and have not been used for about five seconds, ensuring quieter overall operation and reduced fuel consumption.

The next generation Bobcat engine has also allowed the company to extend maintenance intervals with the first service now being after 500 hours and to reduce the number of fuel filter replacements required.

Both new loader models offer two-speed operation as standard, which boosts the maximum travel speed from 11.4km/h in low range to 17.3km/h in high range, to improve productivity and fuel efficiency. This can be combined with the hydraulic bucket positioning option, which keeps the loader bucket level as the lift arms travel upward, enabling operators to spill less and work faster.

Enhanced operator comfort

The next generation Bobcat Stage V engine ensures noise levels have been reduced for both bystanders and the operator. This can be combined with popular comfort features such as the Heat Ventilation with Air Condition (HVAC) option, providing a more comfortable operator environment throughout the year and in all conditions. The optional Cloth Suspension Seat improves the operator's comfort all year long and the Auto Ride Control option improves the operator's comfort and the machine's stability.

Versatile duty tyres

The S550 and S590 are equipped as standard with Versatile Duty Tyres, with a bi-directional design for use on most common mixed surfaces, improving lifetime significantly. Industrial Solid Flex Tyres are available as an option and are designed for intensive wear applications that have a higher risk of punctures.

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AUMUND cooling conveyor convinces voestalpine

Four years ago, the Austrian steel concern voestalpine commissioned what was then the largest and most advanced plant for HBI (Hot Briquetted Iron) in the world, in Corpus Christi, Texas, USA, as part of its 'Go West' project. AUMUND Fördertechnik GmbH supplied two flat plate conveyors type FPB-K for cooling. The patented gentle HBI cooling on AUMUND plate conveyors contributes significantly to ensuring the high quality of the product.

The HBI evaporation cooler system ensures cooling of HBI in such a way as to protect the integrity of this valuable product just after it has been produced in the direct reduction and briquetting process. The two flat plate conveyors spray the HBI with water mist and cool it gently from 800° down to 100° Celsius. At a nominal conveying capacity of 141tph (tonnes per hour), the conveying throughput is up to 285tph each. Each conveyor has a centre distance of approximately 72m.

The AUMUND plate conveyors have been in continuous operation since 2016 at this location without any problems, despite being subjected to considerable mechanical and process-related pressure. These strains on the equipment, as well as the immense focus on availability, have now resulted in the plant operator, voestalpine Texas LLC, placing a conversion order with AUMUND Fördertechnik to upgrade both conveying lines to an enhanced overall design including modified chain drive.

The conversion is set to take place in November 2020 and be completed within 30 days. It will focus on the optimization of the conveyor section design, with improved cleaning, including the chain strand at the drive. The conversion will ensure that the cooling conveyors continue to operate without interruption, as they always have. The plant will resume operation before the end of the year.

The voestalpine Corpus Christi plant, which produces 2 million tonnes per year of high-quality HBI, supplies circa 40% of it by ship to the voestalpine AG steel plant in Linz, Austria. The HBI contributes heavily to decarbonization and reduction of CO_2 emissions. It is batched into the blast furnaces and therefore reduces the dependency on and consumption of sinter and coke.

The rest of the production of HBI from Corpus Christi remains in the NAFTA Region (USA, Canada, Mexico).

About the AUMUND Group

The AUMUND Group is active worldwide. The conveying and storage specialist has special expertise at its disposal when dealing with bulk materials. With their high degree of individuality, both its technically sophisticated as well as innovative products have contributed to the AUMUND Group today being a market leader in many areas of conveying and storage technology. The manufacturing companies AUMUND Fördertechnik GmbH (Rheinberg, Germany), SCHADE Lagertechnik GmbH (Gelsenkirchen, Germany), SAMSON Materials Handling Ltd. (Ely, England), as well as AUMUND Group Field Service GmbH and AUMUND Logistic GmbH (Rheinberg, Germany) are consolidated under the umbrella of the AUMUND Group.

The global conveying and storage technology business is spearheaded through a total of 19 locations in Asia, Europe, North and South America and a total of five warehouses in Germany, USA, Brazil, Hong Kong and Saudi Arabia.

TTS supports rail transport of bulk cargoes

A huge amount of bulk cargo is transported via railroad each year, and there is no sign that this volume is set to diminish.

A great many marine terminals and processing facilities work as a connection point between railroad transport with sea and road directions. It is at this point where there is a need for efficient equipment — loading or unloading of the cargo from wagons with subsequent transshipment of it within the area.

TTS has been in the material handling business for 27 years by now and, during that time, it has built numerous rail transport loading and unloading stations. One example of a completed project is in Riga Port, Latvia.

RBT – Riga Bulk Terminal

The facility, which operates as an import and export terminal, can handle different types of cargo, starting with raw sugar and grain, ending with alumina and fertilizers. For this reason, two separate conveying lines were built, connecting the discharge point with the railcar loading station.

One of the key demands from the customer was to create a system with low dust emissions, so that it would be safe not just for personnel, but also for the environment. For that reason, all conveyors are encapsulated. However, the ones on the jetty are equipped with a specially designed moving roof which opens only at the point of loading, keeping the cargo safe from atmospherical influence and minimizing dusting.

Dust cancelling continues inside the wagon loading stations. Telescopic loading chutes with dust suppression systems are installed to all charging points, bringing dust emissions to zero.

Air and mechanical equipment spread the cargo evenly inside the wagons, but the measuring system gives exact data on each car's precise weight, thus preventing overloading and minimizing the number of workers inside the station.

Two receiving bunkers under the floor level take bulk being delivered by railroad , ensuring import of the cargo, with subsequent loading to the ship using the mobile shiploader. The size of the bunkers is selected so as to accommodate the entire volume of the car's cargo, which makes it possible to speed up the unloading of the entire train — there is no need to wait until the bunker is empty — the cars can move immediately after emptying.

This is one example of TTS's numerous projects involving railroad wagons loading and unloading equipment. As demand for rail transportation grows, so does TTS engineers' experience while designing and building new railroad wagons servicing facilities. The company openly shares its knowledge with its customers, offering a modern approach and innovative solutions in the field of building material handling systems.

Cambelt International Corp.

PROUDLY MADE IN THE USA

CONVEYOR BELTS & SYSTEMS

Integrity. Quality. Competence. Stability.

At the core of **Cambelt International**'s conveyor solutions is our proprietary one-piece sidewall belting which achieves ultimate adhesion strength. Cambelt has set the standard for durability as all of our belts are a monolithic homogenous cured product – no gluing or vulcanizing. This proprietary technology is at the heart of all our conveyor systems which transport horizontally, vertical and horizontally in a single enclosed system. Our designs reduce transfer points and rotating equipment, while providing an industry leading footprint. Cambelt's most important asset is our employees; their dedication to work as a team with our clients to develop customized material handling solutions, delivering tailored engineered conveyor systems to solve each client's unique challenges.

Cambelt International Corp. 2820 West Directors Row, Salt Lake City, UT 84104
P: 1-801-972-5511
E: OEMSales@cambelt.com

www.cambelt.com

AUMUND penetrates stronghold of biomass handling in Japan

Taiheiyo Cement Corporation, Japan's largest cement producer, fires its new power plant in Ofunato with both biomass and coal. Until now conveying of biomass in Japan has been dominated by domestic manufacturers, but the AUMUND Hong Kong team successfully convinced its customer of the merits of the conveying technology solutions offered by AUMUND for both of these types of fuel. An order from Taiheiyo Engineering Corporation for three AUMUND bucket elevators and an AUMUND drag chain conveyor was the result.

The customer chose two identical AUMUND bucket elevators with central chain type BWZ and an AUMUND drag chain conveyor type LOUISE TKF for its biomass conveying, all with capacities of up to 150tph (tonnes per hour). The AUMUND machines transport palm kernel shells (PKS) and palm empty fruit bunches (EFB), which are used as alternative fuels in the Ofunato power plant.

The conveying concept is designed so that the different materials are kept apart and enter the silo buffer tanks separately.

For coal handling Taiheiyo decided upon an AUMUND bucket elevator with gravity discharge type BWZ-S and a capacity of up to 35tph.

AUMUND drag chain conveyor type LOUISE TKF for handling alternative fuels in Taiheiyo Cement's Ofunato Power Plant in Iwate Prefecture, Japan (© AUMUND).

About the AUMUND Group

The AUMUND Group is active worldwide. The conveying and storage specialist has special expertise at its disposal when dealing with bulk materials. With their high degree of individuality, both its technically sophisticated as well as innovative products have contributed to the AUMUND Group today being a market leader in many areas of conveying and storage technology. The manufacturing companies AUMUND Fördertechnik GmbH (Rheinberg, Germany), SCHADE Lagertechnik GmbH (Gelsenkirchen, Germany), SAMSON Materials Handling Ltd. (Ely, England), as well as AUMUND Group Field Service GmbH and AUMUND Logistic GmbH (Rheinberg, Germany) are consolidated under the umbrella of the AUMUND Group.

The global conveying and storage technology business is spearheaded through a total of 19 locations in Asia, Europe, North and South America and a total of five warehouses in Germany, USA, Brazil, Hong Kong and Saudi Arabia.

The AUMUND bucket elevator with gravity discharge type BWZ-S has been in operation in the power plant at Ofunato since autumn 2019 (© AUMUND).

AIR ENVIROTECH opens its doors to support industry in working for cleaner air

AIR ENVIROTECH, specialist in air pollution, dust control and pneumatic product handling for the mining, metallurgical processing and general industrial sectors, announced on 3 August that it has commenced operation, providing a comprehensive range of air environmental and pneumatic conveying services and state-of-the-art systems and technologies.

AIR ENVIROTECH has been established by well-known specialists in the industry, which, to date, comprised the TAKRAF South Africa air environmental and pneumatics team. Following an agreement with TAKRAF South Africa, the company will now provide its services as an independent entity.

AIR ENVIROTECH inherits expertise in air environmental control and pneumatic conveying that has been built up over a track record that dates back nearly 50 years servicing the Southern African industry, first as part of the Bateman Group and later as part of TAKRAF South Africa.

The extensive air environmental reference list includes the design and supply of more than 3,000 dust control systems for a vast variety of applications, with the client list featuring all the major mining companies in South Africa and further afield, including Botswana and Namibia. In addition, leading industrial companies such as paper manufacturers, cement companies and the national power utility have been repeat clients.

AIR ENVIROTECH offers the full range of services and products to provide the best and most cost-effective solution to any dust-control, air-cleaning or product-recovery problem, large or small. The services range from system design, through to manufacture, turnkey installations and after-sales service, with expertise provided over a full range of dust and air pollution control technologies. These include electrostatic precipitators, baghouses and bagfilters, cyclones, dry/wet scrubbers, dust suppression systems and dry and semi-dry flue-gas desulphurization systems.

The wide range of pneumatic conveying systems available from AIR ENVIROTECH includes systems for lean, medium and dense phase conveying regimes, suitable for applications across the industrial sector. Hundreds of different particulate materials have been successfully conveyed through the technologies, with, for example, systems having been applied for the country's leading cement producers. The Pneumodrier, also marketed by AIR ENVIROTECH, combines pneumatic conveying with product drying. The total product containment offered by pneumatic conveying systems, eliminates the spillage, dust and hygiene problems of exposed product handling.

"TAKRAF and, previously, BATEMAN are 'household' names in the Southern African industry and we, as AIR ENVIROTECH, are proud to be able to continue building on this rich heritage," commented AIR ENVIROTECH's Jimmy Tomlin.

"With the increasing legislative stringency and public pressure to reduce the environmental and health and safety impact of industrial operations, we believe that AIR ENVIROTECH is well positioned to support industry 'work for cleaner air'" he added.

PEINER Grabs
for Marine Operation




SMAG
GROUP COMPANY

PEINER SMAG
Lifting Technologies

+49 5341 302 647 LinkedIn peiner-smag.com sales-grabs@peiner-smag.com

Grabbing focus

with bulk handling grabs: growing in sophistication and flexibility

Jay Venter

J&B Grabs offers a wide range of models to suit all bulk handling needs

J&B Grijpers B.V. (J&B Grabs) is a holding company engaged primarily in the developing, manufacturing and reconditioning of hydraulic and wire rope grabs. The company started in 1945 in the manufacture and overhauling of re-handling grabs. The company's 75 years of expertise means that it is able to supply a perfectly balanced product for its customers' bulk handling operations.

J&B Grabs use 3-D solid modelling and FEA analysis is the design of its grabs. This means that customer-specific requirements can be implemented in the design and production process.

The company has a wide range of standard type grabs, which are readily available.

J&B Grabs are used by many brands and types of available cranes, including: E-Crane, Sennebogen, Caterpillar, Hitachi, Liebherr, Volvo, Fuchs and more.

Due to the many brands and types of cranes using different connecting systems, J&B Grabs has developed a number of quick-change connectors.

Mechanical and hydraulic systems make it possible to swap between grabs in just ten minutes.

J&B Grabs deliver parts and grabs internationally. The company is located in

Utrecht in the Netherlands.

Hydraulic grabs from J&B

J&B's hydraulic grab is available as:

- rehandling grab (clamshell);
- closed rehandling grab;
- dredging grab;
- horizontal profiling clamshell;
- log grapple;
- woodchips; and
- bale grab.

Hydraulic clamshell

The **Type LH** for sand and gravel is available in five body sizes, with buckets from 1,000 litres and up. It is suitable for sand, gravel, coal etc. The grab's capacity is decided according to the crane size and material to be handled.

Options for this grab are :

- crane connector;
- height compensation;
- hydraulic rotator;
- cylinders with cushioning;
- central greasing;
- dismountable clay removers; and
- exchangeable cutting edges.

The **Type LHS**, for sand and gravel (low built), is fitted with cylinders mounted on the edge of the buckets. It is ideal for higher closing forces and is low built. It is available up to 7m³ for sand.

The **Type LHS-4** is available up to 30m³ for coal. It is suitable for cranes with lifting capacities of over 15 tonnes and up to a massive 45 tonnes. It is used to handle materials including cereals, coal, limestone, sand, bauxite etc.

Closed rehandling grab

The **Type LHG** rehandling grab is ideal for dusty materials such as cereals, fertilizers, phosphates and biomass. It is available in sizes ranging from 1,500 litres up to 15m³. The grab's capacity is decided according to the crane size and material to be handled.

Options include:

- rubber sealing in the cutting edges; and
- overlapping lower cutting edges.

J&B Grabs' hydraulic clamshell for woodchips.

The Type LHGS-4, for larger sizes, is a closed rehandling clamshell. It has four cylinders and is used with the larger cranes with a lifting capacity of up to 45 tonnes in grab operation. It is available in sizes ranging from 12m³ to 45m³.

Dredging and Digging Clamshell

The **Type LHSz180-4** dredging and digging clamshell:

- has large closing forces;
- is fitted with floating pins for the best sealing;
- has an option for dismountable teeth;
- offers high penetration force; and
- has a large volume.

Horizontal profiling grab

The **Type LHM** for environmental works hydraulic profiling grab is designed to remove polluted soil from the river bed. The grab will dig the first piece of the curve and will then close horizontally.

Log grapple

The **Type PLH125** short log grapple is for short logs, and is fitted with a chain.

Hydraulic clamshell for woodchips

The Type LHL clamshell for rehandling of wood-fibred woodchips is fitted with special teeth for good penetration, without damaging the ship. Because of its large spread, the grab has a good filling rate.

Hydraulic bale grab

The **hydraulic bale grab/clamp** is used to handle material packed in bales such as garbage.

Hydraulic cactus grab/orange peel grab

J&B's hydraulic cactus grab is suitable for various applications:

- scrap handling;
- garbage/refuse;
- rock; and
- woodchips.

The capacity of the grab is determined by the material density and condition and the capacity of the material handler/excavator.

Hydraulic cactus grab for scrap

The **Type JHT** hydraulic cactus (orange peel) grab for scrap has five tines, and is available from capacities starting at 600 litres. The **JHT-4** model has four tines for scrap handling, and is also available from a 600-litre capacity. It is extremely suitable for long pieces.

Hydraulic cactus grab for rock

The **Type JHS** five-tine cactus grab for rock is available for capacities starting at 600 litres. The shape of the tine depends on the rock size.

Options available include:

- removable teeth;
- manganese reinforcement; and
- rotator.

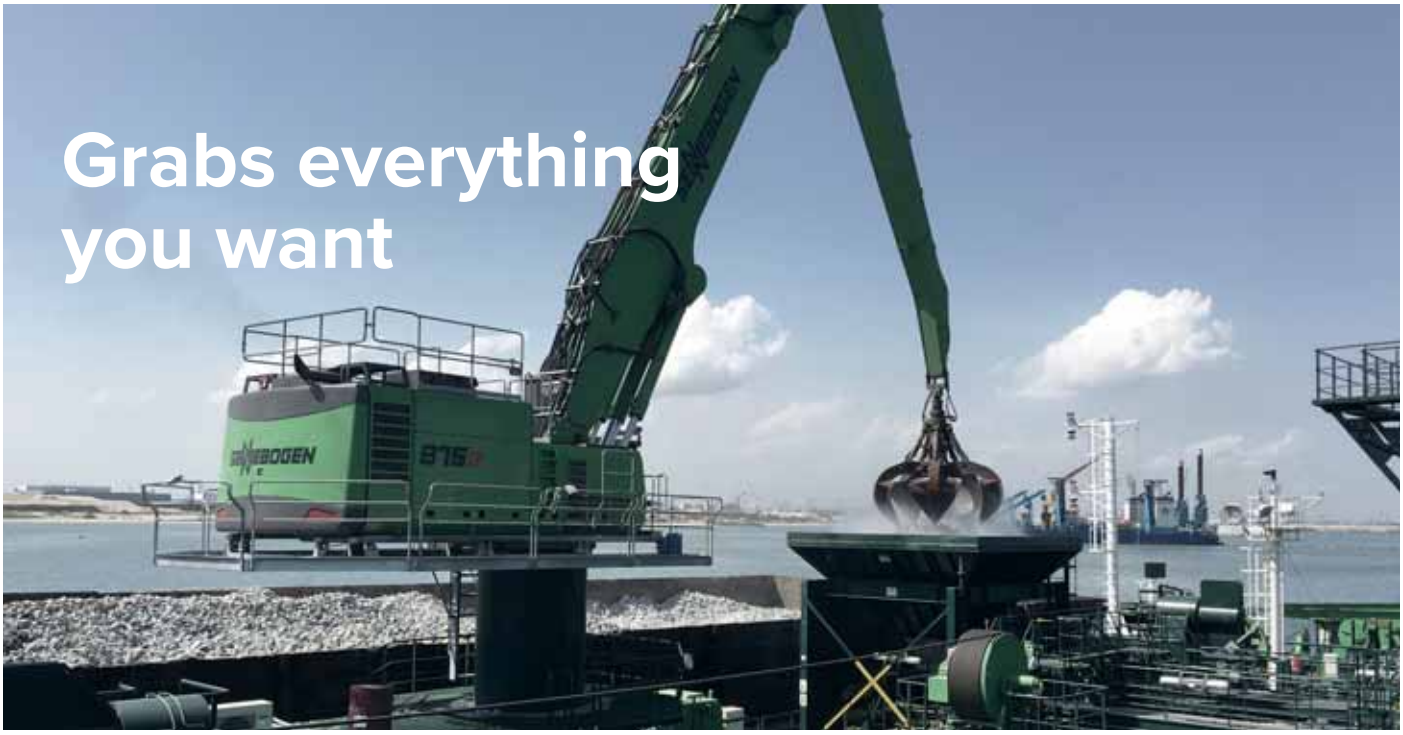
The **Type TH** four-tine rock grapple starts at a one-tonne capacity, and is ideal for large rocks.

The Hand special grab for rock placement is used for fast and accurate rock/armour placement. It is available up to capacities of eight tonnes.

The Hand special grab for rock placement.

J&B Grabs

More than 70 years experience



Grabs everything you want

Our products

For all kinds of bulk handling

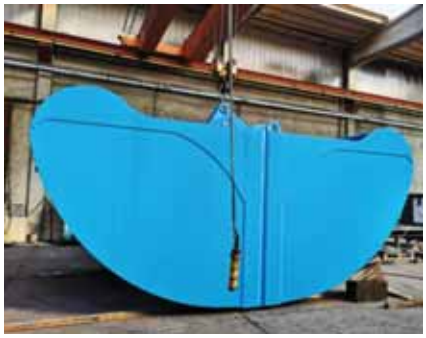
- Cactus Rope Grabs
- Clamshell Rope Grabs
- Hydraulic Cactus Grabs
- Hydraulic Clamshell Grabs
- Hydraulic Log Grabs
- Hydraulic Demolition & Sorting Grabs
- Quick Change System
- Multipurpose Spreader

All our grabs are custom made, designed and produced to our customers requirements.

J&B Grabs are highly efficient for large volume and low deadweight handling.

We grab everything you want!

CFS Handling delivers electro-hydraulic bucket to Port of Taranto



Civettini Italo & C SAS (CFS Handling), located in Montichiari, Italy, recently completed an order for a 30m³ electro-hydraulic bucket for a customer at the Italian Port of Taranto, where it will be handling coal and iron ore, on a 150T Terex crane.

The electro-hydraulic bucket, ordered in February 2020, was completed by 15 May 2020 and sent for delivery in August 2020.

About CFS Handling

CFS Handling manufactures hydraulic and electro-hydraulic grabs and buckets.

The company's production facility covers an area of over 2,000m², 200m² for the offices and an external area of 500m² for the assembly of the hydraulic parts, where highly specialized staff and the latest technology support every stage of manufacture of the product.

CFS handling combines build quality and certified testing methods to deliver products with maximum performance and productivity.

CFS Handling is also able to provide special equipment and customized solutions based on specific customers' requirements.

Grab technology since 1985 – Kardesler Grab And Machine

In 1985, Kardesler Grab And Machine, established in Maltepe/Istanbul, first started to produce grabs for sand. Soon, because of the developments in industry and technology, the company started developing and expanding its product portfolio, which today includes a variety of dry bulk handling grabs.

The company serves Turkey and foreign countries, and is proud to be able to respond to the needs of its customers.

Kardesler radio remote control grab.

By using technology effectively and efficiently and adhering to the standards of Bureau Veritas, CE and SGS certificates, the company has been able to expand its product range:

KARDESLER GRAB AND MACHINE's RANGE OF PRODUCTS

- radio remote control grab;
- electro hydraulic clamshell grab;
- electro hydraulic orange peel grab;
- mechanical touch down clamshell grab;
- mechanical touch down orange peel grab;
- mechanical double-wired clamshell grab;
- mechanical double wired orange peel grab;

Kardesler electro hydraulic clamshell grab.

- mechanical round nose grab;
- hydraulic orange peel grab;
- hydraulic clamshell grab;
- radio remote control orange grab;
- hopper;
- electro hydraulic grab; and
- excavator bucket.

CIVETTINI ITALO & C SAS

The quality of our products is a result of our passion, dedication and hard work.

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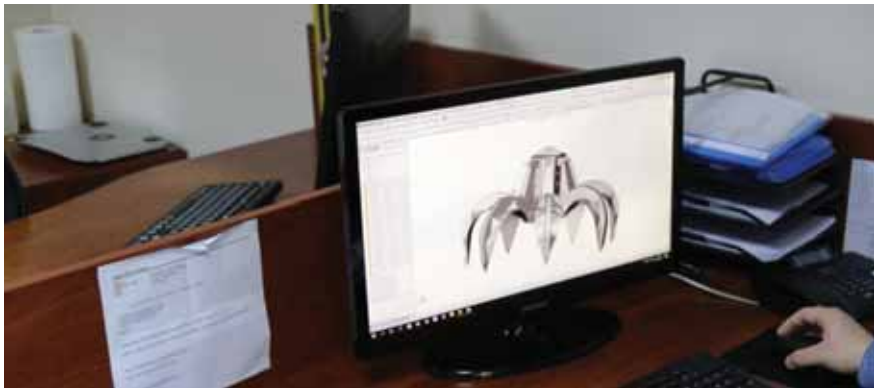
Registro Imprese di Brescia 01583540982 – Iscrizione R.e.a 324999

Sede Operativa - Working Headquarters
Via Sigalina a Mattina, 12/14
25018 - Montichiari - (BS) - Italy
Mobile: (+39) 340 1358822 **Foreign office:** (+44) 7978302839
www.cfshandling.it

Guven Grab & Machine Inc. – 37 years of grab building experience

Guven Kepce Makine Sanayi ve Ticaret A.S. (Guven Grab & Machine Inc.) was founded in 1984 at K. Maltepe/Istanbul in Turkey under the name of Guven Grab.

During the current Covid-19 pandemic, the company has taken all reasonable precautions to protect the health and safety of its employees, customers and all suppliers. In the meantime, it is continuing to manufacture grabs at its plant in Cayirova/Kocaeli, Turkey and fulfilling deliveries and services as usual.



Factory

Guven's production plant is in Cayirova Kocaeli, Turkey and has been set up over an area of 10,000m^2. There are four CNC cutting units, 11 CNC lathe units and 28 units of cranes for various purposes and with differing capacities at its machining centres available in its plant.

Guven's team consists of 85 people in production offices, manufacturing and exports.

Guven's grabs are designed by 3D software — all virtual, load and working tests are done by computer prior to production.

Products

The company manufactures every type of grab for the loading and unloading of bulk material and exports these abroad. Ninety-five per cent of sales are for export to foreign countries and especially oceangoing bulk carrier vessels.

To date, Guven has exported its products to more than 90 countries

Most of its exports are dispatched to China. Guven Grab is proud of having a customer portfolio that spans the globe.

Guven Grab & Machine Inc.'s main activity is to supply the grabs for bulk carrier vessels of first class shipowners (Ultramax, Supramax, Handymax, Handysize vessels). Along with shipowners, its other customers are stevedores, ports, steel factories and more. Most of the products delivered to Chinese and Japanese shipyards are for bulker newbuilds.

The company's grabs fully cover customer requirements such as: competitive prices, european quality, less maintenance, less spare parts and reliability.

Service

Guven Grab & Machine provides 24-hour service facilities to its customers. In order to save the transport cost to its customers, it provides door to door service delivery and assembly on site.

KARDESLER®
grab and machine

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1985 35 years 2020

NEGRINI srl – innovative grab engineering

The business philosophy of Italian grab manufacturer, NEGRINI srl, is centred on a professional and a versatile approach to the different requirements of its customers.

Ongoing research into improving quality, showcased in the entire range of products offered by NEGRINI has led to dynamic, innovative and cutting-edge developments in engineering.

Dry bulk handling grabs produced by Negrini

For the maritime industry

- environmental hydraulic clamshell;
- hydraulic clamshell grab;
- clamshell grab for hydraulic excavator; and
- hydraulic orange-peel grab.

For ports

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

Activity

The reliability of NEGRINI srl lies in its professional expertise and experience acquired by the entire, highly specialized workforce. NEGRINI's technical department is always on hand to tackle and solve any technical problem, explaining and motivating the solutions adopted. When necessary, NEGRINI srl calls upon partners to find solutions to the most complex design issues.

Production system

Every customer request is carefully assessed for feasibility from both a technical and capacity point of view.

The requested elements, including the drawings, are examined and planned in collaboration with the head of department to guarantee delivery times, reliability and the best use of resources.

The technical data, including the drawings, are entered into a Cad-Cam electronic processing and 3D CAD solid modelling system for a more efficient management of the product and rational organization of the machinery.

Before shipping occurs, a final test is carried out by the head of production, overseen by the company owner.

The company's policy is to supply products to firms operating in the excavation and handling industry, developing customized projects.

All products adhere strictly to the technical specifications and drawings and are sourced from reliable and well-established suppliers.

Negrini hydraulic clamshell grabs are used for loose material and can be used on all lifting equipment or crawler cranes.

Negrini radio controlled single rope grab are used for loose material and do not require any external power supply. They are universal and can be attached to all cranes. The remote control allows the jaws to be opened.

Clamshell grabs can be used on all lifting equipment with two or four ropes, or on crawler cranes.

On specific request, NEGRINI can provide individual certificates and reports.

Welding procedures

NEGRINI works with qualified welders according to UNI EN ISO 9606-1:2013, to cover the welding procedures required.

The welders are regularly tested and work in their area of expertise.

Non destructive testing

On request, these tests are carried out by external qualified personnel. The testing procedures comply with current European standards.

NEGRINI
since 1967

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

ORTS Grabs

made in Germany since 1972

Tel: +49 451 398 850 **Fax:** +49 451 392 374 **Email:** soj@orts-gmbh.de

the best link between ship and shore

Nearby Lübeck, close to the Baltic Sea, you will find a specialist for grabs and handling equipment.

The grabs of ORTS GmbH Maschinenfabrik are in operation around the world, on all continents and all oceans.

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Orts GmbH Maschinenfabrik,
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High performance grabs from ORTS GmbH Maschinenfabrik

German company, ORTS GmbH Maschinenfabrik, manufactures fully radio controlled diesel-hydraulic grabs.

For the last 25 years these 'workhorses' from ORTS have been proving their high performance, reliability and ability to operate on every kind of crane.

In the beginning of the 1980s the first grabs with 100% enclosed buckets for protecting the environment from ORTS came on the market.

ORTS GRABS

ELECTRO HYDRAULIC GRABS

Electro hydraulic grabs are designed and produced by Orts-GmbH. The company's electro hydraulic grab is equipped with an electric motor to power the hydraulic pump. The hydraulic pump brings hydraulic cylinder into action forcing grab buckets to open and close. Power is supplied to the electro hydraulic grab via a power-cable that is situated at the crane jib with some additional equipment, e.g. cable drum, rope drum, guide rollers.

DIESEL HYDRAULIC GRABS, FULLY RADIO CONTROLLED

Fully radio controlled diesel-hydraulic grabs have been constructed and produced by ORTS GmbH for more than 20 years. A radio controlled diesel hydraulic grab is a crane attachment that is operated independently of power cables or hydraulic lines; it is completely self-sufficient and is operated via a radio control device by the crane driver or another person at the loading room. Thus, a radio controlled grab can be used on any crane, since an external power supply is not necessary. A diesel engine inside the grab provides the power to drive the hydraulic pump. The crane operator has to send a command to move the buckets via a radio controller. The method of controlling the movements of the buckets/clamshells is identical to that of an electro-hydraulic grab.

MECHANICAL ROPE GRABS

Mechanical rope grabs can have one rope, two ropes or four ropes. Some rare special cranes need three-rope grabs. As the name suggests, a mechanical grab is operated by means of cable/rope systems only ('pulley block/lifting block') and requires no power supply or hydraulic lines. Mechanical grabs are used for the loading and unloading of bulk materials in ports, at industrial plants, as well as in ore smelting and blast furnaces' operation. It is used in port facilities as well. Here a purely mechanical grab is a great advantage, because they are mechanical and robust. No electronics, no hydraulic parts. 'Pimped' mechanical grabs with e.g. radio control and hydraulic system lose this advantage. Mechanical single rope grabs are the oldest grab-system. They are slower with fewer tonnes per hour and have a higher dead weight compare to motor grabs (diesel hydraulic or electro-hydraulic).

Highly productive grabs and solutions from Nemag

Nemag, a family business founded in 1924, provides a full range of grabs and various types of quick-release links and rope pear sockets.

Technological development

In close co-operation with leading bulk terminal operators, crane manufacturers, technical universities and other stakeholders in the industry, Nemag continues to develop new products for the dry bulk industry. The aim is always to reduce handling costs per tonne of dry bulk materials transferred.

The latest software technology like 3D CAD, Multi Body Dynamics (MBD), Discrete Elements Methods (DEM) and Finite Elements Methods (FEM) support its team of designers in optimizing its grabs. High tensile steels, wear resistant steels and advanced bearing technology enables us to design extremely productive, light weight and durable grab mechanisms.

Nemag inventions include the scissor grab, specialized rubber-lined lip sealing systems for handling powdered cargo, the patented Nemag quick-release link and the Nemag rope pear socket for high strength wire ropes, the introduction of a new generation of environmentally-friendly clamshell grabs, and last but not least, the patented and awards winning nemaX® grab. Nemag was rewarded by the Dutch Chamber of Commerce with the 20th position of most innovative companies (MKB) in the Netherlands.

Customer support

Alongside innovation, customer support and a very intensive after-sales service are of paramount importance to both Nemag and its customers. A global network of specialized representatives supported by Nemag specialists are ready to assist customers worldwide.

Leading steel plants, bulk handling companies and crane manufacturers in over 60 countries worldwide are part of our customer base for decades: companies which, just like us, stand for innovation, quality and reliability.

Nemag grabs

To meet customers' specific requirements Nemag has a product range of different grab types. Each grab type with its own specific advantages for each specific application. Environmentally friendly aspects, reduction of the use of trimming equipment and safety of unloading operation are taken into consideration.

Nemag's grab solutions

nemaX® grab
The new grab for iron ore, >10% higher productivity than all comparable clamshell grabs, way stronger and the lowest maintenance cost ever.

Cactus grab
Excellent filling factor in difficult to handle materials like heavy metal scraps and shredded scraps, stones and household waste.

Clamshell Grab™
The new standard for clamshell grabs. The most productive grab for a wide variety of bulk materials. Available at a competitive price point.

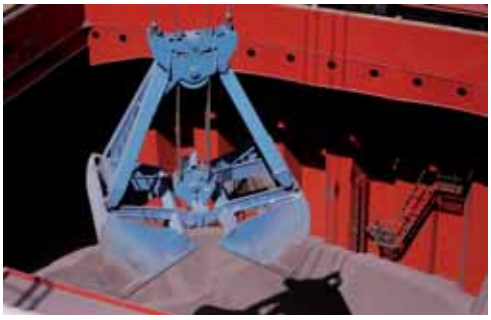
Scissors grab
High average productivity by short opening and closing time, stability on sloping surfaces and excellent cleaning up properties.

Rope pear socket
Optimized Nemag design of special alloy steel ensures a safe rope termination with high lifespan and high load factor.

Quick release link
Proven reliability. Nemag developed and patented connection link for safe and fast change over of grabs and other equipment.

WORLDWIDE NUMBER ONE

IN ROPE-OPERATED GRABS



Are you looking for a new grab?

Please contact us. At Verstegen we are fully specialised in rope-operated mechanical grabs. Our goal is to provide the optimal grab for your specific operation. A new Verstegen grab leads to higher production rates and lower maintenance costs through extreme reliability and long lifetimes. Tell us how you want to improve your operation and together we will find the best solution.

Visit us at **www.verstegen.net**

VERSTEGEN

TOGETHER WE GRAB MORE

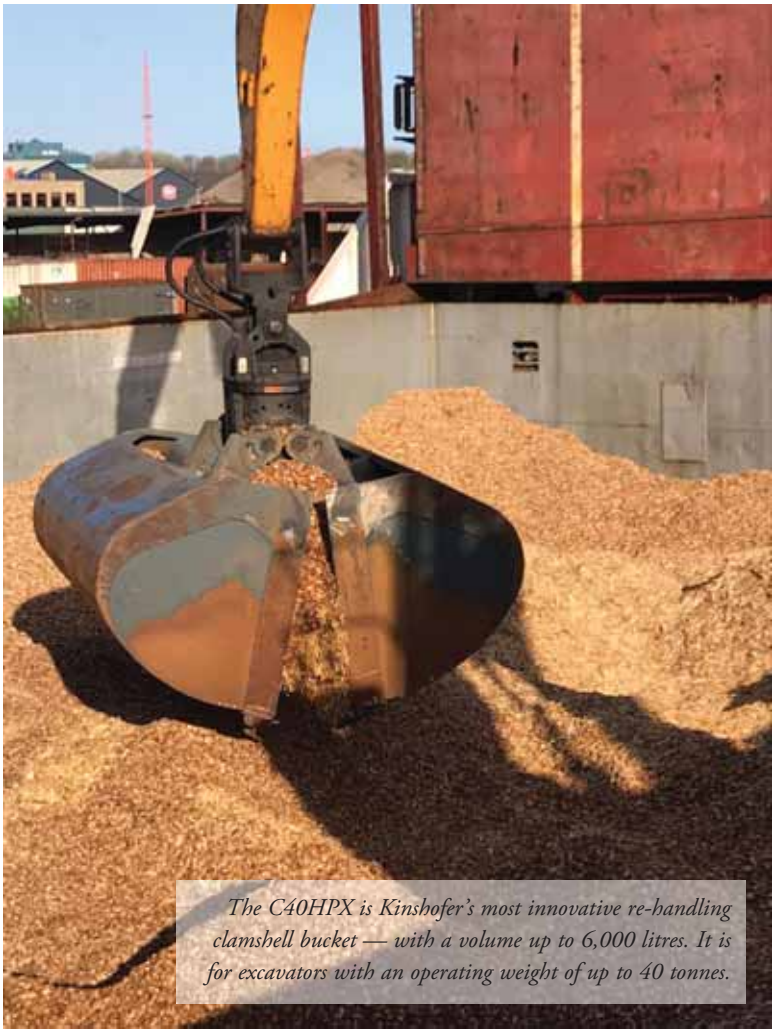
Verstegen Grijpers B.V.
The Netherlands

WWW.VERSTEGEN.NET

Cylinderless re-handling of delicate goods with the C40HPX clamshell bucket

For almost 50 years, Kinshofer GmbH has been a respected manufacturer of high-quality attachments for truck-mounted cranes. The company is now also well on the way to becoming one of the foremost global providers of excavator attachments.

In the last two decades, Kinshofer has become more and more involved in the re-handling business, producing large re-handling clamshell buckets (C-Series) for excavators and carriers with an operating weight from 18 tonnes of up to 80 tonnes. The portfolio also includes a cylinderless re-handling clamshell bucket for excavators with 40 tonnes operating weight — with shells moved by Kinshofer's revolutionary HPXdrive.



The C40HPX is Kinshofer's most innovative re-handling clamshell bucket — with a volume up to 6,000 litres. It is for excavators with an operating weight of up to 40 tonnes.

C40HPX

In contrast to conventional hydraulic grabs, with the HPXdrive the torque is generated by two pistons, which run opposed and have four helix threads. The force is delivered to two shafts, on which the shells are mounted. These advantages of the HPXdrive technology provide an extended service life and higher efficiency.

There are shells in different widths and with different volumes available.

The closed shell versions of the C40HPX are very interesting, especially when handling e.g. grain or other light-weight, delicate materials. Unlike normal buckets, the shells are not open on top but closed. Furthermore, as there are no hydraulic hoses in the HPXdrive, which is a closed unit, there is no risk of hoses breaking, and so the grain will not be polluted. It is protected inside the shell during handling operations. The C40HPX can even be used underwater and is especially popular in environmentally sensitive areas and situations.

A high and constant closing force, torsion-resistant shells with an optimal loading due to the high volume, and precise positioning provided by the integrated rotation with sturdy slewing ring and sealed swivel and bevel are further features of the C40HPX.

The HPXdrive and its integrated rotation form a very compact unit with absolutely no protruding components. There are no greasing points, as the interior parts of the HPXdrive run in a permanent oil bath. Low maintenance means less downtime.

DCi

The closed shells of the C40HPX C-version are ideal for handling e.g. grain or cereals.

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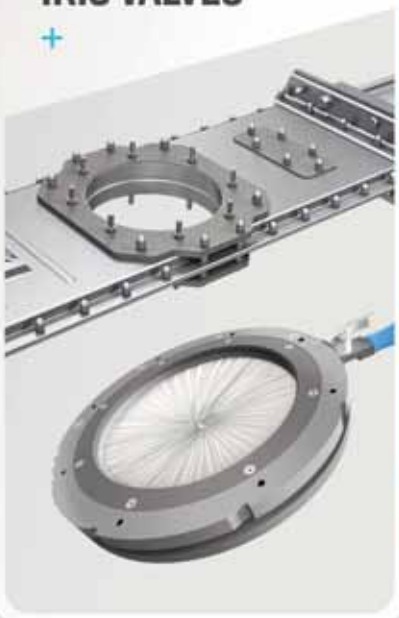

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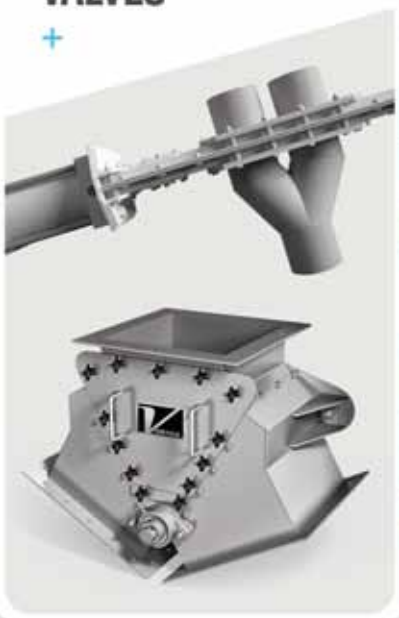
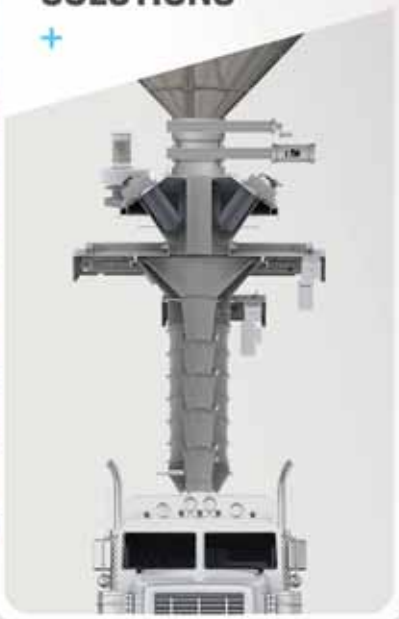


LOADING SOLUTIONS +



OUR DESIGN PHILOSOPHY

+ COMPENSATE FOR WEAR

Vortex closely studies the characteristics of thousands of dry bulk materials and how they interact with various materials of construction. We assess the wear potential for each client's process and make application-specific modifications to ensure reliability, durability and longevity.

+ MAINTENANCE FRIENDLY

Our priority is to keep you up and running – because in your world, there is no time for downtime. Vortex components are engineered with in-line service features that accelerate the system maintenance process, saving your team time and money.

+ MINIMAL SPARE PARTS

Vortex approaches wear parts with simple, durable design. Doing so means maintenance procedures are also kept simple while the need to perform maintenance is infrequent. This leads to a reduction in spare part inventories – which also means a reduction in costs.

+ LONG SERVICE LIFE

End users are often attracted to equipment on the fallacy of low price, ignoring the cost-benefits of reliability and longevity. Vortex believes in designing products that will out-perform and outlast market alternatives – so that end users realize the full value of their investment.

+ DUST FREE ENVIRONMENTS

Facilities have an ethical obligation to protect against the hazards of manufacturing. Vortex closely studies trends in air quality, environmental dust emissions, workplace safety and evolving regulations. Our components are designed with these concerns in mind.

+ APPLICATION ENGINEERING

Vortex believes in offering only value-added products that are designed for purpose, rather than producing off-the-shelf, commodity components. With an in-house team of application engineers, Vortex designs for the most demanding applications.

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VORTEX

Modern shiploading and unloading for bulk technology is key

indurad's 2D radar for boom protection of a shiploader at a customer site in Canada. This full automation project is carried out together with the Canadian partner enCompass Solutions Group.

Louise Dodds-Ely

Radar-based 3D hatch scanning and collision avoidance for shiploaders and unloaders

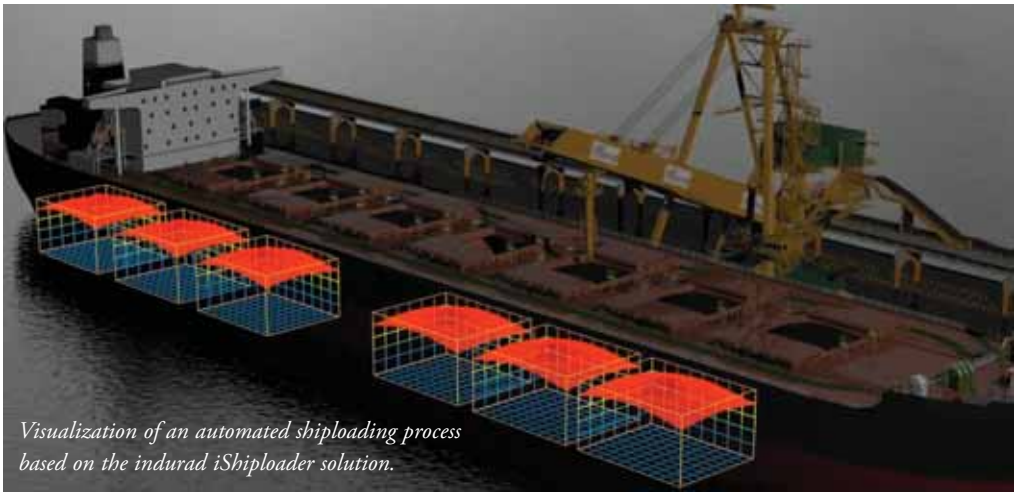
3D radar technology unlocks new potential in the automation of shiploading and unloading operations. 3D scanning solutions, paired with visualization and data analytics, are already game changers in the marine cargo industry. indurad's unique innovative radar sensors, combined with GNSS, help deliver fast operation assistance by providing real-time process information under harsh conditions. The modular iShiploader solution includes collision avoidance, machine positioning, loading assistance, and remote operation up to full shiploader automation. All of the systems work together to optimize the loading process by reducing loading/unloading times and increasing operator safety, comfort, and confidence.

Port operations face a multitude of challenges like harsh environmental conditions and safety risks for personnel and equipment. Ports aim to minimize any risk of machine collision due to the high costs associated with machine downtime. indurad is addressing such challenges with their customers by implementing radar based solutions to partially or fully automate equipment. A modular approach allows a step-by-step process to finance and implement the solution.

With iShiploader, indurad delivers a unique and efficient automation solution for shiploaders and unloaders. The solution consists of several sub-components such as a collision avoidance systems and machine positioning to achieve remote control and full automation. By combining volumetric measurements and berthing assistance, additional information of the entire loading/unloading chain is provided. All of the systems work together to provide necessary information to optimize loading processes and ensure the safety of personnel and multi-million dollar port equipment.

To provide the necessary information to personnel and the machines' PLCs, several radar sensors are installed on the shiploader/unloader in key locations. For machine collision avoidance, 1D and 2D radar sensors are mounted on the sides of the boom, under the boom, around the spout and on the machine's chassis. These sensors scan the nearby environment for possible collision threats and provide the operator with assistance during loading by removing blind spots. Predictive detection and controlled machine regulation without

abrupt operational interruption are a great advantage over conventional lanyard and tripper switches, since the innermost collision avoidance layers do not allow for direct machine control. Also, the alarm triggered by conventional switches often comes too late to stop the machine manually before a collision occurs. For more advanced object detection and machine positioning in a fail-safe manner, the machine is equipped with an indurad GNSS system. This system enables a more accurate and reliable position calculation compared to conventional machine encoders. GNSS positioning is considered a basic requirement and essential for all indurad's machine-based calculations. indurad's GNSS system is especially important when implementing machine to machine collision avoidance applications at berths, where multiple machines operate at the same time.



Visualization of an automated shiploading process based on the indurad iShiploader solution.

To support remote control operation, indurad offers the iShiploader loading assistance sub-module. 3D sensors mounted on the boom tip scan the ship's deck while algorithms identify the hatch outline. By comparing mapped hatches with the load plan, the machine can automatically approach the next hatch to be loaded. During loading, the material flow and pile geometry inside the hatch are continuously scanned and updated. The solution software generates a volumetric model from which key values are calculated; the spout can be moved safely within the hatch and follow the optimized loading path.

Based on a loading plan and a full ship scan, which is performed with the 3D radar scanner at the boom tip, the iShiploader solution software directs the shiploader from hatch to hatch in between loading manoeuvres. This is the final stage to achieve full shiploader automation.

All sensor information is processed by the indurad RadarProcessingUnit (iRPU) which transfers the information to the site's PLCs and HMIs. The iShiploader software is based on the indurad framework for industrial automation and online process control. It is not based on maintenance-intensive Windows software, but on a robust and stable LINUX operating system. indurad has its own LINUX distribution – which comes with full control over all its various features. Both the operator and PLCs use all values provided by the indurad system to speed up loading without compromising safety. External variables are intelligently managed, such as ship movement due to waves or position adjustment of the machine during loading.

Installing and implementing an indurad solution is different from typical mechanical and electrical commissioning projects, since indurad is a full-solution provider. The scope of indurad solutions includes hardware delivery, software installation, engineering, and even full turn-key integration. indurad solutions are modular and customized to each operation's requirements. The indurad team brings along extensive knowledge of the implementation process, ship loading environment, and the customer's demands, which is the basis for a successful project implementation.

indurad's radar-based solution is superior to laser-based systems for several reasons. While laser scanners often fail or capture wrong data in tough environments commonly encountered in the mining industry, the performance of radar scanners is not compromised by dust, fog, snow, rain, or aerial pollution. The wavelength of laser light (approximately 1µm) is less than the size of dust and mist particles in the air, while radar's wavelength (approximately 4mm) is larger. Therefore, the impact of environmental conditions on the quality of radar measurements is minimal.

Laser light reflects off dust and fog particles, leading to a dispersion of the laser light, while radar 'ignores' them. This allows radar to pass small particles in the air and detect objects 'lying behind' them.

Although state-of-the-art laser scanners deliver accurate measurements under optimal conditions, these sensors do not supply usable data in tough environments. It is under these conditions, however, that sensor-based assistance becomes most valuable. Therefore, the use of radar in these environments leads to a higher plant availability and is often the only choice to ensure safety of personnel and machinery.

"With our iShiploader solution, our customers achieve shorter loading processes, higher material throughput and higher availability of the berth. They carry out safer and more efficient operations, even in highly dusty environments, under adverse weather conditions and in complete darkness. Our reliable and maintenance-free technology is a game changer" says Johannes Hornung, Sales Manager at indurad.

"We typically implement those projects on a modular, stepwise basis. Starting with anti-collision sensors in a first step, we then upgrade the solution with 3D scanners for loading assistance functionalities in a second step," Hornung continued. indurad's customers can then realize remote control automation of the loading/unloading process of each hatch until reaching the final goal, full shiploader or unloader automation.

About indurad

indurad is a Germany-based global supplier of radar-based automation technology. indurad's solutions are used to de-bottleneck bulk materials handling systems in mining and port operations. indurad has successfully implemented shiploader and unloader automation solutions in Africa, Australia, Brazil, Canada, and Europe. indurad's proprietary sensors are part of a multi-purpose solution family that covers real-time inventory control, 2D and 3D stockpile visualizations, machine positioning with high accuracy, speed and volume flow control for conveyor belts, ship loaders, and more. indurad has partners and clients in the mining, marine, and bulk materials handling industries on all continents and has local offices in Australia, Brazil, Canada, Chile, Russia, and South Africa.

Three new Siwertell ship-unloaders extend Singapore's environment-friendly cement handling

Bruks Siwertell has secured a prestigious new order that will see the company deliver three new Siwertell ship-unloaders to Jurong Port in Singapore. The trio will join existing Siwertell technology, delivered in the late 1990s, and together they will ensure the environment-friendly handling of Singapore's cement imports.

"This is a further, very positive endorsement of our Siwertell ship unloading technology, " says Ola Jeppsson, Bruks Siwertell Sales Manager, APAC. "The new units, like all Siwertell unloaders, are totally enclosed, and will secure the continuation of extremely efficient, high-capacity cement handling for the port, without dust emissions or spillage, so no cement is wasted and the environment is protected."

Singapore upholds strict environmental standards in cement handling and Jurong Port works closely with its local government authorities on establishing requirements and measures to minimize fugitive dust from such industrial operations, and maintaining operational safety standards. As the world's largest common user cement terminal for over twenty years, Jurong Port's Cement Terminal started off with three high-capacity Siwertell ship-unloaders that collectively met the cement handling needs of multiple smaller import terminals. "With the evolution of technology and equipment, Jurong Port is delighted to work with Siwertell to take our terminal's capabilities and standards further in our vision of becoming a Next Generation Multipurpose Port," says Tan Wee Meng, Chief Technical Officer, Jurong Port.

"It is now time to retire two of those hard-working unloaders," continues Jeppsson. "They have served the terminal well for over two decades, and their proven performance was a deciding factor in the port once again opting for Siwertell technology. The new units will continue their legacy of impressive through-ship efficiencies and will work alongside one of the older units, which will remain in service. Together they will handle Singapore's cement import volumes."

Like their predecessors, the three new ST 490-M screw-type rail-travelling unloaders will each discharge cement, fly ash and cement slag from vessels up to 50,000dwt at a continuous rated capacity of 800 tonnes per hour.

Two of the new unloaders are scheduled for delivery in May 2022 and the third by the end of 2022. All will be fully assembled prior to delivery and transported by heavy-lift ship. Final commissioning and performance tests will be carried out in Jurong Port.

Besides Jurong Port, there are two rail-mounted ST 640-M Siwertell unloaders, in operation at Jurong Island, which handle coal and biomass for TP Utilities' Tembusu Multi-Utilities Complex (TMUC) power-generation facility.

Ship-unloading with the world's largest material handler from SENNEBOGEN

SENNEBOGEN is a major manufacturer of material handling machines and crane technology. It offers a wide range of material handlers, electric material handlers, telehandlers, crawler cranes, duty cycle cranes and port cranes.

One of SENNEBOGEN's flagship products, the 895E Hybrid E-Series, launched at bauma in 2019.

The E-Series benefits is made up of:

- 50 years of experience in designing and constructing hydraulic material handling machines;
- uncompromisingly high performance in all areas: focus on material handling;
- technology that can be mastered: high-quality components without over-engineering; and
- long service life and high value retention.

This model is of particular interest, as it can be used in a wide variety of environments, including shiploading and unloading. It benefits from:

- **Green Efficiency:** save fuels and reduces operating costs. It works quietly, and protects the operator and the environment.
- **Top-level performance:** durable mechanical systems, with stressed parts optimized. High speeds and high load capacities.
- **Maximum comfort — ergonomically optimized work station:** optimal overview and work conditions in the Portcab at maximum 22m eye level.
- **Maximum safety:** safe entry and exit — non-slip steps. State-of-the-art cameras — entire work area in view.
- **Maintenance and service made easy:** SENNEBOGEN control system — easy diagnosis. Simple maintenance, with clear labelling, plus clearly arranged engine compartment containing all drive and steering components in a walk-in power pack..
- **Consultation and support in your area:** three production sites — two subsidiaries. 180 sales partners, and over 350 service stations.

The 895E Hybrid E-Series offers fast loading cycles. It combines speed and efficiency. Especially when handling bulk materials, great loading and unloading speed is necessary to save money. Therefore, the port specialist works in a material handling mode optimized for speedy working cycles as standard.

Precise cargo handling is another benefit: general cargo is all about accuracy in every respect. The 895 E-Series moves pulp bundles, big bags or other general cargo with maximum precision, at the touch of a button on the joystick and without interrupting work.

What skills are looked for when hiring an 895 E-Series operator? Quite simply, a head for heights. In order to have the best possible view of everything in the surrounding area, the operator can raise the large port cab up to a height of 22m thanks to the Skylift cab elevation. This helps with the placing of bulk goods and cargo in ships' hulls and makes unloading freighters much easier, not to mention the fantastic panoramic view of the port. The operators are supported by additional cameras at the rear and on the right-hand side of the machine, conveniently observable via a screen in the cab. There is also the option of installing a camera on the stick of the 40m-long equipment which makes placing or grabbing materials in ships' loading areas much easier.

Heavy Lift is another strength of the 895 E-Series, and brings out the best in the unit, especially when handling heavy loads such as containers or coils. Working in heavy lift mode increases the load capacity of the machine significantly and, at the same time, the machine's equipment manoeuvres to its destination with even greater sensitivity.

Several more 895 machines have been ordered for ports all over the world.

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The Port of Iskenderun

The Port of Iskenderun in Turkey has been operating an 895 E-Series since October 2019, where it moves masses of old scrap every day. It is now an integral part of port operator Tosyali's green fleet.

Everything about this machine is big and record-breaking. Following its smooth transportation in sections on a total of 16 trucks and successful installation and commissioning by Turkish sales and service partner Forsen Machinery in just a few days, the largest material handler in the world is now setting new standards in terms of size and efficiency in the loading and unloading of ships up to Panamax and post-Panamax size. The environment in operator Tosyali's port is perfect for the machine.

Tosyali Holding's transshipment port, located in one of the largest metal producing areas of Turkey, supplies the local steelworks with scrap, among others. Boasting a net weight of around 420 tonnes and a 500kW electric drive, the SENNEBOGEN 895 E-Series is the central linchpin of the specialist port's fleet. Despite its remarkable size, the machine works quickly, efficiently and without emissions.

"Our experience with SENNEBOGEN machines has shown us that using electric material handlers does not mean compromising on flexibility or speed," explains Harun Karaarslan, Technical Port Director at Tosyali. "Quite the opposite. The machines cover a large work area as they can move up and down the pier quickly and easily. By not using diesel we also save a lot of money every year." Tosyali has been relying on green support in the large machinery sector for the past 12 years. Amongst others, the specialist port's fleet includes two 880 EQ Balancers with crawler tracks, both electric versions. The 895 Hybrid E-Series joined the ranks as the seventh and biggest material handler on site, fitting seamlessly into the port's processes.

Energy Recovery System – simple and effective

The unique Green Hybrid system also contributes to the machine's efficiency and reduced operating costs. In the case of the 895 E-Series this means a maximum energy saving of up to 55%. How is it possible for a machine weighing 420 tonnes, itself as heavy as two adult blue whales, to operate so efficiently? The port giant's boom has two in-built hydraulic systems that compensate for the dead weight of the 53-tonne steel structure.

Along with the hybrid storage modules installed on either side of the machine right next to the boom pivot point on the uppercarriage, they make up SENNEBOGEN's Green Hybrid energy recovery system. Like a spring, gas is compressed in separate gas cylinders, storing energy that can then be used during the next lift. This subsequent lifting motion is just like the spring being released and the energy from the compression being let out again. Just a brief look at the annual volumes handled by the Tosyali port shows how important the energy and cost savings from using the giant machine really are.

"We handle 10,000,000 tonnes a year in this port alone, our machines are in constant use. We are reliant on the machines in our fleet working constantly, downtime would be fatal," explains Harun Karaarslan. In this context, he mentions further decisive advantages of the electrically driven material handlers in his port. On one hand, there is the constant availability and not needing to interrupt the work flow to refuel. On the other hand, maintenance frequency is significantly reduced and the overall wear and need for replacement parts including transport costs is significantly lower on electric machines than on their diesel counterparts.

Precision is what it takes

Tosyali is currently using the machine to unload scrap. A 12-tonne orange peel grab with a capacity of 10m³ is installed on the stick. In the future, a wide range of bulk cargo will also be handled with a clamshell grab. Thanks to the green giant's sensitive controls, the grab moves gently over the hopper and loads up the waiting trucks in a cycle time of around 40 seconds.

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MAIN FEATURES

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MAX TRACTION OUTPUT PEAK TORQUE	2x45.000 Nm
MAX SPEED	4 km/h
ELECTRIC TRACTION MOTOR	2x25 kW 400V AC
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)
PRESSURE AT STATIC PAYLOAD	120 bar

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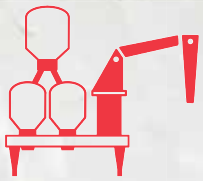

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Shiploading and unloading systems from Bühler help to feed the world

Portalink mechanical unloader.

Bühler is a major manufacturer of shiploading and unloading systems to handle grain.

An astonishing 1.5 million tonnes of grains and meals are shipped over the seas worldwide everyday. This requires highly efficient grain terminals that can handle high capacity and volumes in a cost-effective manner. Bühler's loading and unloading systems are setting high standards in terms of capacity, efficiency, reliability, safety, and operating costs.

Portalink mechanical unloaders

Efficiency and reliable operation: there are key requirements that an unloader needs to fulfill to maintain an advantage in the increasingly competitive business of grain transportation. The unloader is the backbone of operations at a terminal. Fluctuations in capacity and downtime have a significant impact on costs and overall operation. That's why the Portalink, Bühler's continuous mechanical unloader, has been designed to achieve maximum efficiency and reliability, with low operating costs.

Going with the flow

The marine leg is the key to the efficiency of the overall system and the heart of the machine. Portalink's marine leg is a vertical chain conveyor that unloads product in a compact column at a rate of 1,300tph. The low conveying speed protects the product from degradation.

Low energy use keeps operating costs down. The automatic sink-in mechanism maintains the intake boot at an optimal level within the product during the unloading process, enabling the system to unload at constant full capacity.

Advantages include:

- high efficiency unloading;
- low operation costs;
- gentle product handling; and
- low energy usage.

The Portalink unloader consists of a gantry construction with a swiveling top section, a trussed horizontal boom, and the marine leg with kick-in/kick-out system. The unloader transports bulk product from the ship's hold to the pier at low speed using two independent high-performance chain conveyors.

Full range of movement

Portalink has a wide range of movement. The unloader can be designed to travel on rails or equipped with steerable tyre wheels. The boom can be lifted, lowered and swivelled as required. In addition, the kick-in/kick-out system enables the marine leg to move through the hatch and reach the product below the rim of the cargo hold, minimizing the need for bulldozers to remove the residue. This speeds up unloading throughput rates and reduces berthing times.

Portalink options

To make the Portalink and unloading operation even more efficient, Bühler has developed several attachments to the marine leg that increase remnant unloading, improve the unloading of mealy products, and provide the best machine set-up in port.

Portablade:

- **Reduced remnant unloading time:** with the Portablade, more product is removed from the hatch, reducing

remnant unloading time.

- **Earlier bulldozer usage:** by flattening the product on the hatch bottom, bulldozers can then be brought in earlier during the unloading process.
- **Improved product accumulation around marine leg:** the Portablade creates a wall so that the product fed by the bulldozer is placed where needed and does not gather around the marine leg, improving unloading efficiency.

Decompacting screws:

- **Increased unloading efficiency:** soymeal, fishmeal and similar products can become compacted during shipping. Decompacting screws loosen the material and break up large clumps for easier and more efficient handling.
- **Shorter unloading time:** a free product flow is ensured increasing the unloading rate and reducing the unloading time.
- **Constant unloading capacity:** with the required feeding machines (bulldozers), the unloading capacity is higher and more stable, keeping the mealy products in movement.

Unloading simulation software

- **Optimal unloading:** the software application shows the best possible unloading processes for a particular system. The software simulation clearly shows the influence of different system layouts and individual machine throughputs. The customer facility can then be tailored precisely to meet existing requirements.

Marine leg

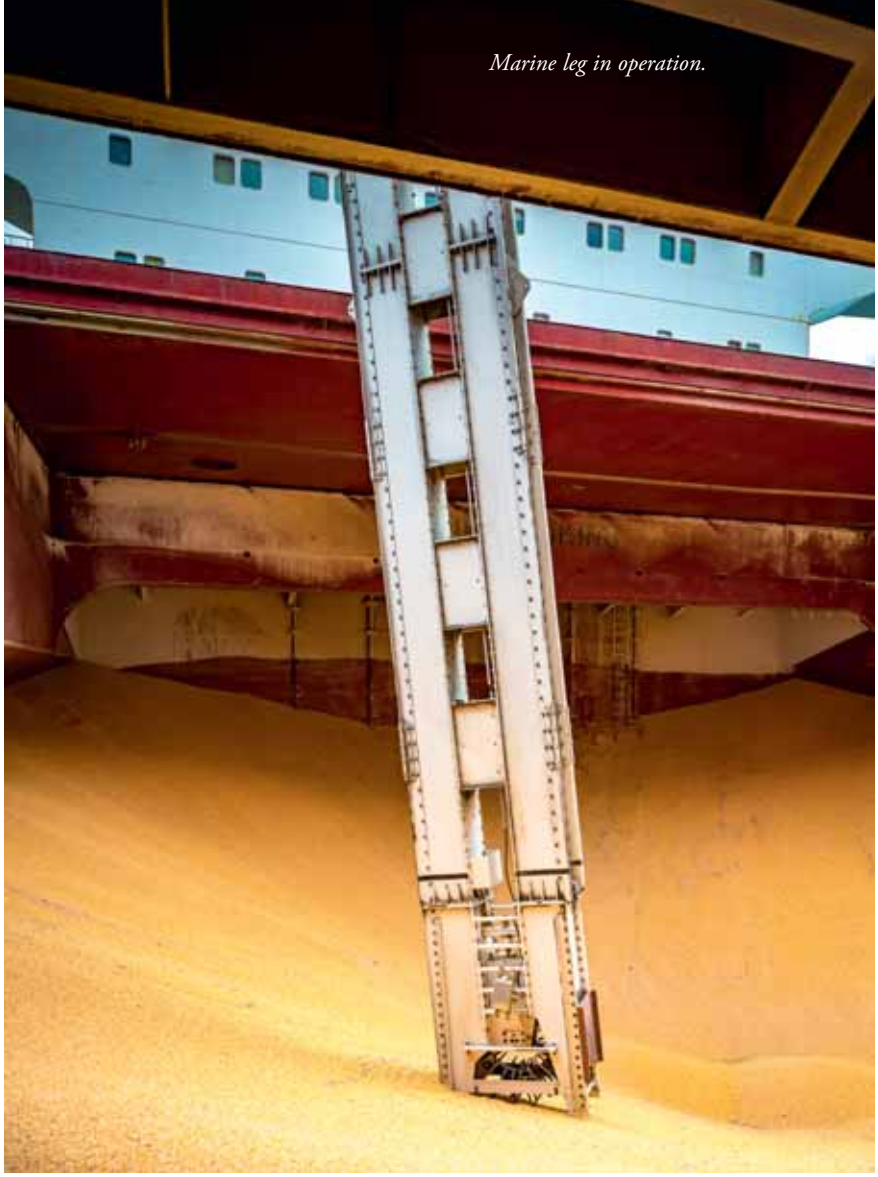
The intake boot at the end of the marine leg sinks into the product in the hold.

The automatic sink-in ensures the intake boot is constantly at an optimum level within the product as it is unloaded. In addition, by balancing out the vertical movements of the ship caused by waves or rising tide, the automatic sink-in improves safety and lowers stress on the steel structure, thereby extending the life of the unloader.

The specially designed chain conveyor picks up the product from the hold in a compact column inside the conveyor's casing. This moves continuously at a low uniform speed to the outlet. From here, the product is carried to the pier conveyor or to the truck or train loading spouts.

Rail travelling gear

Most unloaders are on rails which allow the unloader to operate easily and efficiently. Bühler's modular rail travelling gear is the most commonly used and most versatile travelling gear available. Moreover, it can carry heavy loads for larger unloaders.



Marine leg in operation.

Tyre travelling gear

An unloader on tyres can be moved aside from the berth into a designated parking zone. It is especially helpful for smaller-capacity unloaders and multi-purpose berths that need to keep clear of fixed structures.

Gently does it

The bulk product is conveyed from the ship's hold by the marine leg in a totally enclosed system. It travels inside the casing of the marine leg in a compact column at a uniform low speed. This not only ensures that the product is handled gently, minimizing financial loss from product breakage, but also reduces energy consumption and wear and tear on machinery. Once unloaded, the bulk product can be transferred downstream to conveying systems or directly into road or rail vehicles.

Versatile in design and application

Portalink ship-unloaders come in a range of designs. Mobile or stationary, powered by cable reel or diesel engine, they are well suited for use on ship sizes from 3,000 to 120,000dwt. The lifting and lowering of the boom, and the swivelling motions are powered by hydraulics. All motions are protected by overload valves. Built-in proportional control valves ensure gentle and continuous, variable movements. The control system is equipped with PLC elements. A display shows the operating conditions, error messages, and the preventative maintenance programme.

Portacombi

The Portacombi is a highly efficient unloader and loader combined. Ideal for high capacity unloading and loading from large to smaller ships, it is available in a wide variety of designs. The Portacombi's versatility means operators save on space and costs.

Portalink and loader in one

Combined ship-unloading and loading systems are often used at facilities with import and export activities that handle cereal grains, oilseeds and derivatives. For example, after the oil has been extracted

The worldwide grain trade is increasing year by year and demanding an advanced supply chain for these valuable commodities.

Bühler Grain Quality and Supply is the leading manufacturer of highly efficient loading and unloading equipment combined with low operating costs. Uptime, reliability and efficiency are only three keywords defining the values on which the solutions of Bühler are developed on.

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from soybeans, the soybean meal is then sold on to other processors.

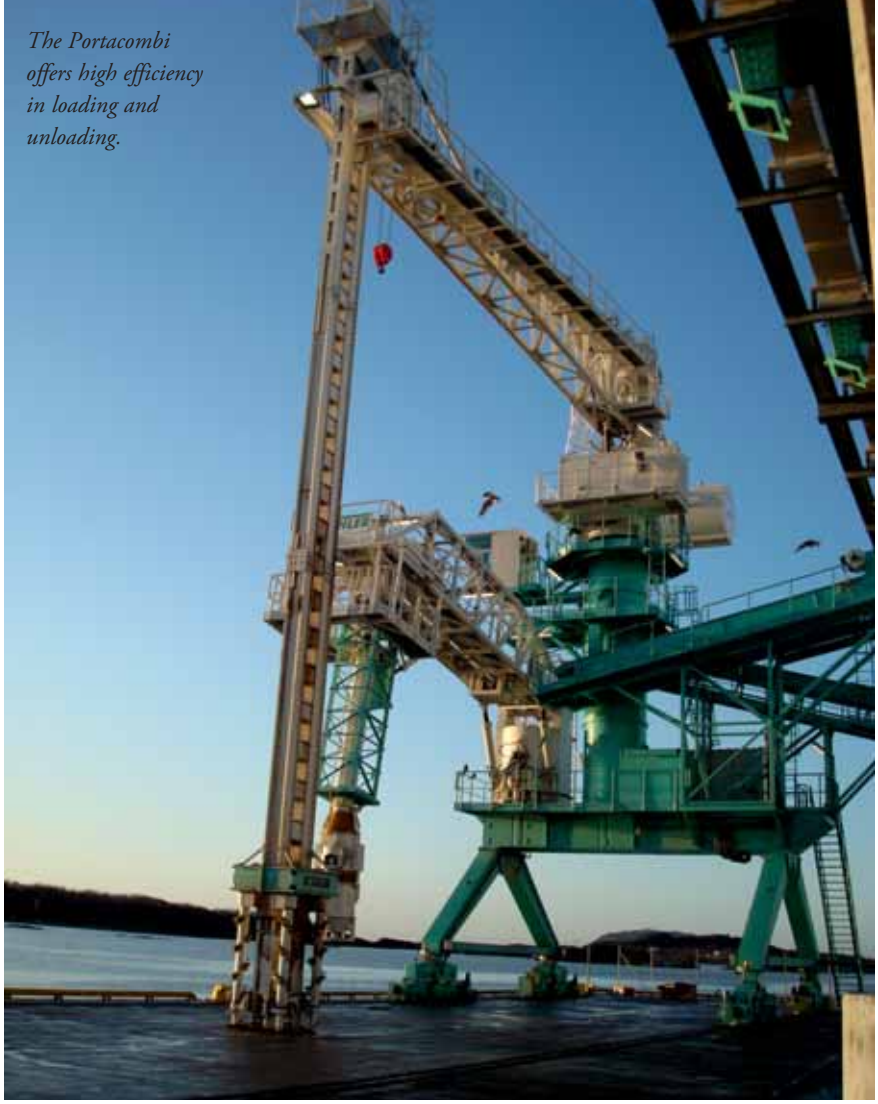
Barge loading

The Portacombi can also be used to unload product from a sea-going ship on one side of the pier, and load it directly on to a barge on the other side, saving time and money for complex product transfer routes.

Portaload

Fast, safe, efficient shiploading. Grain and derivate transshipment is a business in which a 1 cent difference per tonne can create a competitive advantage. Keeping shiploading costs low and efficiency high is therefore vital. Portaload shiploaders are sturdy, hard-wearing and equipped with advanced instruments, enabling them to load quickly, safely and efficiently at low operating costs.

Depending on the situation, a mobile or stationary solution might be the best solution. Both loading systems are designed to provide high availability and low wear, meaning reduced downtime and lower maintenance costs. With many years of experience, the dedicated team at Bühler can advise throughout the project, from initial ideas to the final installation.



The Portacombi offers high efficiency in loading and unloading.

Mobile or stationary: two loading concepts compared

Mobile or stationary? Which loading solution is most suitable for each terminal operator depends first and foremost on shipment volumes and, of course, on available terminal infrastructure. The following provides a comparison of the performance characteristics and advantages of the two loading concepts — valuable indicators as to which is the most appropriate solution.

- **Mobile loader:** for users with an existing berth — possibly shared with neighbouring companies — then a mobile loader could be the best option. A mobile loader is usually mounted on rails and connected to a high capacity pier conveyor and tripper car which brings the product from the silos to the loader. They are ideal for installation on existing quays. The benefits of a mobile loader are flexibility of use, energy efficiency in total, and, in terms of the loader itself, lower investment costs. The use of two mobile systems offers quantifiable advantages over a single system.
- **Stationary loader:** for users who do not have an existing berth available and have high annual loading throughput, then a stationary loader could be the best solution. A stationary loader consists normally of three to four towers each with a rotating loading boom attached to either one or two sides of the tower. They are ideal for high annual loading throughput and high capacity. The benefits of a stationary loader are highly efficient loading and minimal interruption between hatches. The concepts deliver higher throughputs and shorter loading times, resulting in quicker pay off for investment costs.

Mobile Portaload

Mobile loaders are high-value loading installations thanks to their wide range of application, their high capacity, and their suitability for multi-use berths. Mobile loaders are installed on rails ensuring stability during operation and when parked. Parallel movements alongside the ship is guaranteed, making operation easy for the operator.

- **Full range of movements:** the Mobile Portaload has a wide range of movements focused on maximizing loading efficiency and minimizing operating interference. Installed on rails, the loader can lift, lower and swivel the horizontal loading boom, as well as lower and raise the vertical spout as required by the operator. Swivelling and moving the boom requires minimal involvement from the operator, enabling a highly efficient loading process with minimal dust emission.
- **How it works:** the Mobile Portaload is connected to the silo by means of quay conveyor with either fixed product transfer points or with a so-called tripper car, which moves alongside the mobile loader. From here the product is transferred up the gantry conveyor before dropping onto the high capacity boom belt conveyor. The product then falls into the hatch through the vertical spout. To reduce dust emission, aspiration and a dust suppressor can be installed.
- **High reliability through low wear:** in developing the Portaload, particular attention was paid to minimizing the number of wear and tear parts, and such parts were used only in those areas where it was absolutely necessary ('smart wear'). Furthermore, the components' surfaces under load are designed to undergo minimum wear and tear.
- **Maintenance:** Bühler has been able to remove the necessity of a 'kick' system without reducing loading efficiency. This

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Mobile Portaload.

helps eliminate all the hydraulics on the loader. With this, not only the new installation of the loader but, more importantly, the maintenance requirements have been lowered significantly.

- **Three sizes to cover all requirements:** to cover current and future loading requirements, the Mobile Portaload is available in three boom lengths per loading capacity. With this setup, all ship sizes can be loaded optimally combined with sound investment costs.

Stationary Portaload

Stationary loaders have been around as long as mobile loaders and are designed to load ships with maximum performance and minimum interruption, resulting in highly efficient loading and the shortest possible berthing times.

Generally, stationary loading systems are comprised of three towers, each with a horizontal loading boom. Of the three loading booms, two load simultaneously while the third moves into position to enable a hatch change without interrupting the loading process. This design ensures that there is no need for the conveyor belts to be stopped or emptied when switching between hatches. The three towers together achieve a total loading output of 6,000tph.

- **Designed to last:** as with the Mobile Portaload, the number of wearing parts has been minimized, and wear-prone moving parts have been omitted on the conveyor system. The entire structure has been designed with a long service life in mind. The precisely balanced boom plays an important role in this. It rotates, torsion-free, on a bearing with just a single seal. This means a massive reduction in wear and maintenance. The short boom also contributes to reducing the load on the tower structure, in combination with the kick-in/kick-out technology.
- **Benefits include:** highly efficient loading; fully enclosed; low maintenance requirements; and low investment costs.
- **High efficiency loading with two booms in one hatch:** to use the full loading capacity over the ship and according to every loading plan, each boom of the Stationary Portaload can load individually creating an optimal balance during loading, or have two booms loading in the same hatch. This is achieved by the slender structure of the loader combined with the kick system. This allows sufficient space for the loading spouts to manoeuvre safely.
- **Low investment costs:** the optimized design, low position of the boom and balanced force reduce the capital investment costs of the loading system as a whole. The low position of the boom is achieved by combining a horizontal boom that can be rotated and lifted, with a vertical boom with a kick system. This enables a higher hatch coverage rate and provides for greater flexibility because it means loading can be carried out around existing superstructures. It also significantly reduces the load on the tower structure. Both result in a major reduction in the capital investment costs involved.
- **Reduced energy consumption:** the low position of the boom means that the product only has to overcome relatively small differences in height. As a result, the rating of the electrical installations can be kept to a minimum. The mechanical handling of the conveyor system reduces the level of energy consumption even further.
- **Totally enclosed system:** from the silo the product is transported on high capacity conveyors into the distribution tower, where it continues its journey into the spout and onto the fully enclosed boom conveyor. From the boom conveyor it falls into the vertical spout and dust suppressor. The fully enclosed system reduces dust emission at every point.

Long-term safety: spare parts, training and maintenance

Original Bühler spare parts

Whether high-quality spares and wear and tear parts, targeted education and training, innovative retrofits or quick repairs; Bühler offers effective service solutions for sustainable business success.

Stationary Portaload.

Education and training

Specialized trainings are offered which take teams through the complete facility with all its critical parts.

For example, a special training can focus on maintenance and its requirements, or on how to operate an unloader most efficiently.

Customers get the most out of the training as it takes place at their plant, combining class room training followed by on-site application.

Preventative maintenance

Keeping port equipment running trouble-free with minimal interruption can be a hassle. Ensuring adequate personnel is available at the right time, with the necessary knowledge to solve the problem efficiently is an even bigger challenge. Bühler offers various solutions to keep equipment running, for example with service contracts.

It provides customers with high quality spares and wear and tear parts speedily and reliably over the long term. Bühler can assist in the identification of the correct parts and guarantee optimum compatibility for maximum performance and operational reliability.

VIGAN

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VIGAN offers both pneumatic and mechanical unloaders to suit all volumes

Belgium-based company VIGAN is a major manufacturer of unloading equipment, and it offers both pneumatic and mechanical unloaders.

Pneumatic unloaders

VIGAN's pneumatic equipment works on the principle of conveying by air, which handles the product inside the pipes and thus behaves as the transport medium.

This means that, at the suction nozzle and using the vacuum produced by the turbo blower(s), a certain amount of air is mixed with the free-flowing products. Sufficient air speed in the pipes maintains the products in the air flow, and the cargo is therefore conveyed in the same way as the air.

At the centre of the equipment, when the product arrives inside the receiving cyclone or hopper, the air will be sucked and filtered upwards into the turbine while the products settle down into the hopper bottom or cyclone.

After being conveyed down by an airlock (rotary valve), the products will be transported to their final destination such as into trucks, railway cars, silos and/or storage warehouses.

Due to the inherent flexibility of VIGAN's equipment range, they can be used to unload pneumatically any size vessel, as mobile units can be put on the deck of large size vessels, and large size models can have a boom with a suction pipes of up to 30 metres to unload post-Panamax size vessels.

Pneumatic unloader (and below).

Mechanical unloader

VIGAN's mechanical unloader, the SIMPORTER, has been designed to meet very high capacity needs. It is able to discharge up to 1,500mtph (metric tonnes per hour), and is particularly suitable for large bulk carriers up to post-Panamax, and when the annual intake usually exceeds three million tonnes.

The twin-belt SIMPORTER system offers major benefits to port authorities and other organizations concerned with the bulk transfer of granular materials.

Choosing the best model

When it comes to choosing the model that is best suited to the application is a complex matter, and is subject to several factors.

First, it is important to consider which products are to be unloaded. Most free flowing products with a density between 0.5 and 1.5 and a natural angle of repose less than 40° can be handled by VIGAN equipment. Products such as all kinds of cereals (corn, wheat, barleys, etc.), oilseeds, nuts, animalfeed, certain chemicals such as soda ash, alumina etc., …. but also slightly compacted products such as soy bean meal

(SBM) are also suitable.

The second consideration is how many tonnes will be unloaded each year.

It is important to get the right balance between unloading capacity and financial investment. It is most useful to compute the tonnage of each product and the forecasted figures for the coming years.

For up to 200,000 metric tonnes each year, VIGAN recommends the use of portable grain pumps. For up to 2–3mt (million metric tonnes), a pneumatic tower or NIV on gantry is advised. For over 3mt per year, an NIV on gantry and/or mechanical SIMPORTER is ideal.

VIGAN's expert team is always available to offer advice, and to direct customers to the best solution and cost: benefit ratio.

Next, the target unloading rate should be considered. It should be remembered that maximum unloading capacity applies most when the product is at the top of the hold, and the intake nozzle is in the middle of the opening area of the hold. In this position, the equipment is at its most effective. Average capacity considers the whole-ship-unloading operation, and therefore also the cleaning period at the bottom of the almost-empty hold, when the unloading rate necessarily drops significantly.

Many factors affect the average capacity in practice such as for instance:

- type and number of machine(s) in operation;
- size and type of unloaded vessels;
- manpower;
- captain's instructions;
- weather conditions;
- auxiliary equipment; and
- others, including maintenance, type of product, and so forth.

For continuous ship-unloaders (CSU), the average 'through the ship' unloading efficiency, including hatch cleaning, varies usually between 50–60% (mechanical) and up to 80% (pneumatic unloaders).

When comparing the average unloading efficiency between equipment and/or experimented unloading operations, close attention should be paid to considering exactly the same parameters such as taking (or not taking) account of any stoppage due to silo or warehouse problems, the lack of trucks for product loading, the time 'lost' for the displacement of the equipment along the ship and so on.

For example:

- maximum capacity 300mtph: average efficiency 70%;
- average unloading rate: 210mtph;
- assuming a working day of 22 hours, then a daily unloading rate of ±4,620 tonnes per day will be achieved.

The key figures to define are:

- average unloading rate; and
- number of working hours per day.

Users should also remember to ensure that the onward movement/storage of the product can handle the unloaded cargo. So it is vital to ensure:

- enough trucks to ensure the product transport at maximum unloading rate — this is the most common limiting factor when the maximum unloading capacity is above 300–400mtph;
- sufficient capacity (maximum) of the conveying system to the silos and/or warehouse; and
- other factors such as maximum berth occupancy time and so on.

Once all these factors have been closely examined, the type of equipment can be chosen. VIGAN's main types of equipment and most common maximum capacities are:

Pneumatic

- mobile or portable (also called vacuvators or grain pumps) — maximum capacity from 120 to 250mtph;
- barge unloader, mostly for barges or vessel less than 15,000dwt — maximum capacity from 160 to 600mtph; and
- NIV or gantry type, mostly for all types of vessels up to post-Panamax — maximum capacity from 200 to 800mtph.

Mechanical

- SIMPORTER (twin belt technology) — maximum capacity from 800 to 1,500mtph.

Almost all equipment can be either mobile, either self-propelled or stationary. Most of VIGAN's equipment is customized, with many options and accessories available. Unloaders are all designed, manufactured and pre-assembled in VIGAN's factory in Belgium.

The SIMPORTER in operation.

Bedeschi expertise includes shiploaders and unloaders for bulk cargoes

Bedeschi S.p.A. is an industrial design and manufacturing company located in Padua, Italy; it was founded in 1908 and has been operating globally for several decades now. In addition to its original brick business unit, Bedeschi can now supply machinery and complete plants for bulk handling, marine, gas cleaning and container logistics. The machinery developed by the company includes conveyors, shiploaders and ship-unloaders — for onshore and offshore logistics — crushers, circular and longitudinal storage and vertical wall blending storage.

Among the projects realized by Bedeschi, one of its major ones is for equipment at a Cereal Docks. The ship-unloader, mobile on rails, operates at a capacity of 800tph (tonnes per hour), handling soya beans and delivering these to a dedicated quay belt conveyor. It is a fully erected machine delivered to the quay of Marghera Port in Italy, that does not require assembly at site.

The unloading system is based on the proven chain elevator technology, which grants the lowest power consumption, gentle handling of the material, compliance with the most stringent environmental regulations, simple and inexpensive maintenance.

Cargill WestWego is an ongoing project in New Orleans. This is a shiploading system able to load grains and oilseeds at 80,000 bushels/h (2,200tph) on vessels up to 120,000dwt. It is part of the refurbishment and upgrade of an existing facility operating on the Mississippi River manufactured through Bedeschi USA located in Deerfield Beach, Florida.

Another Bedeschi project is at the Kernel Terminal in Ukraine. Two luffing and slewing shiploaders, with a combined capacity of 4,400tph, have been installed. The equipment is tailor-made for loading barges and ships up to Panamax size, side by side on the same quay.

Cereal Docks, Bedeschi ship-unloader.

In a shiploader developed for a client in the Netherlands (pictured below, left), Bedeschi's engineers introduced a significant technological innovation. The 'sandwich conveyor system' is placed in the centre of the main gantry and it refers to the two conveyors one on the top of the other for gently conveying the material. The main advantage of this technology is that it reduces dust emissions and spillages in the air.

The giant shiploader (below, right) is the biggest ever developed by Bedeschi. It is part of a fully automated coal export terminal and it has a capacity of 8,000tph. This project represents a very big success for Bedeschi's team.

Bedeschi is very active in Eastern Europe, North America and South America. Thanks to its solid structure and its strong team of engineers and sales agents working worldwide, the Italian company is able to handle threats and difficulties properly by transforming them into new opportunities. This is proved by the steady increase of orders and the innovative equipment supplied by the company. The projects mentioned above are clear examples of the company's competence to create tailor-made solutions for a wide variety of cargoes.

Shiploader for a customer in the Netherlands.

Bedeschi's largest-ever shiploader is for a fullly automated coal terminal.

CSUs from Sumitomo Heavy Industries Material Handling Systems

Continuous ship unloaders from Sumitomo Heavy Industries Material Handling Systems Co., Ltd.

A 3,200tph CSU for Sumitomo, handling coal at a Japanese power station.

Sumitomo Heavy Industries has always been a major presence in the field of continuous ship unloaders (CSUs), since the first bucket elevator-type CSU was delivered in 1978. Since then, there have been many subsequent innovations, and the high unloading efficiency and reliability of the company's machines are the reasons for Sumitomo's respected position in the industry.

To date, 85 machines have been delivered, or are under construction, mostly for the power generation and steel industries.

The success of Sumitomo's CSU for iron-ore is especially significant due to the difficulty of handling this material. The CSU has enabled Sumitomo to gain considerable confidence from its customers.

Sumitomo has been especially successful in the last two to two-and-a-half years, receiving orders for nine machines, from both the power generation and steel industries. It has therefore been successful in winning the lion's share of the CSU orders in Japan. The photo shows one of the company's 3,200tph (tonnes per hour) CSUs for coal at a Japanese power station.

Another area of continuous unloading is the vertical screw type. To date, Sumitomo has delivered a dozen machines, with a further two units under construction. The customers handle diverse materials including petcokes, coal, grains and gypsum, and Sumitomo's latest machines are designed to handle biomass pellets, the use of which is increasing in the power industry.

Sumitomo's CSU line-up also includes the twin belt design (sandwich belt), with three machines operating successfully.

With its diverse CSU designs and long-term experience, Sumitomo is able to offer a wide range of unloading solutions to its customers, who handle many diverse materials.

DCi

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Belledune Port Authority benefits from New Brunswick's abundant forests

New Brunswick's greatest resource

The lush green forests of New Brunswick in Canada are the envy of many who are surrounded by concrete walls in population-dense cities. However, a lot of the province's own residents may not even know exactly how rich of a commodity the abundance of woods in their own backyards produce. Enter forest biomass — the wood waste left as a result of strategic forest management and local sawmill processing. In being resourceful and taking that 'waste' and turning it into value-added product, the wood pellet can be produced and thus, a source of clean energy is created. It is arguably New Brunswick's greatest underutilized resource.

Wood pellets have become a highly sought-after product and are being used more and more for industrial heating purposes, replacing the outdated use of fossil fuels. Hundreds of thousands of pellets are exported out of the Port of Belledune annually, destined for overseas heating facilities. The UK understands this resource and has effectively reduced the use of fossil fuel drastically; as a result, also cutting carbon emissions.

The Belledune Port Authority (BPA) has worked to become the top biomass exporter in Eastern Canada since beginning to export wood pellets over a decade ago. The amount of laydown space available at the Port of Belledune and the excellent storage facilities directly on the terminals as well as top notch operations have clients increasing their supply of these products. In 2019, JD Irving Ltd. constructed a storage facility adjacent to Terminal 3 in collaboration with the port's stevedoring partner and terminal operator, QSL Canada Inc. Wood pellets are sensitive to the elements and this new facility is the third warehouse on the Port of Belledune's terminals dedicated to storing the commodity. As growth continues, necessary discussions are taking place to identify how to best support the local economy while meeting global demands.

The wood pellets in the new storage facility at the Port of Belledune are created from byproducts and leftover sawmill biomass materials at the JD Irving Sawmill located in Saint Leonard, New Brunswick. This facility is just one location that makes up the product supply exported overseas through the Port of Belledune. In being environmentally responsible, JD Irving Ltd. is taking the by-product of its operations, what would otherwise be thrown out, and capitalizing on other uses. Customers in Europe and other continents overseas continue to increase their purchasing, recognizing the environmental benefits of using wood pellets as fuel for energy production.

There continues to be growing interest locally around wood pellets and their ability to be a clean energy solution for the domestic market as well. The question is whether it is possible to utilize the province's own supply of biomass while continuing to be profitable and successful in supplying customers overseas. In 2016, the provincial government of New Brunswick released their Climate Action Plan (CAP), including the lofty goal of eventually transitioning to a drastically carbon-reduced economy. An important part of CAP that will directly influence businesses around the region is the eventual phasing out of coal being used to produce energy. According to an article published in *Canadian Biomass Magazine* in 2017, the wood pellet sector in New Brunswick is "well positioned to help the government meet its climate commitments, to improve the provincial economy, and to create more jobs." Benefits to adding wood pellets to heating methods include:

- growing employment and job creation;
- growing an industry based on using waste that is already being generated by the sawmill industry;
- using a cost-effective, reliable, and clean way to reduce pollution and meet CAP standards;
- ultimately reduced heating costs; and,
- reducing dependence on imports of oil and coal, which would keep money circulating in the province.

Although it remains to be seen how exactly the use of industrial wood pellets could benefit local industries and the environment, it is certain that wood pellets will continue to be needed internationally and demand will likely grow. To remain a top supplier of this renewable energy source, the key will always be to have smart, strategic, and sustainable forest management.

As the BPA focuses on clean environmentally friendly projects, there is also a commitment to partner with organizations that have similar values. The BPA is proud to partner with JD Irving Ltd. because of its exemplary efforts to responsibly replace the wood supply used in its operations. Since beginning the tree planting programme in 1957, over one billion trees of various species have been planted. The company proudly holds the national record in Canada and continues with its commitment to always replace what is used. The trees planted act has natural air filters and absorb up to one tonne of carbon in a lifetime.

It is not something always at the forefront, but it is important to recognize the impact New Brunswick has overseas by making the most of its greatest natural resource. New Brunswick has significantly played a helping role in the world's quest for cleaner energy and reducing worldwide carbon emission output. Even more, the province is poised to contribute even more through escalating wood pellet exports from the Port of Belledune and its suppliers. It is clear the greatest resource at the province's disposal is one that resides in all our own backyards. What was once viewed as unusable trash has become a natural commodity which is in demand. BPA's supply to the world positions it as a leader in creating a less-polluted, healthier, and safer world.

Good news for Brazil's pulp & paper?

with China's economy recovering, Brazil's industry continues to perform well

Patrick Knight

A world leader as far as deaths from the coronavirus is concerned, and with its economy expected to shrink by at least 6% this year, there is little to celebrate in Brazil at the moment. But with the economy in China, Brazil's leading market for market pulp and a strong market for printing and writing paper as well, bouncing back strongly after falls in February and March, there is some good news.

Exports to China of all goods, notably of farm products, were 60% greater in the first quarter of this year compared with the same period in 2019. The strong demand for market pulp has resulted in stocks — which hit a record high of 90 days' supply in the middle of 2019 — falling to 30 days at the moment.

There is a sombre background to the good news, however. This is that Brazil is being badly hurt by poor economic prospects, as unemployment soars, factories and shops close and the currency plummets. While the Brazilian president, Jair Bolsonaro, continues to press for the Brazilian economy to scrap restrictions which are affecting growth, the governors of the states hit worst by the Covid-19 virus, notably Sao Paulo and Rio de Janeiro, as well as in the North and North East, are trying to enforce a lockdown in an apparently vain attempt to keep the growth in cases of the virus to slow.

This mixed messaging has resulted in the Brazilian currency falling by about 30%, to its lowest level ever, while stock markets have collapsed. Well over 30,000 deaths from the virus had been reported in Brazil by early June, compared with only about 500 deaths in neighbouring Argentina, whose government has been far more successful in persuading residents to stay at home. Argentina has given cutting the death rate far greater priority than encouraging the economy to grow.

Analysts suggest that Brazil's ambivalent approach to the virus will lead to the country having the worst of both worlds. There will be an extremely large number of deaths, together with very poor economic performance, which is unlikely to recover as hoped.

Recent rises in the price of pulp are not expected to be maintained either. The impact of the virus in other important markets for Brazilian pulp, such as the EU and North America is continuing to cool demand. The weaker real has some benefits. The earnings pulp and paper manufacturers get from exports, in terms of the local currency in which most operational costs are incurred, are much higher than they were a year ago. On the negative side, however, the cost of servicing the huge debts which Brazilian pulp makers have incurred in making major increases in capacity, are set mainly set in US dollars. So debts are weighing much more heavily than before.

The foreign debt of the Suzano company, for example, which in the past couple of years, has incorporated the

assets of the Fibria group, now exceeds $11 billion. But such companies are not panicking, as the rise in export revenues is greater than the increased weight of their debt. So Suzano is proceeding with building a new 2.2mt (million tonnes) annual capacity pulp mill in Mato Grosso state, having acquired about 100,000 hectares of land there to supply it with wood. The company has, however, reduced the amount of paper made at its mill at Mucurui, in Bahia state.

The leading Chilean pulp producer, CMPC, which acquired the Irani company in Brazil last year and continues to expand output at its large Guaiba mill in Rio Grande do Sul state, now has 44 operations, including numerous mills, in eight different countries. CMPC now claims to be the world's fourth largest maker of pulp. Its Chilean fellow Arauco, which also has assets in Brazil, is to build a new mill in neighbouring Uruguay, as there is no more space for new mills in Chile.

Brazil's Klabin company, which has 24% of the buoyant Brazilian market for packaging paper, and which is in process of duplicating capacity at its new Puma mill in Santa Caterina state, has now begun making packaging paper out of eucalyptus pulp. The new type of pulp, which Klabin says will be particularly suitable for packing foods, is much lighter, as well as cheaper, than the variety made from pine, previously Klabin's speciality. Eucalyptus trees grow faster than pines. The new material, of which 450,000 tonnes will be made in 2021, can be safely stacked high and is more receptive to print than its pine equivalent.

Klabin anticipates the new material gaining market share from plastic, something which has already occurred with other types of paper packaging in Brazil, as plastic falls from favour. Statistics show that commodities, a majority of which, including pulp, are considered agricultural in origin, now form an all time record 65% of all Brazil's exports.

This compares with the 42% such exports formed a few years ago. This is in contrast to the fall in exports of manufactured goods, led by things such as motor vehicles, consumer durables and electronics. Most manufactured goods are sold to neighbouring countries, notably Argentina. Most commodities go to countries in the developed world, where demand for farm goods has not fallen much as yet.

While exports as a whole have fallen slightly as a result of the coronavirus outbreak, imports by Brazil have fallen much more severely. This is mainly because of the sharp fall in demand for consumer goods from China, as well as the fact that all imported goods are costing significantly more following the devaluation of the real.

Although most pulp and paper is shipped in bulk, an increasing proportion, notably of paper, has been packed in containers in recent years. But because of a sharp reduction of Brazil's imports of low cost consumer goods from China, far fewer containers are available than normal in Brazil at the moment.

This has affected exports of pulp, and more specifically paper, as some is having to make a more devious journey to their destination, pushing up transport costs. DCi

J. MÜLLER expands storage facilities

increases breakbulk and project cargo capacity

New warehouses on Niedersachsenkai completed

In almost 200 years of existence, the company J. MÜLLER has continuously evolved, and has adapted itself to best meet the conditions and challenges of the growing international trade in goods.

J. MÜLLER was founded in 1821, and is a major provider of general cargo transshipment services on the German North Sea coast.

In the north of the Brake seaport is the ultra-modern breakbulk terminal, the Niedersachsenkai. This offers a 450m quay length, and excellent rail connections with four access rails and six sidings, two of which are right on the pier facility. Iron and steel products of any structure are handled here on an area of 110,000m² — from long rails, hot and cold rolled coils, wire rod to large tubes as well as wind power and project cargo, round and sawn timber, pulp and paper.

The facility is unparalleled in Germany in terms of productivity, space layout and depth requirements. Due to the spacious grounds, it also offers optimal conditions for handling complete shipments of project cargo. XXL components of up to 1,000 tonnes can be easily achieved.

The mobile harbour cranes can lift up to 210 tonnes.

In the last year alone (2019) J. MÜLLER provided logistics services for over 2.8mt (million tonnes) of forest products. In the future, J. MÜLLER plans to focus even more on expanding the transshipment of pulp.

To meet the requirements of the market and the growing need for this raw material, J. MÜLLER has invested enormously. In May of this year, the second of the new warehouses — with five hall segments (about 22,000m²) — was

WAREHOUSE STATISTICS J. MÜLLER BRAKE

- Investment volume of the two new warehouses on the Niedersachsenkai: €13.8 million
- **Warehouse capacity:**
  - Niedersachsenkai in total: 37,000m²
  - Seaport Brake warehouse capacity in total: 225,000m²

completed on the Niedersachsenkai. The NSK 3 warehouse with two hall segments (about 7,000m²) has been in operation since January 2020.

The warehouses are not only designed for the storage of pulp, the walls are also suitable for the storage of bulk cargoes and can therefore be used flexibly. The warehouses are located directly on the water, which optimizes operational processes: the number of truck transports to the rear warehouse is now reduced, and handling is more efficiently aligned, which also improves the ecological balance.

The investment totalled €13.8 million.

When awarding the individual construction contracts, care was taken to use companies from the region as far as possible. More than 20 different trades were involved in the construction.

About J. MÜLLER

Every product requires specific handling. From grain and feedstuffs to forest products, from coffee to iron and steel, from wind turbines to marine proteins — at its sites in Brake and Bremen, J. MÜLLER offers a comprehensive portfolio of highly specialized port services.

In terms of forest products, J. MÜLLER already has a great advantage in terms of its location. Its seaport terminal in Brake has covered storage areas for pulp, paper and other forest products. With a throughput of more than 1mt, it is the largest pulp import location in Germany. Its excellent rail connections ensure that most destinations in Europe with a rail siding can be reached within 48 hours.

Because it has specialized in handling pulp and paper for around 50 years, J. MÜLLER pays particular attention to the correct storage and treatment of each individual type of product. Large parts of its premises, for example, are fitted with a floor covering designed specifically for the storage of paper.

The company's product and transport competence also benefits many other areas. As part of its Cargo Care service package, for instance, it inspects the quality of all goods and also attends to any damage that has occurred. In addition to numerous ancillary services — such as container stuffing and stripping — J. MÜLLER can also organize transport to and from the port.

For project cargoes and heavy lifts, the seaport of Brake is one of the leading transshipment hubs on the German North Sea coast. Extensive logistics areas provide ample space and J. MÜLLER's highly specialized equipment and heavy-lift cranes ensure fast and careful handling of a wide range of goods.

Whether heavy machinery, rolling stock, conventional general cargo or even complete industrial plants, J. MÜLLER is an expert when it comes to handling industrial goods, making it an ideal partner for this sector. It ensures correct transshipment, has comprehensive storage facilities and also attends to pre- and final assembly as well as maintenance work in co-operation with local craftsmen and service providers.

J. MÜLLER also handles around 4mt of agricultural goods per year and the trend is rising. The location of the seaport of Brake, combined with its grain storage facility in Bremen, means that it can offer a high quality service. J. MÜLLER has the largest coherent silo facility in Europe and can discharge 20,000 tonnes of agricultural goods a day. Storage facilities in Brake and Bremen can hold a total of more than 650,000 tonnes. Modern self-service stations mean that goods can be collected at any time.

The superb Niedersachsenkai is also ideal for the handling of iron and steel. Equipment: Whether heavy plate or large pipes, coils or slabs, sheet piling, special wire products or steel girders, J. MÜLLER has the right equipment to handle all these goods. DCi

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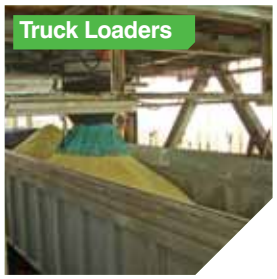

Cleveland Cascades are Specialists in the design and manufacture of bespoke dry bulk loading chutes.

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