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Ready to put our intensity to work for you?
Celebrating success

The winners of the 2018 American Metal Market Awards for Steel Excellence are profiled in this issue of Metal Market Magazine. In no less than 15 different areas of activity along the full length of the steel supply chain — from raw materials to finished products and their distribution — companies that have excelled in their particular roles are described.

Since the awards were announced at a gala dinner in New York City at the end of June, the insights that each winner has given in interviews with Metal Market Magazine into the strategies they deployed to achieve success provide plenty of lessons in making progress.

At the hot end of the supply chain, refractory business HarbisonWalker International is being transformed under the leadership of Carol Jackson. The insights she gives about company strategy and her management of it in our cover profile interview give more inspiration for pathways to success.

This magazine issue also majors on US service centers — ferrous and non-ferrous. It includes summary results of American Metal Market's survey of the sector, in which one veteran player suggests that being small, nimble and flexible — or very large to benefit from economies of scale — are the best approaches to thrive in today's markets.

A bullish business environment for steel and metals business in the United States, driven in part by the US imposition of tariffs on steel and aluminium imports into the country, has encouraged many of the country’s service centers to invest in growth, but has also made them nervous about the uncertainties of further movement in US international trade policies.

All of the above is complemented by our usual regular world news review pages, base metals and steel market analysis by Metal Bulletin Research, updates on innovations and metal end-uses and, as a bonus, our latest list of new orders placed for plant and equipment globally.
Indonesia to buy majority Grasberg stake

State-owned PT Indonesia Asahan Aluminium (PT Inalum) will become a 51% shareholder in Grasberg, the world’s second-largest copper mine, buying shares from Rio Tinto and Freeport-McMoRan in a deal totalling $3.85 billion, Rio Tinto and Freeport-McMoRan said on Thursday July 12.

Rio Tinto has agreed to sell its 40% stake in Grasberg for $3.5 billion, while Freeport will divest a portion of its interest to be left with 49% ownership of the mine. The transaction is expected to close during the second half of 2018.

Copper producer KME signs deal to take over MKM

Intek Group has announced that its copper producer subsidiary KME has reached an agreement to take over Germany’s Mansfelder Kupfer und Messing (MKM), another major participant in the European copper industry.

Italy-based copper group Intek released a statement on Friday July 6 to announce that its fully controlled subsidiary KME had reached an agreement for the acquisition of 100% of the indirect interest in metals processor MKM, subject to certain conditions, including merger control clearance from antitrust authorities.

Avebury nickel mine to restart, Transamine signs offtake deal

The Avebury nickel mine, in Australia’s island state of Tasmania, is set to restart after almost ten years of inactivity, because of the current high price for nickel and healthier prospects for demand, Metal Bulletin reported on Wednesday July 11.

Switzerland-based trader Transamine has signed a multi-year offtake contract with the mine’s owner, Dundas Mining, for the sale of all nickel concentrates from Avebury to the global market.

The mine has around 30 million tonnes of Joint Ore Reserves Committee (JORC)-confirmed resources. Current plans are that this will be processed at a rate of 1 million tonnes per year, suggesting a mine life of more than 30 years.

Recylex starts hot commissioning at Weser-Metall furnace

Lead-zinc producer Recylex has started the hot commissioning phase of the new reduction furnace at its lead smelter at Nordenham in northern Germany, operated by Weser-Metall.

The hot commissioning phase will be used to test furnaces before they go into production mode, and is expected to last for a few weeks before ramping up to commercial levels of production in the third quarter of 2018, the company said.

The reduction furnace will enable Weser-Metall to extract larger volumes of lead from the smelting process.

EGA to ship Guinean bauxite to Vedanta from 2019

Emirates Global Aluminium (EGA) will supply bauxite produced by its Guinea Alumina Corp (GAC) subsidiary in West Africa to Vedanta from 2019.

Vedanta trialed two shipments of bauxite from GAC, totalling 125,000 tonnes, in its alumina refinery in 2017, EGA said.

Regularly scheduled bauxite exports from the GAC project are expected to start during the second half of 2019. At full capacity, GAC is expected to produce 12 million tonnes of bauxite per year.

Open Mineral sets up blockchain platform

Metal concentrates trading platform Open Mineral has joined others in the metals industry to make use of blockchain technology to facilitate secure information exchange and to track parcels on a new platform called Minerac.

Minerac, a joint venture between Open Mineral and US-based ConsenSys, will allow stakeholders to securely exchange critical trade documents, such as bills of lading and letters of credit, via the use of smart contracts, the company said on Monday July 9.

LKAB eyes permit to expand Kiruna iron ore mine

Swedish state-owned iron ore producer LKAB has applied for a new environmental permit that would allow it to increase output at its main mine in Kiruna, northern Sweden, the company said.

The permit application for Kiruna relates to a maximum production of 37 million tonnes of crude ore from the Kiruna mine and 23 million tonnes of finished products, LKAB said.

Wieland to double US surface tube capacity

Germany’s Wieland Group is set to invest $20 million over the next year to construct a new production facility that will double its surface tube production capacity in the United States, the company said early in July.

The new facility – to be adjacent to its current operations in Wheeling, Illinois, a suburb of Chicago – is expected to be completed by spring of next year and will allow Wieland to meet expected demand growth in the North American heating, ventilation, air conditioning and refrigeration industry.

Oil giant BP buys UK’s EV charging company

Oil and gas conglomerate BP plc is to buy Chargemaster, the UK’s largest electric vehicles
Alcoa permanently closes potline at Wenatchee

Alcoa will permanently close one of four potlines at its smelter in Wenatchee, Washington, in the United States, despite the high-price environment brought on by import tariffs. “The potline planned for closure, Line 3 (capacity of 38,000 metric tonnes per year), has not operated since 2001, and the investments needed to restart that line are cost prohibitive,” the company said in a release on Monday June 18.

Alcoa’s decision comes while the US market is increasingly tight on supply after US President Donald Trump announced a 10% tariff on aluminium imports, which had been intended to support the domestic industry. The tariffs caused aluminium prices to soar to the benefit of US producers, triggering some industry participants to claim the time was ripe for a new aluminium smelter in the US.

Braidy al auto sheet mill on track for 2020 production

Following a ground-breaking ceremony at its greenfield aluminium rolling mill in Kentucky earlier this month, Braidy Industries is primed to begin selling into the automotive market by mid-2020, according to the company’s top executive.

Braidy chief executive officer Craig Bouchard said the mill — located in Greenup County, Kentucky — has pre-sold 230% of its capacity, and plans to be ready to undergo a six-month certification process with sales to automotive customers beginning in 2020, generally sticking to the timeline previously announced by the company.
India’s Vizag Steel ups steel capacity by 1m tpy

Indian steelmaker Rashtriya Ispat Nigam Ltd (RINL) – also known as Vizag Steel – has increased its steel capacity by 1 million tpy with the commissioning of a new continuous caster at its Visakhapatnam steel mill.

It is now able to produce blooms of 410 mm and 450 mm, as well as 200 x 200 mm square sections at the mill in Andhra Pradesh state.

The five-strand continuous caster has a casting radius of 12 meters and can produce various grades of steel, including carbon grades and grades for ball bearing and seamless tube applications, plantmaker SMS Group said.

Global stainless output up 9.5% in Q1: ISSF

Global crude stainless steel production totalled 12.77 million tonnes in the first quarter of 2018, according to figures released by the International Stainless Steel Forum (ISSF) on Tuesday July 10.

This was up by 9.5% year-on-year from the revised figure of 11.66 million tonnes produced in the first three months of 2017.

Stainless steel production in Russia, Brazil, South Korea, South Africa and Indonesia totalled 1.44 million tonnes in January-March 2018, up sharply from 845,000 tonnes in the corresponding 2017 period.

Production in China was 6.52 million tonnes in January-March 2018, up by 6.5% from 6.13 million tonnes in the corresponding period in 2017.

Italy requests new Ilva plan from ArcelorMittal

Italy’s industry minister Luigi Di Maio is expecting to see a new proposal from ArcelorMittal about jobs and the environment at Italian steelmaker Ilva, he said at a meeting with trade unions and the steelmaker in early July.

ArcelorMittal originally expected to finalize the acquisition by the end of the second quarter, but in late June the Italian authorities postponed the takeover of Ilva by ArcelorMittal until September 15.

Borusan Mannesmann’s 232 exclusions denied

The US Commerce Department has denied Borusan Mannesmann Pipe US’ requests for Section 232 tariff exclusions that the company previously said would enable an expansion of operations at its mill in Baytown, Texas, Borusan Mannesmann Pipe US chief executive officer Joel Johnson told American Metal Market via email on Tuesday July 10.

Company executives are “reviewing all of our options” after getting the bad news, he added.

The company was seeking exemptions for imports of various sizes of oil country tubular goods (OCTG) from its parent company in Turkey, according to the department’s docket.

“Our company and our dedicated employees are very disappointed that the government did not accept our unique short-term application for a 232 steel tariff exemption in exchange for a significant financial investment and expansion in our Baytown, Texas, facility that would have created about 170 new well-paying jobs in the critical energy sector,” Johnson said.

Liberty House restarts Georgetown mill in South Carolina

Liberty House Group has reopened its wire rod mill in Georgetown, South Carolina, with a ceremony on June 25.

The reopening took place almost three years after ArcelorMittal USA LLC idled the mill, London-based Liberty House said. Attendees included public government officials and former workers who have been rehired by the mill, which used to employ as many as 226 people.

The mill, now named Liberty Steel Georgetown, is the first project in a “large-scale” investment program by GFG Alliance in American metals and industrial assets, according to a statement.
two companies are “capable of rolling wire rod diameters from 4.5mm up to 27mm at speeds up to 120 meters per second,” technology supplier SMS Group said this week.

SSAB schedules Q4 outage at Iowa plate mill
SSAB Americas plans to take a routine, three-week maintenance outage at its Iowa plate mill early in the fourth quarter.

SSAB Americas, part of Swedish steelmaker SSAB, operates one plate mill in Montpelier, Iowa, and another in Mobile, Alabama. The mills have an annual crude steel capacity of about 2.5 million tons.

Russia launches retaliatory tariffs against US
Russia will apply duties of 25-40% on 79 US goods — including construction equipment, oil and gas services equipment and metal mining equipment — according to an order signed by Russian prime minister Dmitry Medvedev on Friday July 6.

Those duties will take effect by August 7; the order stated that the measures will come into force 30 days after the official publication of the signed order.

Tenaris lays off 40 at Algoma Tubes, citing Section 232
In perhaps the first instance of job reductions resulting from the United States’ Section 232 tariffs on Canadian steel, Tenaris laid off 40 workers at its Algoma Tubes mill in Ontario, according to a union official.

The layoff at the seamless tube mill in Sault Ste Marie was effective Sunday July 1.

The company attributed the reduction to the new US tariffs and also the impact of imported steel from abroad originally intended for sale in the US that is being redirected into Canada, Cody Alexander, president of United Steelworkers union Local 9548, told American Metal Market.

Finnfjord to carry out maintenance at FeSi furnace in Q3
Norwegian ferro-silicon producer Finnfjord Smelteverk will cut about 3,500 tonnes of production in Q3 of this year because of planned maintenance to one of its furnaces, according to an industry source.

The company, which has its plant in the north of the country, operates three furnaces, one with capacity for 20,000 tonnes per year and two with capacities for 40,000 tpy.

The company is aiming to have it back in full production by around the start of September.

Some 5,000 tonnes of production was cut in the past quarter after Finnfjord carried out maintenance and repairs that had been postponed from the last quarter of 2017.
In times of rapidly changing markets, you want your technical partner to support your competitiveness. We listen. We learn. We deliver: based in over 50 locations around the world, our technical specialists are always close by and ready to help at any time. We provide a full range of Life Cycle Services to boost plant availability, including consulting and technical assistance. Whatever you envision, we will make it happen for you.

Leading partner in the world of metals
Turkey’s Yildiz Iron & Steel starts HDG production

New Turkish flat steel producer Yildiz Iron & Steel has started production of hot-dipped galvanized coil at its facility in Kocaeli, the company stated on Monday July 2.

The mill has capacity for 400,000 tonnes per year of HDG, and a temper mill with capacity for 450,000 tpy.

The HDG will be made in gauges of 0.20-3.00 mm and in widths from 700 mm to 1,300 mm.

Yildiz Iron & Steel started production of pre-painted galvanized iron (PPGI) at Kocaeli in March 2018.

The company will start producing cold rolled coil at a rate of 1.5 million tpy in September this year.

India rising as steel producer, feedstock importer

The world’s largest coking coal producer, BHP, is “cautiously optimistic” about India’s economic potential, with the country on the brink of becoming the top importer of the steelmaking raw material.

India’s coal imports are expected to hit 69 million tonnes by 2020, when it will overtake China as the top importer of coking coal, according to the Australian government’s latest Energy and Resources Quarterly report.

Growing demand for the steelmaking raw material in India is expected to stem from its rising steel production capacity, driven by infrastructure growth.

Zekelman’s Alabama Z Modular plant open

Zekelman Industries’ new Z Modular plant in Birmingham, Alabama, has begun production, the company said on Thursday July 5.

The modular manufacturing facility, which assembles steel frames out of hollow structural sections (HSS), is busy fulfilling an order for an affordable-housing project in the city of Washington, according to Zekelman.

The 125,000 sq ft Birmingham location employs 41, which could potentially rise to 100 workers at full capacity, the company said.

The new Alabama plant sources HSS from Zekelman’s nearby Atlas Tube mill in Birmingham.

Second Big River mill on track; Brownsville in lead?

Big River Steel in the United States continues to explore building a second greenfield flat-rolled steel mill, possibly in Brownsville, Texas, according to sources familiar with the matter, who noted that the steelmaker’s doubling of capacity at its existing flat-rolled mill in Osceola, Arkansas, will not slow that process down, reported American Metal Market.

Exactly when Big River will build a new flat-rolled mill — whether in Brownsville or elsewhere — depends on a variety of ongoing processes, including site selection, engineering and environmental studies, AMM’s sources said.

Big River Steel last week announced an expansion at its US manufacturing complex in Osceola that will double its flat-rolled steel production capacity to 3.3 million tons per year.

Possible new US tariffs on EU car imports

New tariffs threatened by the United States on imports of cars from Europe could jeopardize as many as 1 million jobs in manufacturing and 3.3 million jobs in the retail sector, according to the European Union.

Finnfjord producers 75% grade ferro-silicon, which it sells to customers in continental Europe and the United Kingdom.

Bristol buy of Marcegaglia galv tube operations done

Bristol Metals LLC has completed its acquisition of Marcegaglia USA’s galvanized tube operations for $10 million, parent company Synalloy said on Monday July 2.

The agreement, announced in May, includes manufacturing equipment and inventory at the Munhall, Pennsylvania, facility where Bristol Metals already operates other tubing operations acquired from Marcegaglia in 2017.

The deal involved a sale-leaseback agreement, with Synalloy also refinancing an asset-based credit facility to $80 million from $65 million, the Richmond, Virginia-based company said early in July.

SDI completes $400m CSN Heartland buy

Steel Dynamics Inc (SDI) has completed its $400 million purchase of Heartland Steel Processing LLC, the former US operations of Brazilian iron ore and steel producer Cia Siderurgica Nacional (CSN).

The acquisition increases SDI’s flat-rolled steel shipping capacity to 8.4 million tons per year and gives it more exposure to light-gauge and wide-width markets, the company said.

Formerly known as CSN LLC, the Terre Haute, Indiana, flat-rolled steel processor has a cold-rolling capability of 1 million tons per year and galvanizing capacity of 60,000 tpy, SDI said, adding that it also makes pickled-and-oiled material.
Market analysis

### Aluminium

**Price forecast lowered, fundamentals mixed**

Aluminium prices appear to be steadying around $2,100 per tonne in early July, having unwound virtually all of the Rusal sanctions rally that peaked in mid-April. We are forecasting a global deficit of around 700,000 tonnes this year, but the risks are stacking up in favor of it being reduced. Uncertainty clouds the market while trade is being disrupted by sanctions and tariffs; demand looks fragile on softer economic data, while North American aluminium production is being incentivized to ramp up and Chinese production grows. The persistent LME backwardation is drawing metal into exchange warehouses, which will weigh on sentiment. We have revised lower our price forecasts for Q3 and now see the base case average at $2,100 per tonne. Our previous forecast was $2,280 per tonne. It is not all bearish. In China, high electricity tariffs, lower prices and government efforts to regulate captive power plants may restrain production in H2.

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### Lead

**China tightness spreading West**

Lead has been a resilient base metal as others have fallen in June and early July. That reflects lead’s tight fundamentals, which positions it to recover when sentiment reverses. The Chinese lead market is tight, as demonstrated by the fall in SHFE and bonded stocks, which amount to 37,000 tonnes as of early July; a small cushion in a 5 million tpy domestic market and one which was in a 66,000-tonne deficit in 2017. Lack of Chinese trade data makes it hard to confirm that China’s lead imports have picked up. We think they must have given the internal stock drawdown, open arbitrage window, higher premiums and SHFE backwardation—all suggesting a tight market, capable of sucking in metal from abroad. That will spread China’s tightness to the ex-China market, where stocks are low and premiums higher in Asia on Iranian supply disruptions. We are sticking to a bullish Q3 forecast of $2,520 per tonne.

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### Copper

**Still reasons to be bullish**

Copper fell by more than $1,000 from June’s four-and-a-half-year high of $7,348 per tonne to one-year lows in the first week of July. But there are a number of bullish copper-specific factors that should ensure this market’s fundamentals tighten further in H2 and allow prices to recover off this base level, despite weaker macroeconomic indicators and concerns over trade tensions. These include scrap restrictions and environmental inspections in China tightening supply and boosting demand, unplanned smelter outages across Asia, the threat of summer mine strikes in Chile and a solid background demand level. So although we have lowered our base case price forecasts for Q3 and Q4 by $200, to $6,900 and $7,200 per tonne, respectively, to reflect the weaker macro environment and risk-off sentiment, we are still forecasting a swing to an uptrend this quarter, as opposed to a continuation of the recent downturn. Much depends on sentiment around the US-China trade war.

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### Nickel

**Solid fundamentals protecting the downside**

Nickel has been undergoing a healthy corrective move lower. Unlike some of its peers, nickel’s correction has been in an orderly fashion, with prices consolidating either side of $14,000 per tonne in early July. Further downside should be limited due to nickel’s positive fundamental backdrop, which includes: 1. an underlying supply-demand deficit reinforced by falling exchange stocks; 2. strong demand from the stainless sector on major capacity expansions in Asia; 3. China’s tighter environmental policies keeping a cap on NPI production there; 4. struggling Philippine miners facing an unfriendly government and weaker ore prices for their bread-and-butter lower grade material, now that Indonesia is shipping favorable higher-grade material again; and 5. optimism about the long-term shift in EVs. Protagonists in the auto/battery supply chain are possibly even dip-buyers now, such is the eagerness among some to lock in tonnage of Class 1 nickel units. Our Q3 price forecast is $14,400 per tonne.

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In this regular section, Metal Bulletin Research’s base metals team summarise their in-depth reports to highlight key factors driving the markets and their short-term price forecasts. The weekly
Tin

Good call on Q2 price, what for Q3?

In line with our expectations, the LME tin price came under downward pressure in Q2 due to the surge in Indonesian tin exports. The LME Q2 average cash price ended up at $20,961 per tonne, virtually spot-on our long-standing forecast of $21,000. We think the majority of Indonesia’s debottlenecking is done. Despite uncertainties over China’s supply outlook, we still model the global market in a small net deficit in H2. That should see prices stabilise in the $18,750-22,000 per tonne sideways range that has constrained trading since H2 2016. We do not see anything bullish nor bearish enough to justify a break from this. The early July low was $19,300 per tonne, so there is more room for tin on the upside — consistent with our view on other base metals that have become oversold and due a rebound. Our base case tin price forecast for Q3 stays at $20,750 per tonne.

Zinc

Have bears jumped the gun?

Zinc prices undershot our expectations, falling by $500 in the space of three weeks in late June and early July. Dip buying finally emerged around $2,700 per tonne, but in view of the rising trade uncertainties, buyers are likely to be cautious. The latest ILZSG data showing still no growth in global mine production, combined with a lack of recovery in TCs and talk of smelters in China being forced into production cuts again, all suggest persistent tightness in zinc concentrates. That in turn warns that zinc fundamentals may take longer to rebalance. We have trimmed our estimates for Chinese zinc production and are now modelling a slightly deeper global deficit in 2018. The zinc bears may have jumped the gun. Our Q3 forecast of $3,200 per tonne is unchanged, after prices averaged $3,113 per tonne in Q2 — in line with our forecasts. We continue to forecast a global deficit in Q3 for tin on the upside –

Steel

US HRC price rise may be curbed by higher output

The domestic hot-rolled coil market in the United States has remained the best performer among international benchmarks in the mid-May to late June period. Local HRC prices have been steadily trending upward and rose by $36 per short ton over the course of 1.5 months, reaching an average of $916 per ton fob mill in the week ended Friday June 29, amid Section 232 decisions. This compares with an $8-per-tonne increase in the Chinese export HRC market to $595 per tonne fob main ports.

Meanwhile in the CIS region and the European Union, the prices declined over the period by $18 and €10-13 ($12-15), respectively, to $568 per tonne fob Black Sea and €530 and €558 per tonne delivered in southern and northern parts of the EU, according to Metal Bulletin.

While US local HRC prices are yet to fall, a significant increase in slab import volumes in June suggests that rolling operations are preparing to boost production, which had been in decline earlier in the year. A rise in flat steel product output will likely put pressure on the elevated HRC prices, MBR believes.

According to the latest available license data, blooms, billets and slabs posted the biggest month-on-month gain among all the products, with imports licensed at 799,670 tonnes in June, up 95% from 409,471 tonnes in May.

Semi-finished product imports from Brazil and Russia climbed significantly; the latter to 304,640 tonnes from only 69,571 tonnes in May. Given that US sheet prices continue to rise and flat steel imports finally appear under pressure because of the Section 232 measures, it is little wonder that sheet and plate mills have finally been attempting to increase production, which would explain the recent slab import figures.

Interestingly, the biggest step-change on a month-on-month basis was from Russia where a 25% duty on imported semi-finished steel is applied, unlike from Brazil. But even with a duty-paid price, importing slab is still a great way to make money as it supports an almost unprecedented (two-year) high and rising margins on hot-rolled coil sales (see chart).
Experience matters. We believe imagination matters too. Curious minds question everything to find groundbreaking solutions. There is still so much to discover. So many great opportunities.

We love the heat and we love the cold. We love the glow and we love the dust. We love the quantum leaps and the small steps. We love to innovate and we love to be challenged. We love metals and we will change the way you produce it.

We are pioneers at heart.
Steel raw materials

Gap between high and low Fe grade iron ore products widens

Metal Bulletin 62% Fe fines index averaged $65.23 per tonne cfr Qingdao in the week ended Friday June 29, down by $1.72 per tonne from seven weeks earlier. Meanwhile, the 65% pellet index rose by $6.04 per tonne over the period to $117.32 per tonne cfr, and pushed the already high pellet premium further up. As the chart shows, the pellet premium peaked in October last year at 97% and although it fell for the following four months, it still remains elevated.

Behind the rising demand for pellets in China is a structural demand shift, brought on by the Chinese authorities as they enforced stricter environmental regulations to control emissions and pushed for cleaner and more efficient productions from larger mills. These larger mills use a greater share of pellets to balance the blast furnace load. The pellet premium is likely to hold up in the short term, but supply will increase to meet the growing demand and drive down the premium by the end of 2019, MBR believes.

Producers of high Fe-građe products already plan to increase output to respond to growing demand. Vale aims to reach 65 million tonnes of pellet production by 2020 and LKAB recently applied for a permit to achieve an output increase from 14.8 million tonnes to 23 million tonnes of finished iron ore products; Anglo American is upgrading its Kumba portfolio.

High coking coal prices have also had an impact on the iron ore market as steel mills have aimed to reduce their cost by limiting their use of low grade ores, thus lowering the need for coking coal. Metal Bulletin benchmarks for fob Australia coking coals rose by $10.28 per tonne over the course of 1.5 months for hard coking coal and by $10.31 for premium material.

We continue to anticipate a softening trend in line with our demand projections for the third quarter. However, the price drop is likely to be limited as persistent demand for higher value coals in China, amid a stronger-than-expected outlook for hot metal production, should limit the discounts from Australian miners.

High steel mill margins do seem to encourage higher quality ore and pellet consumption, MBR calculations indicate. For the past three years, the correlation between the average real-time operating margins for Chinese hot-rolled coil producers and the premiums for 65% Fe fines and pellets was 71% and 79%, respectively.

Our data also shows the discount for 58% Fe fines increases with rising HRC margins and the correlation there is 72%. The link between rebar producers and the iron ore quality spreads are slightly weaker, with a 68% correlation for 58% Fe fines and 61% for 65% Fe pellet, but both are still statistically significant.

As to the question of Chinese steel mill margins leading to increased productivity, the answer is more nuanced reflecting supply-demand fundamentals. Overall, Chinese mills do not simply produce more because their operating margins increase. There is no statistically significant correlation between operating margins for steel mills and total crude steel output or blast furnace utilization rates in China. Instead, we have to look into regional variances and the different steelmaking margins before we can see a link.

In north and east China, the operating margin for neither HRC nor rebar producers has any significant impact on the blast furnace utilization rates. In northeast China, however, the question of steelmaking profitably appears to have a larger impact on production, measured as blast furnace utilization rates. There, the correlation between blast furnace utilization and operating margins for rebar and HRC is 70% and 56%, respectively.

Analysis by Aliona Yunda, Metal Bulletin Research
It took a few years longer than her classmates at Uniontown High in Southwestern Pennsylvania predicted, but the Class of 1990’s crystal ball proved close to clairvoyant last year when Carol Jackson took the reins of the oldest and largest refractory producer in America.

“I missed it by five years,” the president, chairman and chief executive officer of Moon Township, Pittsburgh, Pennsylvania-based HarbisonWalker International (HWI) reflects on the prescience of her classmates’ senior-year prediction that she would be the CEO of a multi-national corporation by age 40. “But I gave myself that deadline,” Jackson, 46, says.

Today, HWI’s top executive, who was unanimously elected to the post that she assumed in July 2017, after serving three years as senior vice president and general manager of the company, is in the midst of a multi-pronged, people-centric, analytics-informed push to make HWI “the first and only call for industry.”

Initiatives along the way range from a rigorously researched and carefully implemented rebranding program that re-launched the ANH Refractories family of companies under a ‘new’ name (HarbisonWalker International) and spirit in 2015 to the startup, only weeks ago, of a $30 million refractory plant in South Point, Ohio, which Jackson describes as “completely revolutionary.”

These days, HWI – like other suppliers to the US steelmaking sector – is riding a swell in mill sentiment. “Steel definitely is keeping us busy right now,” Jackson says. “And what’s good for steel is good for us. The entire value chain, whether it is those of us who support steel or downstream at the service center level, is very optimistic.”

Hot stuff
At last look, iron and steel accounted for an estimated 70% of refractory consumption by industry, easily dwarfing other consuming sectors with non-ferrous metals pegged at a much more modest 3%, glass at 4%, chemicals at 6%, and lime and cement at 7%. And although refractory materials, as consumables, account for 2-3% of steel production cost, “they have much greater indirect influence on steel production,” noted Rakesh K. Dhaka, a senior research engineer (Refractories) at Pittsburgh-based U.S. Steel Corp in an April 2017 paper.

Jackson, who brought more than two decades of experience in the paint, coatings, chemicals, glass, ceramic materials and specialty steel sectors with her to HWI, could not agree more. “Our industry is incredibly important to steel and others,” she conurs.

To serve a customer base that cuts across industries ranging from steel and power generation to petrochemical, incineration and pulp and paper and spans countries around the world, HWI currently counts more than 1,800 employees operating...
Profile

19 manufacturing plants in North America, the United Kingdom and Indonesia. Add to that 30 Global Sourcing Centers (GSCs) located throughout North America and a contractor/installer network that includes more than 100 companies in North America and around the world.

Enter asbestos
The fact that HWI is not only standing but stable, meeting its near-term financial goals and driving forward to capture growth is no small achievement given the tsunami of asbestos-related lawsuits that hit refractory producers and other industries some 18 years ago. At the same time, the US refractory sector was undergoing consolidation. In moves keyed to deal with the mounting asbestos liability, three assets — A.P. Green, North American Refractories (Narco), and Harbison Walker — were bundled under one umbrella and called ANH, a name derived from the first letters of each company’s name. The combined entity was no sooner formed than it filed for bankruptcy in 2002.

Today, some 16 years later and as part of that legacy, HWI is privately held, owned by two Trusts and governed by a Board of Directors. Although ANH, the predecessor company, emerged from bankruptcy in 2014 — the same year that Jackson joined the refractory producer — it surfaced suffering from what could be called a corporate identity crisis.

“The three companies were never integrated,” Jackson reflects. “The Narco guys stayed the Narco guys and the Harbison guys stayed the Harbison guys. When the company emerged, we were kind of in neutral,” she adds. “We were kind of in limbo for 12 years.”

Driving forward
“Life shifted out of neutral and in an effort to identify what is great about us,” Jackson, an avid reader and meticulous researcher, rolled up her sleeves and dug in. “The first challenge and one of the things I am so happy I was able to be a part of was a lot of research, talking to our customers, talking to our employees to understand who we are because we needed to rebrand,” she recalls. The feedback was telling. “We had really good participation across industries, strong brand names and there was not a customer I visited that didn’t say how great our people are,” HWI’s top executive notes. Research also showed that the name that emerged as the strongest, top-of-mind customer awareness and no negatives was Harbison.

“That was our first decision,” Jackson says. “We are moving to Harbison Walker, drop the ‘Refractory’ and add ‘International’ because we have aspirations.”

A name change is one thing, but getting employees to understand the need and buy into the rebranding and culture change that comes with it is something else. “It was a real commitment on our part to get that done,” Jackson emphasizes. “Because it’s my personal opinion if I don’t have everybody saying I’m Harbison, if we are not part of that family, then we are still fighting against each other. Common name, common identity, common brand,” she says.

Add to that a common culture, one built from the ground up as part of the rebranding and carefully constructed around giving employees a voice. “Our cultural values and the beliefs that support those values were all driven by our people saying this is what we want to be,” Jackson explains.

“Fundamentally, we built this program around the culture we aspire to be,” she elaborates. “And you start with the results you want to accomplish, results that are based on people’s actions, which, in turn, are informed by their beliefs and experiences.

“We wanted to achieve different results,” Jackson acknowledges, commenting on the objective behind the rebranding and growing number of initiatives she has championed, spearheaded and/or been part of over the past four years. “We want to grow, top line and bottom line. We want to be an investable enterprise moving forward, creating value for our shareholders. And to achieve different results, we have to start at the bottom and create new experiences,” she adds. “Those experiences are built around our cultural beliefs like ‘Drive Forward’ and ‘Engage Others.’”

Full steam ahead
Driving forward in pursuit of growth, HWI has begun shipping product from a newly constructed, $30 million, monolithics manufacturing plant located in South Point, Ohio. “We are not full-scale commercial yet, but we are up, running, and shipping to customers with a lot of feedback requests,” Jackson told Metal Market Magazine in mid-June. “In fact, we are sending people on-site to make sure the products work right and the customers are happy. It’s like no other, certainly in our world,” she sizes up HWI’s newest production facility. “And I would argue probably it’s new to the refractory industry.”

“A lot of the equipment is similar to what our competitors might have or we have,” Jackson allows. “But the configuration, our approach, our adoption of automation and putting it all together in that combination is completely revolutionary.”

Describing the new facility, HWI’s top executive uses words ranging from “super lean” and “nearly no-touch” to “maximum efficiency,” emphasizing that it is the configuration of the plant’s equipment — the way things are structured — that is proprietary. “It is a configuration that is unique to us with the exception of packaging,” Jackson points out. “We’re implementing a state-of-the-art, world class, form, fill and seal packaging system that came from different industries.”

Startup of the new plant has brought with it the need for a different skill set on the part of its operators. “We need folks who are familiar with automation, who understand and can work with different process controls, think analytically, and are able to move around to do different jobs,” Jackson notes. “It’s an extremely flexible workforce there so they can back each other up. It is very much a team-based environment.”

“We’re implementing a state-of-the-art, world class, form, fill and seal packaging system that came from different industries’

‘It is very much a team-based environment,’ says Jackson
While Jackson stops short of disclosing the details of any future expenditures, expansion or right-sizing plans, she makes it a point to note that HWI is always looking at footprint. “Part of the challenge is where the market is going,” Jackson says. “And certainly where steel goes, we go.

“The reality is just the sheer volume of refractory materials that are consumed in steel drives refractories,” she adds. “And, even within that, the types of products, the chemistries realy drive the decision with each facility because each plant is set up to manufacture certain types of products.

“We will always have a need to evaluate our footprint and be thinking about where products should be made and what the future looks like,” Jackson allows. “What we are focusing on now is improving efficiency at our current operations, becoming more cost-efficient and doing what we can to get to a cost structure that gives us the flexibility to deal with the ups and downs of the business cycle.”

“That is the aspiration,” she says. “The notion of being flexible and having the ability to flex is really important to us.”

Trade tensions
Although no stranger to trade actions — the US refractory industry has filed cases against certain mag-brick from China — HWI’s Jackson stops short of assigning full credit for the recent upswing in steel prices and strengthening industry sentiment to the implementation of Section 232.

“Do I think 232 is helpful?” she asks rhetorically. “Yes, but I think it is a factor. I think there is a lot working in our favor. Right now, the market is up. The entire value chain is experiencing lift and that is going to help us all,” she observes. “Ultimately, I am hopeful we will get to a place of fairer trade. I don’t think we have all the solutions in place and there will be lots more sound bites and a lot more provocative comments from any number of government officials.”

Jackson, whose blue-chip résumé includes a 13-year stint at PPG Industries, where she led the team responsible for the purchase of the entire $5-billion portfolio of raw materials for all business units globally, is intimately familiar with the ebb and flow of global economic dynamics.

“Certainly, there are geopolitical concerns,” she says, acknowledging the potential for retaliatory actions launched in response to the imposition of tariffs and/or countervailing duties on certain products by one trading partner on another. “China is a concern,” she goes on to note, zeroing-in on refractory raw material supply. “And it has nothing to do with buying cheap materials.”

“For us, China is a mineral-rich resource. It is where the raw materials are located,” Jackson explains. “We’ve spent a lot of time building our capabilities in our supply chain and procurement functions. And that includes growing a team of Chinese-speaking professionals deployed both in the US and China to ensure we are getting those materials.”

“Security of quality supply is number one with us,” Jackson emphasizes. “And those materials come at higher prices. China is withholding explosives permits, which means less material mined,” she goes on to add. “And that means further constraints in supply, which will help keep prices up.”

“What this tells me more broadly is China is truly looking to be a global player,” Jackson concludes. “In the end, I think we will get to an equilibrium of supply but at a higher price. And that is not necessarily a bad thing.”

Meanwhile, back home
Closer to home, Jackson is busy keeping a careful eye on the progress and real-world results of a growing family of initiatives launched under her leadership while staying fiercely committed to retaining the deep-rooted values, traditions and institutional knowledge of the company she is evolving.

“We are not your old refractory company,” she says. “I really am committed to keeping the stuff that is working well. There’s a heritage of knowledge and deep industry relationships that I absolutely want to retain.”

“But let’s pepper-in supply chain concepts that are state-of-the-art, let’s pepper-in automation, let’s pepper-in new technology and open innovation,” Jackson emphasizes. “In my view, that is how we are going to completely change the game in refractories. And that is exciting.”

Jackson, who was born and raised in Southwestern Pennsylvania, cites her childhood experience growing up on a family farm — and participating during her youth in a Junior Achievement (JA) program — as key factors influencing her approach to business and the arc of her career.

“I was raised on a farm but my parents had daytime jobs on top of that,” she elaborates. “So, I had two working parents, hard-working at that. That’s how I grew up,” Jackson says. “I learned the value of a hard day’s work. I learned respect. I had the city and the country. I had diversity in my own little bubble.”

Her involvement in a JA program, sponsored by the company her father worked at as a human resources executive, opened a new and different world. “I discovered that I liked this business thing,” Jackson reflects. “I liked the idea of making something. That is why Junior Achievement is so near and dear to me. It formed who I am,” she says. “It gave me that taste for business, making stuff and industry.”

In the midst of a myriad of forward-looking initiatives ranging from overseeing the implementation of ERP to leading HWI’s Open Innovation program, Rapid Technology Advancement Process and newly launched Intellectual Asset Council, Jackson is looking forward to a future very much formed and in her hands.

“We are just so busy,” she says. “I love the journey we are on, but I will tell you I am looking forward to the day when we get to a steady state. “I cannot wait to see when things are settled and we’re rockin’ and rollin’ and we’ve got the tools to run this business,” Jackson adds. “We are going to be unstoppable.”
Upbeat but stressed in the United States

While a significant pick-up in steel and metals demand in the United States is welcomed by its service centers and is fueling an optimistic business outlook, challenges – such as those created by uncertainties about future government policy, balancing inventories and the strain that more shipments place on logistics – are tempering their positive mood, reports Myra Pinkham

US metals service centers are having a very good year – perhaps the best they have had in the past ten years. But they are concerned about the impact of trade and transportation issues, and what appears to be a growing level of uncertainty about the future for business.

After a long period of decline, metals service center shipments started to turn upwards last year and they are continuing to build on that positive trend, helped by robust demand across all major end-use market sectors, according to Bob Weidner, president and chief executive officer of the Metals Service Center Institute (MSCI), which represents carbon steel, stainless steel and aluminium distributors.

MSCI reports that US service center steel shipments, including stainless steel shipments, were up 4.7% year-on-year in May. US service center aluminium shipments were up by 6.1% over the same timeframe. Canadian service center shipments were also up — by 1.5% for steel and by 3.1% for aluminium.

The story is similar for US copper and brass service centers. Garret Herringdon, who is president of the Copper and Brass Servicenter Association (CBSA) as well as general manager of Southern Copper & Supply Co Inc, Pelham, Alabama, observes that while service centers’ red metals shipments have been strong, albeit at a steady level, for the past year or so, the rate of growth has strengthened over the past three to four months and could continue to trend upwards.

CBSA reports that US service center red metals shipments were up by 6.9% year-on-year in April, including a 4.9% increase for copper products and a 9.0% increase for brass and other copper alloys.

This comes as the US economy, including a broad number of metal-intensive sectors such as manufacturing, construction and energy sectors, are seen as being strong and growing. While slightly slower than some predictions, the US economy continues to grow more quickly than most other regions in the world — 2.0% in the first quarter by contrast with 1.2% a year earlier and 2.9% growth in the fourth quarter of 2017.

The Institute for Supply Management’s manufacturing purchasing managers index remains quite strong at 60.2% in June — its highest level since September 2017. This, according to Christopher Plummer, managing director of Metal Strategies Inc, West Chester, Pennsylvania, comes on the back of a 3.4% increase in US industrial output. This includes a 32.2% increase in North American heavy-duty truck production, a 13.5% increase in US construction equipment, and a 5.0% rise in US farm equipment output — as well as a 6.4% increase in US home appliance shipments. Also, even though year-to-date US auto output was down slightly — by 1.3% — Plummer says that given that May light-vehicle production was up 5.0% year-on-year, it could be up for the year as a whole.

“While North American light vehicle output might have flattened somewhat, still over 17 million vehicles are expected to be produced this year, which is pretty high,” MSCI’s Weidner points out.

Also, according to Bob Mraz, vice-president of sales and marketing for Exton, Pennsylvania-based TW Metals Inc, metals demand by the aerospace sector has been on the rise due to increased production of not only commercial planes, but also business jets, helicopters and drones. This has not only meant demand for more aluminium and stainless steel but, helped by increased use of composites, more titanium use in both aerospace airframes and engines.

‘Trucking is a blinking red light that we are challenged with and that we struggle with every day’
Energy and construction

Rising energy prices have also boosted both ferrous and non-ferrous metals demand. CBSA’s Herringdon says that it is for oil and gas applications that copper and brass service centers are seeing the biggest impact. There has also been a big uptick in steel energy pipe and tube demand, especially for seamless tubulars, Plummer says, noting that demand for seamless oil country tubular goods (OCTG) was up by 31.0% year-on-year and 22.3% year-to-date through May. All indications are that pipe and tube demand will continue to rise, with West Texas Intermediate crude oil prices rising over $74/barrel on the New York Mercantile Exchange (Nymex) and Brent crude oil prices at nearly $79/barrel in early July. Also, Nymex natural gas prices have been hovering at about $2.95 per mmBtu.

Plummer also notes that the US construction sector has been strong this year, with steel-related demand from that sector up by 8% year-on-year in May, including a 20.3% increase in housing starts, a 6.1% increase in non-residential construction and a 7.7% increase in public works construction. The improvement has come even without the long-anticipated infrastructure investment plan that President Trump has been actively promoting. Congress is not expected to consider such legislation until after the mid-term elections in November at the earliest.

Pent-up demand

Several factors have been supporting service center metals demand. This, according to Zachary Siegal, vice-president of strategic development at Bedford, Ohio-based Olympic Steel Inc, includes the enormous amount of pent-up demand over the last several years as companies are still continuing to recover from the global financial crisis of 2008-09. “Also, the recent tax and regulatory reform has definitely helped our customers to be more competitive and has provided additional certainty on a go-forward basis,” Siegal says. “Because of this, including changes that have been made regarding depreciation of capital expenditures, we have seen a lot of capital projects requiring the use of industrial metals moving from the drawing board and getting implemented or executed,” Weidner says.

Also, consumer sentiment as reported by Thomson Reuters and the University of Michigan was up again in June to 98.2 points, just slightly below expectations, largely due to the uncertainty about the ultimate impact—including the potential of a trade war—of the steel and aluminium Section 232 tariffs. Especially with mill lead times generally extending—
including some reported instances of metals producers falling behind and delivering products even later than promised — service centers have been benefitting from these trends. “A lot of customers are asking service centers to take on more roles, including holding more inventories for them or doing more processes for them,” Herrington points out. “Many of our customers are asking us to act as a one-stop shop.”

**Challenge of uncertainty**

The US metals service center market is not without its challenges, not least of which is a general air of uncertainty about what the future will bring. “There are so many unknowns right now, especially those related to trade issues including the Section 232 tariffs, other trade cases and the possibility of a trade war,” says Stephen Armstrong, president and chief executive officer of Birmingham, Alabama-based O’Neal Steel.

He says that while it is still too early to tell what the long-term ramifications will be, there is always the risk that there will be some unintended consequences or fallout from the tariffs that could eventually swing or stifle demand. “While I don’t see that happening in the short term, it is too early to tell what will happen longer term.”

“The idea is to balance the merchandise trade balance, which is a good goal, but I’m not sure what is being done will accomplish that,” Bill Hickey, president of Lapham-Hickey Steel Corp, states.

Already supply has begun to tighten, notes Chris Billman, market research manager for Cleveland-based Majestic Steel and author of the service center’s CORE Report. “This is not just because of increases in demand,” he says. “Supply started tightening in 2016 because of anti-dumping (AD) and countervailing duty (CVD) trade cases and has now tightened further with the Section 232 tariffs, which have resulted in extended mill lead times, which will move out further with the surprise decision by the Trump administration to lift the temporary exclusion of the Nafta countries and the European Union from the Section 232 tariffs.”

Very few, if any, service centers expected the Trump administration to place tariffs on those countries — the United States’ top trading partners, according to Lisa R. Goldenberg, president of Fort Washington, Pennsylvania-based Delaware Steel Co. That, she says, has caused a bit of a frenzy at many service centers. “Everyone is rushing around trying to figure out what to do.”

Tariffs on Canadian imports are perhaps the largest concern, Billman says, noting that 25-30% of all US steel imports come from Canada.

He agrees with Armstrong that in the short- to medium-term it will probably not be much of a problem, although in the longer term it could create problems in the supply chain, especially a recent move on both the mill and service center levels toward more long-term contracts.

That is also assuming that the tariffs on Nafta nations will stay in place long term, which is far from a certainty. TW Metals’ Mraz, like many other service center executives, believes that this tariff is a bargaining tactic for the renegotiation of the Nafta agreement. “I would be very surprised if those tariffs are still in place by October or November,” he says.

One thing that is for sure is that the tariffs have created a lot of uncertainty. In fact, Jim Barnett, chairman and chief executive officer of Grand Steel Products Inc, Wixom, Michigan, says that the tariffs have been hanging over the market all year, making it hard for service centers to know how to react, as they do not know whether there will be enough available metal to meet customer needs or whether it could adversely impact demand should some service center customers be priced out of the market.

For example, American Metal Market’s Midwest steel hot-rolled coil index moved up to $915.60/short ton as of the end of June, which is up by 55.6% from $588.60/ton a year earlier. By comparison, the LME aluminium price was $2,163 per tonne at the end of June, which, while down from about $2,300 per tonne the previous month, was 14.6% higher than a year earlier.

Barnett says that he has already heard that some of his company’s customers are looking at bringing some duty-free stamped parts in from overseas, counter to what had been a recent trend to buy components produced in the United States instead of those from China and elsewhere in the world. “If this continues it could eventually impact our sales,” he says.

Goldenberg says that concerns that this could result in a price correction is making some service centers “not just cautious, but paranoid and neurotic” about their inventories, caught between the need to have enough inventories to meet their customers’ needs and ensuring that, should prices come down suddenly, they are not caught with too much high-priced inventories.
“This is especially important given that companies know that the next presidential tweet could cause things to change dramatically,” she says.

**Tightening supply**

The tightening of supply is causing greater pricing volatility than normal and, with domestic mills’ order books filling up faster than some have anticipated, it is creating a have/have-not division among different service centers, depending on their inventory management and metal buying strategies, according to John Tumazos, president of Very Independent Research LLC. He explains that companies that are historically import buyers will have more problems getting metal than those that have strong buying relationships with domestic mills because they have to make new friends and will need to pay a higher price for their metal.

“Trees don’t grow to the sky, so at some point in time pricing is going to reach a crescendo and we want to make sure that we are appropriately inventoried for whenever that might happen,” Siegal points out, noting that in this environment Olympic Steel has been very mindful about how it is turning its inventories, how it lives up to its commitments to its customers and to be disciplined about what inventory it brings in.

There are other factors that come into play. For example, Craig Mathiason, president and chief operating officer of Jemison Metals, says he believes that his company has a competitive edge in this marketplace because not only are all its purchases done on a contractual basis, but it has technologies in place to meet its customer demand even in times of tight supply.

Mike Young, president and chief operating officer at Klein Steel Service Inc, while admitting that he could not with 100% certainty say what impact a possible trade war could have on his business as he — nor anyone else in the industry — has never experienced a trade war, says he is confident that his company’s strategy of turning inventories as quickly as possible and managing their business as they have in the past — week by week, month by month and quarter by quarter — will enable it to successfully adjust to the realities to the marketplace.

Herrington says that some service centers have found that in this business environment it is difficult to inventory everything that anyone might need. “While we would like to be everything to everyone, Southern Copper and several other service centers aren’t stocking as many different sizes and alloys as we used to, keeping them more finely tuned to what most of our customers need,” he explains.

This could provide an opportunity for some other service centers to fill in that gap. For example, Barnett says that sales to other distributors accounts for 20-25% of Grand Steel’s sales.

**Impact on aluminium**

Service centers appear to be even more challenged when it comes to aluminium than for steel. One reason is that, according to Tumazos, about 60% of the primary aluminium consumed in the United States is imported, therefore subject to the 10% Section 232 tariffs.

However, according to O’Neal Steel’s Armstrong, while the Section 232 tariffs are having an impact, it has been the AD/CVD cases — both on aluminium common alloy and foil — that have had the biggest impact upon stilling aluminium imports — both from China and elsewhere in the world — making it very difficult for service centers to procure the aluminium that they need. “A healthy amount of imports is needed to keep things in balance and to help supply a market that isn’t self-sufficient yet,” he points out. That is even with recent announcements by several companies that they will be restarting idled US smelter capacity.

Matt Meenan, a spokesman for the Aluminum Association, observes that there is still only about 2 million tonnes of available aluminium smelter production in the United States (including still-idled capacity), while last year the US market consumed about 5.5 million tonnes of primary aluminium. Despite this, Tumazos says it would take a 50%, not 10%, tariff to encourage the building of another aluminium smelter in the US, given the high cost of power there.

Availability is much less of a problem for steel, Tumazos says, noting that domestic mills have enough production capacity to supply 80% of US steel demand.

### US steel service center shipments

<table>
<thead>
<tr>
<th></th>
<th>Shipments</th>
<th>% Ch. Yr-Ago</th>
<th>YTD % Ch. Yr-Ago</th>
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<tr>
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<td>3.30</td>
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</tr>
<tr>
<td>F-17</td>
<td>3.27</td>
<td>1.7%</td>
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<tr>
<td>A-17</td>
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<tr>
<td>M-18</td>
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<td>38.63</td>
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*Source: Metal Strategies Inc*

### US steel service center inventory

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<thead>
<tr>
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<th>Inventory</th>
<th>% Ch. Yr-Ago</th>
<th>YTD % Ch. Yr-Ago</th>
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<tr>
<td>M-18</td>
<td>7.43</td>
<td>4.3%</td>
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</tr>
</tbody>
</table>

*Source: Metal Strategies Inc*
Further challenges
While trade is a big concern, Olympic Steel’s Siegal maintains that two even larger challenges for metals service centers are transportation and labor issues.

MSCI’s Weidner agrees that, with the US unemployment rate falling to a 17-year low of 3.8% in May, that is making it hard for service centers to find the new qualified employees they need: “For the first time in recent history there are more job openings than there are people applying for them.”

This, Hickey notes, is not just because of the low unemployment rate, but because of a skills gap with many college students ignoring the trades when looking for jobs on graduation, at the same time as many baby boomers are retiring.

Similar factors are causing a shortage of truck drivers, especially drivers for long hauls. This is an issue affecting whether a service center has its own dedicated truck fleets or is reliant upon common carriers to haul all their loads. Plummer notes that, even though truck and truck trailer production has recently picked up by over 30% year-to-date, that has provided very little relief with the worsening of the driver shortage. Driver scarcity has been exacerbated by stricter hours-of-service regulations and the recent requirement for each truck to utilize electronic logging devices.

“Trucking is a blinking red light that we are challenged with and that we struggle with every day,” Armstrong declares, especially with the available load per available truck currently being at a recent high, reaching approximately 100 flatbed loads per truck in April, up from about 40 loads per truck a year earlier and about 20 loads per truck in April 2016.

Frequently service centers utilize their own trucks for at least a portion of their deliveries to customers. Similarly, the deliveries from their mill suppliers come in via a combination of dedicated and common carrier trucks, so if they have a problem getting trucks it could make an already-late mill delivery even later.

Armstrong says that even through O’Neal Steel has its own dedicated fleet of trucks, it uses common carriers every day for a variety of reasons, including excess capacity needs or when one of their own truck drivers is on vacation or calls in sick.

Given that the problem is not so much the availability of trucks but of truck drivers, Hickey says that one possible solution in the future could be driverless, or autonomous, trucks. “But there are still some issues that need to be worked out before that occurs,” he added.

Service centers today do whatever they can to partner with trucking companies to be viewed as a destination and/or customer of choice. This, Klein Steel’s Young points out, includes loading and unloading trucks quickly and scheduling appointments so that the driver does not have to sit around for long windows of time. “We try to make sure we can offer full truck loads,” which includes convincing customers to purchase larger volumes at a time, Hickey says.

Service centers are looking at other creative solutions to this problem, including also doing more partnering with mills to help get metal in quicker. That, Armstrong says, includes having drop trailers at certain mills or offering to pick up some of the loads with the service center’s trucks.

Another impact of the trucking shortage has been that freight rates, according to Majestic Steel’s Billman, have escalated by as much as 25-30% in certain lanes over the past year. Given their tight margins, service centers pass along as much of this cost as possible, Olympic Steel’s Siegal says. “It is a cost that we can’t absorb. By and large our customers understand that because they are feeling the same pain when they are shipping their products.”

Barring any surprises, MSCI’s Weidner says that he is optimistic that 2018 will continue to be a good year for metals service centers: “Consumer confidence is up. Metal shipments have been up across the board and just about every major metals end-use market seems to be heading in the right direction.”
Steel of West Virginia’s drive to add value

Welding, punching, wax coating and batch galvanizing are processes more readily associated with service centers or manufacturing than steel mills, but Steel of West Virginia’s mini-mill has invested in all of them. Nat Rudarakanchana visited to discuss value-added strategy at the SDI group mill.

That target market has shaped SWV’s physical structure and business model, influencing the layout of the urban steelmaking campus, down to the individual welding and sawing lines.

Similarly, the mill’s customer base has ensured that its equipment and capabilities do not stop short after the usual melting, casting and rolling stages typical of a mini-mill. These OEM steel buyers required such technical expertise that SWV eventually started processing and fabricating steel products, said Mark Gilliam, the company’s vice-president and general manager, promoted to the mill’s leadership role at the start of 2018.

“For decades, we provided cut-to-length, fabricated, coated parts,” said Gilliam in a wide-ranging interview with Metal Market Magazine, prior to a mill tour on site in late April. “So we’ve always just looked for ways to expand that, to be a better servicer and supplier to our OEM customers.”

“And because we have that equipment in place, this allows us to do that type of work for other people,” he continued. “We got saw lines because we had to have them, for the OEM guys. But now, if another company wants something sawed to length, that’s not a problem for us.”

That dual role for the mill – both as a steel producer and a place where steel is sometimes processed to a quality expected from a top-tier service center – makes the facility stand out in the US steel landscape.

Even the physical layout of the mill reflects that. Fully 26% of the floor area under roof at the Huntington steelworks is devoted to steel finishing. SWV also benefits from being able to utilize two off-site sister locations – a fabrication and wax coating facility called Marshall Steel in Memphis, Tennessee, and a newer galvanizing facility called Steel Ventures in Wurtland, Kentucky.

On the Huntington campus, one whole detached building is devoted to a robotics line, which coats and stacks thousands of small steel beams. The rest of the facility is dotted with robotic welders, saw lines, paint lines and dozens of skilled operators, all carefully crafting finished steel.

From 2000 to 2018, SWV invested more than $100 million into its processes and equipment to sharpen its competitive edge in processing and steelmaking. That does not include the $18 million Steel Dynamics, Inc (SDI) spent on Steel Ventures, its 60,000 ton per year galvanizing plant opened in September 2017, which is an integral part of SWV’s strategic future.

Within robotics alone, the company’s latest ten material handling robots cost anywhere from $100,000 to $200,000 each, the company’s fabrication superintendent Scott Boggs told Metal Market Magazine.

“Still, we’re not doing anything new that we didn’t do before we had the robots,” remarked Boggs, who oversees the company’s robotics, as he referred to how robots weld or wax beams. “We’re just doing it more efficiently.”
Ranger Steel plate can be found almost anywhere and rail line tank cars are no exception.

More important, however, is the reputation that we put on the line with every project we supply plate for. It is a reputation for offering the best customer service in the business. Plate and service – with Ranger Steel, they line up to make our high quality product complete.
This emphasis on value-added services is an "integral part" of how SWV operates, Gilliam explained. "We want to be responsive and are committed to filling our customers' needs."

"It takes a lot of money, time and effort to provide these value added services to our customers," he added. He explained that SWV follows the lead of its parent company, Steel Dynamics, in going the extra mile to provide steels that resist the sticky label of commodity-grade products, citing other notable finishing capabilities at SDI’s flat-rolled and long product mills in Indiana and Mississippi.

This centralized drive at SDI, to add value to steel products, where possible and profitable, manifests in the paint lines at SDI’s Butler, Indiana and Columbus, Mississippi sheet plants, according to Gilliam. He carefully pointed out how SWV’s business model is paralleled, albeit at different scales and for different reasons, at fellow SDI mills, including the Pittsboro, Indiana SBQ mill and Columbia City, Indiana rail and structural mill, showing a corporate focus on adding value that cuts across business divisions and steel categories.

Many of the same services provided by SWV are offered at Pittsboro, albeit for an entirely different bar product, while heat-treating, turning, straightening and inspection services are also offered there, with capabilities installed as early as 2006. Like SWV, those value-added services are not a minor part of the mill’s operations, as those finishing operations can process up to 300,000 tons of bar per year, or about a third of the mill’s output at full capacity.

Similar to the Columbia line at the mill in Huntington, a $100 million Columbus paint line investment was a relatively recent investment, which began ramping up in early 2017, and was cited in a cover profile interview by SDI CEO Mark Millett, in the June 2018 issue of Metal Market Magazine, as cutting $60 a ton out of supply chain costs alone. Thanks to tightly targeted investments, like such paint line upgrades, SDI can differentiate itself from other US mills by selling value-added products — a helpful tactic in down markets, Millett said then, underlining a theme that has rung true at SWV for decades.

Notably, SDI’s SWV even sometimes obtains steel products made at other SDI mills, especially those that fall out of SWV’s particular range. It is only on “rare occasions” that SWV needs to buy steel from outside the SDI family, he noted. Gilliam noted co-operation, synergy, and the shared strategy of the SDI mills, explaining how they work together for the good of Steel Dynamics as a whole.

**Getting what you need**

A key to the artisanship of SWV is the diversity of its customer base. The company’s steel goes into industrial trucks, trailers and forklifts; into railway systems or automobile lifts; or is used in guard-rail posts, as components for off-highway vehicles, or as bulb flats used to stiffen the hulls of ocean-going ships.

In addition to the core business, up to a quarter of the mill’s output, dependent on demand, comprises common merchant and structural steel shapes that, in turn, form a wide variety of products, including channels, wide-flange beams, and various sections.

Companies in the mining, rail, construction, shipbuilding and energy industries also use the mill’s products, with solar energy specifically cited as a growing end-use market. The mill galvanizes the posts that hold up arrays of photovoltaic cells, which cluster together in solar farms that are increasingly common throughout the Southern United States.

That diversity of applications and end-use markets necessitates SWV’s focus on customized steels, and fits well with the mill’s “just in time” manufacturing strategy. It is easy to produce commoditized steels and stock them on the mill floor, but harder to produce and finish steel made-to-order, which is SWV’s task.

The mill generally has “long-term relationships” with its OEM customers, but that does not necessarily mean a formal long-term supply contract for all such buyers, Gilliam noted. As OEM demand surges, the mill will cut back on its commoditized merchant and structural output; and if OEM demand wanes, the mill will increase the output of more standardized steels, he explained.

“SI has been very supportive in allowing us to spend the necessary capital to do vertically integrated projects that add value to the products and markets we serve,” Gilliam noted. He credited Steel Dynamics’ foresight as enablers of SWV’s success.

And just as a focus on processing allows SWV to prosper, the mill’s supply of fully finished and ready-to-manufacture steel products allows OEMs to focus on their own priorities. “Having the tools to supply finished parts allows our customers to focus on their manufacturing processes and core business such as the assembly of van trailers, truck bodies, and industrial trucks,” Gilliam noted.

SWV’s sister galvanizing plant opened in September 2017, in Wurtland, Kentucky, to offer zinc coatings for its steel and to add even more value-added options, at a site with 350,000 sq feet of space under its roof.

That Steel Ventures plant is just a short trip down the Ohio River and it is strategically sited with access to highway and rail. This location in the Ohio/Kentucky/West Virginia tristate region, a lingering heartland of US manufacturing, also allows the company to galvanize products for local and regional fabrication companies, a good addition to its core work.

“Many of the products produced at SWV in Huntington get cut to length, straightened, fabricated, and then galvanized at this sister facility,” Gilliam noted, crediting SDI for its recent $18 million investment there.

“Steel Ventures galvanizes trailer beams, posts for the solar industry, and also galvanizes whatever walk-in or local fabrication shops need galvanizing,” at this plant, Gilliam explained during a tour of the facility. It is equipped with modern features like its galvanizing kettle, designed to protect workers and equipment from zinc splash as steel is dipped.

But the vision for Gilliam, a general manager who has walked the mill floors at SWV for 39 years, is of course for Steel Ventures to grow and to take on even more fabrication work. One 87,000 sq foot building is now used mostly for storage, but that could change as more fabrication capacity is installed, Gilliam told Metal Market Magazine.

“It’s our vision that the Steel Ventures plant will continue to grow into more and more of a fabrication plant, either for the industrial truck or the truck-trailer market, or both,” he said.

In line with the company’s drive to expand services and improve efficiencies, more robotic fabrication cells could be installed at Steel Ventures in the near future, Gilliam indicated. “Plans are in place to further add robotic fabrication cells to automate manual operations,” he added.

Certain core OEM customers are interested in the company doing even more value-added fabrications, which could then also be galvanized at Steel Ventures.

“Where there is enough volume to justify the investment, we would capitalize on our experience with robotics and automate these welding and fabrication processes,” Gilliam noted, drawing attention to the links between investment, automation and specialization, a key trio in the DNA and future of this dynamic mini-mill.
Riding the wave

In a transformed business climate for US steel and metals, many of the nation’s service centers are investing in expansion

When Donald J. Trump was elected President of the United States in November 2016, there was a collective sigh of relief by many facets of the domestic steel industry. Citing the movement toward creating a national manufacturing policy coupled with the prospect of a less stringent regulatory environment, key leaders in the steel industry were positively giddy.

Since then, business conditions in the North American steel industry have strengthened. Shipments and prices are on the rise, and the price of hot-rolled coil, an industry bellwether, is near a ten-year high. Based on rising fundamentals of the metals industry, even before the Section 232 tariffs were imposed, the metals industry, even before the Section 232 tariffs were imposed, the gathering strength of the industry was reflected in the responses of many leading North American service centers to the annual service center survey prepared by American Metal Market.

Nearly all respondents posted higher revenue in 2017 than the previous year. Reasons for the improved results were many—from market factors, such as higher selling values and stronger demand, to efforts within individual companies such as facility enhancements, new product lines and broader geographic reach.

For example, facility expansions led to a revenue increase of almost $100 million for Triad Metals International, Pittsburgh, Pennsylvania. “Triad has built two new warehouses in the last three years to include a new plate wholesale processing company in Pittsburgh and a new structural warehouse and processing distribution center in Oshawa, Ontario, Canada. We are realizing the fruits of our labors from our determined and tenacious group of dedicated employees,” said Ron Hammond, Triad’s chief executive officer.

For Liberty Steel, growth for the third consecutive year has come as a result of “expanding our overall customer base while penetrating new markets,” said Jim Grasso, president and chief executive officer of Liberty Steel Products, North Jackson, Ohio. “Liberty Steel’s diversification into building products has proven successful, and continues to provide favorable year-over-year results. Further expansion of our pre-painted business will continue to be a focus of our future success. Lastly, Liberty Steel Products completed the acquisition of Welded Tubes of Orwell, Ohio. The acquisition was completed in the third quarter of 2016 and, as such, has been added to the company’s overall revenue.”

But for others, some of that increased revenue was the result of consolidation, which began in late 2016 and has picked up momentum since then. Reliance Steel and Aluminum purchased Tubular Steel in late 2016, and in 2017 Japan’s Metal One bought Cargill Metals USA and now operates the business as Plateplus. And in just this year alone: Lapham-Hickey acquired Thompson Companies, which includes the Thompson Dayton service centers; Ryerson Holdings bought both Fannello Industries and Central Steel and Wire; Russel Metals purchased DuBose Steel; Union Partners acquired both Maksteel and Contractors Steel; and Olympic Steel bought Berlin Metals.

Roy Berlin, who acquired the former Hokin Steel & Tinplate in Hammond, Indiana, in 1967 and renamed it Berlin Metals, knew it was time to consider selling. “There are a number of companies like mine where the ownership is aging without successors in the wings. We have a 50-year successful history, and I wanted to find a buyer that was large, strong and had similar values of family, ethics and customer service. I believe I found that company in Olympic Steel.”

On the broader topic of service center consolidation, Berlin offered these observations: “Consolidation is the natural evolution of a mature industry. In the metals service center space and in the steel space in general, there has been some shrinkage in total steel consumption due to our US economy being so mature and due also to the offshoring of manufacturing. As a result, there is a slightly smaller pie with many powerful, capable and hungry suppliers of all sizes competing and seeking to grow even larger. The smaller companies can often be more nimble and responsive, find a niche service, product or geography and still prosper. The large companies have the advantage of scale, which means broader sales coverage, lower costs of operation, more products to offer and typically lower-cost material arising from their purchasing power with the steel producers. But the mid-sized companies get squeezed. They can have difficulty being nimble and they aren’t big enough to enjoy the lower cost of the larger companies. So I think the choice is get smaller, get bigger or get sold.”

Vince Pappalardo, managing director of Brown Gibbons Lang & Co’s metals and metal processing practice, expects the consolidation trend to continue. He believes that the tax reform measures of last year have given companies the ability to invest more in their businesses. And because tax law can change in the future, “It spurs the desire to take advantage of consolidation opportunities sooner versus later.”

Bob Weidner, president of the Metals Service Center Institute, agrees. Despite consolidation of both producing mills and service centers that has been underway since the early 2000s, “We are still a fragmented industry, Consolidation is not just about volume; it’s also about getting into new markets and new geographic regions. Strategic acquisitions are all about looking for a good fit.”
AMM's annual ranking of service center survey respondents by revenue in US dollars

<table>
<thead>
<tr>
<th>Rank</th>
<th>Business Name</th>
<th>Revenue (in US$ millions)</th>
<th>Aluminium</th>
<th>Steel bar, tubing, structurals</th>
<th>Carbon flat rolled</th>
<th>Carbon plate and brass</th>
<th>Copper and brass</th>
<th>Stainless steel</th>
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<td>15% to 30%</td>
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<td>&lt;15%</td>
<td>&gt;30%</td>
<td>15% to 30%</td>
<td>&lt;15%</td>
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<td>&gt;30%</td>
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<td>&lt;15%</td>
<td>&gt;30%</td>
<td>&gt;30%</td>
<td>15% to 30%</td>
<td>&lt;15%</td>
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<td>&gt;30%</td>
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<td>20</td>
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<td>439</td>
<td>15% to 30%</td>
<td>&gt;30%</td>
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<td>15% to 30%</td>
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<td>26</td>
<td>Lapham-Hickey Steel</td>
<td>305</td>
<td>&lt;15%</td>
<td>15% to 30%</td>
<td>&gt;30%</td>
<td>15% to 30%</td>
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<tr>
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<td>Ratner Steel Supply</td>
<td>251</td>
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<td>32</td>
<td>Owen Industries (tied)</td>
<td>125</td>
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<td>&gt;30%</td>
<td>&lt;15%</td>
<td>15% to 30%</td>
<td>&lt;15%</td>
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<tr>
<td>33</td>
<td>Ranger Steel (tied)</td>
<td>125</td>
<td>&gt;30%</td>
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<td>100</td>
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<td>37</td>
<td>Horizon Steel</td>
<td>98</td>
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<td>&gt;30%</td>
<td>&lt;15%</td>
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<tr>
<td>38</td>
<td>Sabel Steel Service</td>
<td>94</td>
<td>&lt;15%</td>
<td>15% to 30%</td>
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<td>82</td>
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<tr>
<td>40</td>
<td>MidWest Materials</td>
<td>73</td>
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<td>&gt;30%</td>
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<tr>
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<td>Center Steel Sales</td>
<td>53</td>
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<td>15% to 30%</td>
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<td></td>
<td>&lt;15%</td>
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<tr>
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<td>Farmers Copper</td>
<td>47</td>
<td>&lt;15%</td>
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<td>&gt;30%</td>
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<tr>
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<td>Almetals</td>
<td>36</td>
<td>&gt;30%</td>
<td>&lt;15%</td>
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<tr>
<td>44</td>
<td>IM Steel</td>
<td>20</td>
<td>&gt;30%</td>
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</table>

To remain competitive – as well as attractive to possible buyers – service centers have been actively reinvesting in their businesses. Of the 44 respondents to this year’s survey, 34 indicated they have updated their facilities in the past year. Some examples of recent investments include:

- Value-added processing including enhanced leveling, fabrication and multi-step processing
- Aluminium processing including aluminium blanks
- Moving into downstream processes at the request of contract customers
- Increased AHSS/martensitic steel and also offering zinc/aluminium/magnesium coatings
- Vertical integration to internalize purchased services
- Offering tighter tolerance while expanding product line
- Acquisitions to extend capacities in markets involving additive manufacturing, super plastic forming and hot forming for aerospace, along with custom manufacturing and robotics for targeted large industries.

Reviewing the activity of the past three years, a majority of respondents indicated they have added facilities in the past three years (see graphics).

Bette Kovach
Shortages last year of the ultra-high-performance graphite electrodes used by EAF-based steelmakers and some non-ferrous metal producers rapidly pushed up their price. *Metal Market Magazine* asked Hidehito Takahashi, managing corporate officer Showa Denko K.K. and general manager of the Carbon Division at the international electrode manufacturer, about the market's global dynamics and SDK's future.

A Japanese company with international operations, Showa Denko — a wide-ranging chemicals business — claims to be the world’s largest supplier of UHP graphite electrodes. Based in Showa Denko’s Tokyo headquarters, Hidehito Takahashi, managing corporate officer Showa Denko K.K. (SDK) and general manager of the Carbon Division, said that global demand for the UHP electrodes in 2017 was 785,000 tonnes per year.

SDK estimates that current total global capacity for UHP graphite electrodes production ex-China is about 800,000 tonnes per year. The company estimates that UHP-quality graphite electrode production
capacity in China is currently about 50,000 tonnes per year, although the country has greater capacity for producing lower quality graphite electrodes.

With a group capacity for UHP electrode production soon to be about 250,000 tonnes per year, Showa Denko supplies about 30% of the world market, said Takahashi. The company’s acquisition of SGL Group’s graphite electrode business last year helped it to reach that level.

How does he account for the shortage that appeared to catch many EAF-based steelmakers unaware last year? The answer stretches back to the period, several years ago, when world steel markets were generally weak and the demand for UHP graphite electrodes was correspondingly poor. “As a consequence, about 25% of the market was taken down,” Takahashi recalled, referring to a decline in global electrode production capacity.

When steel markets started to recover during late-2016 into early-2017 — in response to improving global economic conditions — demand for electrodes also picked up. This coincided with the Chinese government closing induction-furnace production of low-quality steel, a decline in net exports from China, and an impetus for more EAF-based steelmaking in the country and elsewhere, Takahashi explained. He also pointed to the imbalance between EAF-based steelmaking outside China, which accounts for an average of 40%-plus of steel production, by contrast with just 9% in China itself — albeit a growing portion of that nation’s formidable output.

“Because the market for steel was so bad for a couple of years, steelmakers reduced their inventories of graphite electrodes and the supply chain was empty,” said Takahashi. “Consequently the panic button was hit [by steelmakers awakening to a supply shortage],” he recalled.

The electrode shortage was exacerbated by “very limited” supplies of needle coke, Takahashi added. “We need good needle coke for UHP electrode production,” he explained, but there are not many companies able to produce it and not many newcomers in its supply, he stressed. The supply-demand balance was not helped by increasing demand for needle coke for battery production too. And, according to some reports, certain needle coke production in China has been reduced as part of a national policy to reduce air pollution.

Takahashi claimed that SDK, and competitor Tokai Carbon, have an advantage over other manufacturers in being able also to use pitch coke to produce UHP carbon electrodes. He also said that, as the world’s largest producer of electrodes and hence its status as a large consumer, Showa Denko has a good relationship with needle coke suppliers.

To illustrate the severity of the limited supply of needle coke, he estimated a global nameplate production capacity of 900,000 tpy for the important ingredient, and a 1:1 tonnage ratio between the quantity of the material consumed and the weight of graphite electrode produced. Contrast that with SDK’s forecast for total global demand for UHP electrodes in 2018 of 820,000 tonnes per year for UHP graphite electrodes, 5% higher than in 2017. He also stressed that the actual utilization of needle coke production equipment is often below full capacity.

All told, “This is a challenging time for graphite electrode producers,” Takahashi summarized.

**Outlook**

Despite the shortage of UHP electrodes, is there not growing capacity for electrode production in China?

Takahashi acknowledged announcements of capacity increases in China, but downplays their significance: “Most of the increase there is by Tier 2 players,” he said, adding that they either cannot make UHP electrodes or are inexperienced newcomers.

On the latter point, he explained that the quality of UHP electrodes depends not only on the availability of high-specification needle coke, but also technical expertise in each of the main process steps (see primer box) in making them, particularly baking, extrusion and graphitizing. “Newcomers are not so ready, so I’m not worried about new Chinese players,” said Takahashi.

China does have great potential for long-term growth in UHP graphite electrode demand as the country generates more steel scrap and the proportion of electric steelmaking in the country grows in tandem with national efforts to increase recycling. Takahashi noted a Chinese government target of 15% EAF steelmaking by 2020. While that may be an overly ambitious goal, Takahashi estimated that even if just 12% was achieved by then, an extra 50,000-60,000 tonnes per year of UHP graphite electrodes would be needed.

SDK has a majority share in a UHP graphite electrode producer in China, with a national Chinese steel company, which may be able to take
A quarter-million tonne capacity
SDK will have a global capacity for producing 250,000 tonnes per year of graphite electrodes when the ramp-up of its Ridgeville, South Carolina, USA plant to 75,000 tonnes per year is completed later this year.

The company’s other plants are in Japan, USA, China, Malaysia, Spain, Germany and Austria. Its capacity for graphite electrode production was given a significant boost last year through its acquisition, for an enterprise value of 350 million euros (about $410 million), of SGL Group’s graphite electrode business, comprising about 900 employees and six production sites in Germany, Austria, Spain, USA and Malaysia. SDK has delivered electrodes to more than 2,000 EAFs in over 80 countries.

SDK’s Austrian plant, in Steeg, is the oldest and the Malaysian factory, in Banting, is the newest factory, but the company notes that it has continuously revamped and modernized its facilities in order to maintain quality and safety standards, while ensuring its plants remain highly productive and cost-effective.

The company’s Ridgeville plant started up in 1983 and was acquired by SDK in 1988. Celebrating its 30th anniversary this year, completion of the plant’s expansion will see its capacity increase by 30,000 tonnes per year.

advantage of the forecast growth in demand. Another option for SDK would be to serve the Chinese market from its plant in Malaysia.

International UHP graphite electrode producers negotiate prices for their products directly with their diverse customer base. The products come in a variety of both standard and special dimensions, so their manufacturers hesitate to discuss specific prices publicly.

Nevertheless, Takahashi confirmed that he had heard the reports of “crazy prices” in China last year in the range of $20,000-30,000 per tonne at the peak of the steelmaker scramble to obtain supplies.

He added that, more recently, prices in China, other parts of Asia, Europe and the USA have converged. He said that he understands that some other suppliers have long-term contracts at around $10,000 per tonne, but added that prices would probably be higher than that for bespoke products.

For its large customers, SDK normally enters into one-year supply agreements with half-yearly price reviews. He added that the company wants to give comfort to high-volume clients about this continuity of supply.

SDK is continuing to integrate SGL Carbon operations with its own, but it has no plans to expand capacity beyond a project at its US plant, which is adding an extra 30,000 tonnes per year of capacity to increase total capacity there to 75,000 tpy. Takahashi explained that the US expansion was originally planned several years ago with a view to supply South America and Europe from the plant, but with the acquisition of SGL Group’s graphite electrode business and demand growing in the USA it will mainly serve the Americas now.

Integration progresses
Takahashi said that the integration programme with SGL Carbon provides an opportunity for its staff and SDK’s to learn from each other. He said that bringing together the core competences of the two companies – notably the cost efficiency of the former and the product-quality expertise of the latter – is helping to deliver “products with best value-in-use: a quality and price combination.”

He stressed the high importance of consistent UHP electrode performance.

Monitoring key performance indicators at each plant and comparing them with those at sister works in the group is helping to benchmark their relative positions. For example, he noted that the number of people needed to produce a tonne of UHP graphite electrode can range from two to 20. Energy and labour costs are also being monitored and compared.

Fundamental quality parameters for the electrodes produced are a low coefficient of thermal expansion, a high flexural strength and low electrical resistance. SDK offers technical service and advice to steel producers through its ECO PRO® programme. It started in the United States and is being rolled out globally with oversight by one global technical service leader based in South Carolina, Takahashi explained.

In addition to the electrodes, the programme covers other aspects of the EAF process. SDK reports that successful co-operation undertaken so far has: increased productivity and reduced operational costs; improved power and process profiles; lowered energy consumption; optimized carbon/oxygen injection and chemical energy consumed.

Most producers of electrodes follow a similar six-stage production process, but their competence and equipment efficiency vary, Takahashi noted. While the potential benefits of an Industry 4.0 approach to monitoring plant performance and the use of Artificial Intelligence are in Takahashi’s sights, he admits that they are at the early stages of evaluation at SDK. “The graphite electrode industry is very conservative,” he observed. “It’s something they have been doing for 80-90 years,” he added.

As for most large international suppliers of technology and equipment, beyond its work to leverage advantage from the integration of SGL Carbon, SDK’s focus is on being a very good partner with the steel industry and to foster long-term relationships with its clients.

“We want to deliver products to customers when and where they want them at a fair price,” he concluded.
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Market spotlight: Minor metals

Shedding light on lithium and cobalt markets

Two minor metals have grabbed attention for their value in making batteries for electric vehicles – lithium and cobalt. Metal Bulletin price development manager Jon Mulcahy and battery raw materials team leader Charlotte Radford explore a rapidly evolving market and how market intelligence for the metals is becoming increasingly transparent.

Surging investment across the battery raw materials supply chain, stemming from growing demand for electric vehicles (EVs), including hybrids, has fueled an increasing appetite for transparent market intelligence.

Two of the key components of the batteries commonly used in EVs—lithium and cobalt—are at different stages of market maturity, with greater transparency in the latter. As an international price reporting agency, Metal Bulletin has recently enhanced its coverage of the battery raw materials supply chain, providing assessments and indices to bring increased clarity to what is a fast-evolving and in some cases opaque market.

Lithium

Lithium investors have been flocking to become involved in this sector as prices have surged in recent years. The story is a familiar one: a demand boom catching the industry off guard; supply taking time to respond through expansions and greenfield developments; and prices heading one way in the meantime.

In this case it was the rapid increase in EV production that drove the demand surge for lithium—an important component of lithium-ion batteries. The pace of the demand rush was accelerated through China’s subsidy and incentive policies for EV production initiated in 2015, prompting a genuine scramble for lithium, with producers unable to ramp up supply in such a short space of time.

More recently, Metal Bulletin’s spot price assessment for battery-grade lithium carbonate (min 99.5% Li₂CO₃), exworks China, has fallen 30% since December amid the availability of cheaper stocks, weaker consumer demand and a four-month transitional period in China towards the adoption of the new EV subsidies (which started in June 12) causing a deceleration in consumption.

Despite the fall in price, appetite for market intelligence and price references remains as strong as ever. In the growing lithium sector, Metal Bulletin provides valuable insights into the carbonate and the fast-developing hydroxide markets. The end-uses of lithium remain diverse, although the battery boom has necessitated a distinction in prices between battery-grade and technical-grade material.

Pricing workflow

Metal Bulletin’s pricing workflow comprises six main steps:

1. Price reporters in 13 international locations provide specialist market knowledge.
2. Market data is collected from numerous approved contributors from across the supply chain.
3. Pricing data is entered into a dedicated database (MiND – Metals Information Database) to ensure a full audit trail.
4. Data is analyzed and, if required, normalized. Outliers are removed.
5. An integrated peer-review system ensures that all data is verified by at least two reporters to ensure quality control and compliance.

Metal Bulletin’s and American Metal Market’s pricing practices align with core IOSCO Principles.

Despite the overwhelming majority of lithium supply being covered by long-term contracts, recent years have seen increasing amounts of spot business, particularly in China, which sees some smaller producers sell up to 50% of their production in the spot market. It is this business that informs Metal Bulletin’s spot price assessments, with trained market reporters in touch with producers, consumers and traders to collect the data used to set a representative price level.

China is the clear hub for lithium consumption and has emerged, at least for the time being, as the most liquid spot market and as a potential proxy for lithium prices globally.

However, as investment globally in new lithium mining operations increases, with the majority of production aimed at feeding growing appetites from China, Japan and South Korea, Metal Bulletin has developed several prices to capture the relative value in the Pacific basin.

If the lithium market is to evolve along similar lines of maturity as markets such as iron ore and alumina, it is likely that market participants will look for a seaborne, international price reference against which to tie their business.

In iron ore, the breakdown of the negotiated benchmark pricing system in 2010 led to the emergence of more reflective pricing tools that provide near ‘real-time’ spot market levels, with the ‘price of the day’ determining the settlement price for term contracts.

Price volatility driven by rapid supply-demand swings was a necessary precursor to the breakdown of the previous iron ore market structure, and a predominantly producer-led
pushed steered industry participants to transition to pricing against an independently calculated index that responded to these fluctuations.

In the alumina market, that shift was again driven by producers, who felt their existing pricing mechanism – long-term contracts fixed as a percentage of the aluminium price – undervalued their material, which at that time was in tight supply.

For lithium, that drive for a shift in structure is more likely to come from the consumer side. Battery manufacturers are not just buying lithium, but also other crucial raw materials, such as cobalt. For cobalt, they will already be familiar, or at least quickly gaining familiarity, with the Metal Bulletin world spot price reference.

**Cobalt**

Most of the world’s cobalt business is tied to the benchmark cobalt metal price assessment published twice a week by Metal Bulletin. This means that long-term contract prices were able to respond to the over 260% increase in prices in the 18 months between October 2016 and April 2018. Such an increase has been down to intense demand and the buzz associated with EV and battery demand, combined with tight, uncertain supplies – about 60% of the world’s cobalt is mined in the Democratic Republic of Congo.

Most recently, such a structure has meant that contract prices have adjusted to the fall in market prices from around $44 per lb in late April, to the $39 of mid-July.

The reach of Metal Bulletin’s cobalt price extends outside of the metal market into salts and intermediates. In preference to metal, the battery sector will look for cobalt sulfate – likely sold with an agreed discount or premium to the Metal Bulletin low-grade cobalt price, or cobalt hydroxide, for which the contract will likely refer to an agreed percentage payable of the benchmark.

Cobalt is similar to other markets – including lithium – in that the majority of business is agreed on long-term contracts, with a comparatively small tonnage bought and sold in the spot market. But cobalt’s still-dynamic spot market, combined with the buzz around new energy and investor interest, mean that the minor metal has garnered serious exchange interest.

**Lithium**

For lithium, that drive for a liquid market was settled against an exchange, and less liquid through references published by PRAs,” Matthew Chamberlain, CEO of the London Metal Exchange said at the annual Cobalt Institute conference in May.

“The cobalt market is interesting, Chamberlain added, because its traded volumes are right on the edge of what is considered appropriate for an exchange-traded market. The cobalt price is expected to make an announcement about its new cash-settled cobalt contract later in the summer. The final point for confirmation is the PRA reference price against which the contract will be cash settled.

Spot-linked pricing is still a relatively new development for lithium. That said, one parallel benefit of this type of pricing is that close to “real time” pricing mechanisms provide an opportunity for the implementation of risk management tools through exchange-based contracts and sometimes over-the-counter swaps and contracts.

Like cobalt, lithium has not escaped the eye of the exchanges. The London Metal Exchange, for example, has spoken of its intention to provide a full set of hedging tools for battery raw materials. The lithium market will need to mature, and potentially at a fast pace, for that to happen. A cash-settled contract is on the cards, but what that requires is consensus from the physical market as to how its participants wish to structure their long-term contracts going forward, specifically which reference price or prices they wish to tie their business to. In other markets – cobalt, iron ore and alumina, for example – that reference has emerged in the form of an international or seaborne price.

But the spot cif markets remain relatively illiquid for lithium. Under the eager watch of the financial sector, exchanges, and lithium juniors, to name a few, that benchmark could emerge as a domestic Chinese price, or at least a price that incorporates Chinese market activity, where the greatest spot liquidity – a necessity for robust price discovery – lies.

While that would be unusual, it is arguably appropriate when talking about a material so crucial to the battery and EV sector, the boom of which has been so dictated and steered by China in recent years.
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The festive crowd — buoyed by strong industry performance and outlook — attending the ninth annual Steel Awards Dinner in late June led Jeff Mason of Glenmount Global Solutions to say the AMM Awards for Steel Excellence are like Oscars for the steel industry.

A sell-out audience of 270 steel industry leaders witnessed the announcement of the 15 winners of the 2018 AMM Awards for Steel Excellence at the dinner, held at the glittering art deco-styled Edison Ballroom in New York City in conjunction with the annual global Steel Success Strategies XXXIII Conference.

“These awards recognize the best and the brightest firms throughout the steel industry supply chain. This year’s awards saw an extraordinary number of high-quality nominations, creating a challenging selection process. Although each company is unique, they are united in their quest for excellence and innovation, and we, as an industry, benefit from their high standards of performance,” American Metal Market chief executive officer Raju Daswani said. The winners were selected from 53 finalists in 15 categories.

In addition to the usual attendance at the dinner by CEOs, technical experts and sales managers, Michigan Seamless Tube invited four of its key hourly employees from its South Lyon, Michigan, facility. “We wanted to recognize the folks who really keep our business flourishing through their hard work and ingenuity. Although we were not a winner this year, we were happy to be a finalist and to share our success with some of the people who make it happen day in and day out,” said Mary Pollen, general manager of pipe and tube sales with Michigan Seamless Tube, who attended the dinner before retiring on June 30 after nearly 35 years with the company and 42 years in the steel industry.

Ambassador Robert Lighthizer was awarded American Metal Market’s Steel Advocate of the Year award during the dinner. He was chosen for his role both in advocating for tariffs on foreign steel under Section 232 that has led to higher pricing and facility restarts in the domestic industry, and his representation of manufacturing interests in negotiations with significant trading partners and steel producers like South Korea and China.

The 2018 winners profiled on the following pages are:

- Best Innovation: Product — TimkenSteel Corporation
- Best Innovation: Process — GrafTech International Ltd
- Best Operational Improvements — Outokumpu Americas
- Technology Provider of the Year — Glenmount Global Solutions/SR-Instruments Oy/ArcelorMittal Global Research
- Financial Services Provider of the Year — Bank of America Merrill Lynch
- Legal Services Provider of the Year — Wiley Rein LLP
- Information Technology Provider of the Year — Quintiq
- Steel Producer of the Year — Steel Dynamics, Inc
- Environmental Responsibility/Stewardship — SSAB Americas
- Logistics/Transportation Provider of the Year — Ports of Indiana
- Scrap Company of the Year — Schnitzer Steel Industries, Inc
- Scrap Equipment Provider of the Year — Metso Minerals Industries, Inc
- Tube and Pipe Producer of the Year — JSW Steel (USA) Inc
- Service Center of the Year — Jemison Metals
- Raw Materials/Consumables Provider of the Year — GrafTech International Ltd

The winners of the AMM Awards for Steel Excellence were selected by a panel of steel industry experts: Michelle Applebaum, veteran steel analyst and founder of Steel Market Intelligence; Thomas Danjczek, advisor and past president of the Steel Manufacturers Association; Jo Isenberg-O’Loughlin, retired AMM executive editor; Bill Jones, retired vice chairman of O’Neal Industries; Vincent Pappalardo, managing director of metals, Brown Gibbons Lang & Co; Nick Sowar, global metals sector leader, Deloitte & Touche LLP; James Wainscott, retired chairman, AK Steel Corp; Thorsten Schier, AMM North American steel and ferrous scrap editor; and Nat Rudarakanchana, AMM steel reporter.

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To meet the demand for longer lasting steels required to operate at ever higher loads, TimkenSteel developed new Endurance grades to push steel capabilities further than before, increasing both strength and toughness for improved wear. Their success won this year’s AMM Award for Steel Excellence for Best Innovation – Product.

The original development of the grades furthered work completed with the US military in 2015. Through further R&D, TimkenSteel was able to apply the technology to its existing Endurance line of high-strength steels.

“It was exciting working with the US Air Force,” said Ray Fryan, vice-president, technology & quality. “We went from the first prototype melt in the lab to a production melt and sled test in 18 months. It was the most agile and quick development I have seen in my entire career.”

TimkenSteel has a long-standing research relationship with the US Air Force. “We expect to set a new pace with the new development process,” said E. Buddy Damm, a scientist in advanced steel for Timken. “We have three new alloys that are separate from the Air Force alloys. The focus for the Endurance line has been on harder, faster and longer-wearing. The changes in the development process that we are applying to the Endurance line are in the areas of computational modeling and thermodynamic work.”

Tim Timken, chairman, chief executive officer and president of the company founded by his great-great grandfather, put the current advances into context. “Since we made our first heat of steel in 1917, innovation has always been a core value of TimkenSteel and will continue to be integral to who we are. The development of our new Endurance steels is an excellent example of how our R&D capabilities, manufacturing assets, and the expertise of our people come together to create materials that can deliver a precise combination of advanced properties, whether the application requires greater strength, toughness, corrosion resistance or better machinability.”

Damm said that the company started with three-dozen original ideas for new steels, of which it was decided to proceed with seven. That determination was made in January 2017. Ultimately three new alloys came to fruition, all for high-demand moving equipment. All three react well to carburizing.

There are multiple target markets for the new steels, including oil and gas, mining and transportation. “Some of the really big themes these days are wind energy, marine, and industrial applications,” said Damm. “We have one new alloy for the larger-scale components, and another for automobile and light-truck components.”

Fryan explained that the trade-off in these components — even with current high-strength steels — is the balance between cost, weight and longevity. For example, materials that have economical costs may not last long enough, or materials that do last and that are economical may be too heavy. With the first three alloys developed through the new process, existing components can be made more economically or to last longer, or can be operated at higher power-transmission levels.

“Our customers have a very heavily capitalized supply chain,” said Fryan. “They can get more power, or more longevity out of their existing components.” That is far preferable to having to retool and resubmit parts for testing and specification.

Damm added that for all the strength and endurance of the new alloys, “processing, melting and annealing are the same. These steels are as machinable as any steel out there.” In the realm of good problems to have, he noted that “We are going to need new ratings for the gear steels from the American Gear Manufacturers Association. We can reduce weight by about 30% for the same rating.”

He also stated that fatigue performance in heavy mining and drilling equipment can be improved by as much as an order of magnitude. “Where equipment once could be expected to last 10,000 cycles until fatigue, it could now be as many as 100,000 cycles. We are seriously talking about logarithmic improvement.”

Work on additional Endurance steels continues. “What we have here is modeling efforts on steroids,” said Damm. “We are generating thousands of potential designs and we are not going to stop developing new Endurance line steels. We are already gaining some market share and displacing some exotic alloys.”

Fryan noted, “We have a very talented and persistent team. This will definitely lead to more opportunities. We are very excited about the prospects of shorter design cycles in addressing needs that customers bring to us.”

On that same note, Tim Timken added, “Receiving this year’s Best Innovation – Product award is a testament to our outstanding team of employees and their focus on developing steels that both advance the industry and help solve our customers’ toughest challenges.” He said that congratulations are due to the company’s technology team and all 2,800 TimkenSteel employees for this tremendous honor.
GrafTech is the steel industry’s premier provider of high-quality graphite electrodes and technical services and solutions. We operate three of the largest graphite electrode production facilities in the world. GrafTech also has the largest technical services team in the industry with nearly 500 years of experience and a proven track record of reducing costs, increasing productivity and maintaining uninterrupted production flows for our customers.

GrafTech is honored to be recognized by American Metal Market as award winners for 

Best Innovation - Process and Raw Materials/Consumables Provider of the Year.

AWARD-WINNING, HIGH-QUALITY GRAPHITE ELECTRODES

graftech.com
GrafTech International Ltd, Brooklyn Heights, Ohio is a leading manufacturer of high-quality graphite electrode products needed for the production of electric arc furnace (EAF) steel and other ferrous and non-ferrous metals. GrafTech highlights that it is the only large-scale graphite electrode producer that is substantially vertically integrated into petroleum needle coke—a primary raw material for graphite electrode manufacturing—which is currently in limited supply. GrafTech says that position gives it competitive advantages in product quality and cost.

Founded in 1886, GrafTech has over 125 years of experience in the R&D of graphite-and carbon-based solutions, and it states that its intellectual property portfolio is extensive. “Our vision is to be the lowest-cost, highest-quality producer of graphite electrodes, while providing the best customer service,” GrafTech states as its mission.

GrafTech is seeing the results of a multi-year production efficiency effort unfold. The operational improvement plan was devised to maximize the productivity of the company’s graphite electrode manufacturing facilities. The program achieved significant operational repositioning to unlock the potential of its most efficient and large-scale manufacturing facilities.

The company began shifting production from six electrode facilities to three electrode facilities in 2012. Completed in 2016, this step concentrated production at the company’s largest-scale, lowest-cost plants with the most upside potential.

The next step was elimination of artificial constraints to exploiting latent production capacity. The company removed those constraints and empowered the company’s highly experienced general managers, it notes. It re-evaluated baking cycles and firing curves throughout the system for all product sizes while improving quality.

A systematic operational enhancement program was next. GrafTech worked with a consulting firm to execute six-month turnaround projects at each plant in a process to liberate additional bake and graphitizing production capacity throughout the system, further shifting bottlenecks.

“We are well on the way with our debottlenecking effort,” GrafTech president and CEO David Rintoul told Metal Market Magazine in early July. “All three plants have some degree of work going on as we speak,” he noted. That work is expected to be completed by the end of 2018.

The company is now completing a targeted capital program as its final step in operational repositioning. As a result of the cumulative effect of these prior operational improvement activities on plant bottlenecks, GrafTech has been able to achieve large production capacity increases within the plants quickly, with specific, targeted capital investments.

Rintoul explained that the means to achieve debottlenecking has been specific to each individual plant. Production of graphite electrodes comprises half-a-dozen different steps. Any mismatch in throughput between one step and the next has the potential to create a bottleneck. “We aim to ensure that no one step impedes another,” Rintoul elaborated. Debottlenecking has ranged from the electrode forming operation to the graphitization furnaces.

The total cost of the on-going debottlenecking plan was $37 million, or approximately $1,000 per tonne of production capacity, which compares very favourably with estimated green-field new graphite electrode production capacity costs of approximately $10,000 per tonne and the 5-10 years lead time from initial permitting to full production needed for a greenfield facility, GrafTech calculates.

Last year GrafTech’s Calais, France and Pamplona, Spain plants exceeded previous annual record production levels by 15% and 12%, respectively. Production at the Monterrey, Mexico plant was 12% higher than the highest annual production level during the past ten years.

The company says that its operational repositioning will result in an incremental 35,000 tonnes of annual production capacity by the end of 2018. GrafTech says that it will produce more from its three operating plants in 2018 than it previously produced from six plants.

GrafTech previously publicly disclosed that in Q1 2018 it realized average graphite electrode pricing of $10,124 per tonne to generate Ebitda of over $7,000 per tonne on 43,000 tonnes of electrode sales. The cumulative impact of the company’s operational improvement and debottlenecking efforts will increase production by more than 35,000 tonnes per year by the end of 2018. GrafTech’s total production capacity will exceed 200,000 tpy when work has been completed.

“We continue to do well at our plants and have exceeded throughput records in the last couple of months,” said Rintoul.

Given GrafTech’s Q1 2018 economics, 35,000 tonnes of production volume would equate to over $245 million in incremental annual Ebitda. This figure compares well with the total capital expenditures applied in its multi-year restructuring plan.

Do Industry 4.0 technologies have potential to enhance GrafTech’s productivity further still? “We are beginning to do work in these areas, particularly in machining,” said Rintoul. “It’s important for efficiency and improving the standard deviation of the process, resulting in quality benefits,” he added.

He declined to give further forecasts for the company’s future fortunes, simply saying “All of our work program is on track.”

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Outokumpu Americas has recently embarked upon a series of operational improvement projects to help it achieve a goal set in 2016 by its parent company to become the best value creator in the stainless steel industry. This is being achieved through both greater engagement with its customers and other stakeholders, and increased efficiencies.

While there is no doubt that other steel companies are also very committed to employing tools to be more efficient and to create a safer work environment, Outokumpu Americas President Mike Williams says he believes there is something in his company’s organizational DNA, and in the passion that both its management team and workers possess, that empowers them to really embrace a continuous improvement mentality.

“We recognize that we have not yet achieved our ultimate vision,” Williams admits, “But we are definitely well on our way, perhaps more quickly than some other steelmakers. It is because of this commitment to keep finding ways to improve itself that American Metal Market has presented Outokumpu Americas with its 2018 Steel Excellence Award for Best Operational Improvements.

One of the most important goals that Outokumpu has been looking to achieve — not just in the Americas, but worldwide — is to improve employee safety. It has been doing that with its SafeStart® human error prevention methodology, which drives employment engagement — not only in the workplace, but across all areas of the employee’s life.

“This is based on the philosophy that if we have a very effective and high performing safety culture, it will influence our whole organizational culture and business performance, including our efficiencies, our product quality and our customer service,” Williams explains.

Outokumpu introduced Phase 1 of this program, first on a pilot basis late in 2016, at its Americas unit, which includes its Calvert, Alabama, and San Luis Potosi, Mexico, plants plus its processing and metals distribution center in Buenos Aires, Argentina. Williams observes that after full implementation was achieved last year, Outokumpu Americas achieved a 14% year-on-year improvement in total recordable safety incidents and a 45% reduction in incidents that resulted in injuries.

Owing to these successful results, Outokumpu is currently implementing its SafeStart® methodology at its other operations globally. In January 2018 it began rolling out Phase 2 of the program at its Americas unit, where it is expected to be fully in place by the end of this year.

Williams says he expects that Phase 2, which builds upon the awareness orientation of Phase 1, should continue to result in dramatic improvements in the company’s safety performance as well as general business performance. He says it will do so by having employees make changes in their way of life, promoted by their recognition of their physical capabilities, including an awareness of fatigue and of the impacts of certain of their behaviors.

“By doing all the right things all the time, it really improves one’s behavior and performance in the workplace,” Williams says. “And if things aren’t right, it teaches you to take a step back and to take a course redirection to ensure that you are on target, not rushing, not overly fatigued and that you are focused upon doing the task at hand in the safest manner.”

Outokumpu Americas has also incorporated several other operational improvement projects, including initiatives to improve the throughput in both its melt shop and cold rolling operations in its Calvert, Alabama, mill. A series of projects at the mill’s melt shop has enabled the company to increase its capacity utilization last year from 90% of its nameplate capacity to greater than 100% by the first half of 2018.

This was initially accomplished — both in the melt shop and at the company’s cold rolling mills — by implementing aggressive predictive maintenance schedules for its equipment, improving the reliability of its production equipment by eliminating, or at least significantly reducing, downtime or production delays.

Additionally, Outokumpu Americas has begun using a lean engineering tool — the single-minute exchange die principle — to enable it to evaluate certain equipment that needs to be changed on a routine basis with time-lapse cameras and statistics, and to be able to engineer the necessary setups in a way that enables these change-outs to be accomplished in minutes as opposed to hours.

Williams says that Outokumpu Americas has a full pipeline of projects that it plans to undertake in the future, including a number that are aimed at focusing on increasing its reliability. “Our product quality is excellent, but we want to achieve a much higher level of consistency and to be able to differentiate ourselves from our competition by becoming our customers’ most reliable supplier.” He explains that since the company’s products tend to go into very high-end applications, it involves some very sophisticated and complex supply chains that could be difficult to manage.

“Going forward we will continue to be heavily focused upon self-help, working closer with our customers,” Williams says, adding that Outokumpu Americas plans to do that while continuing to improve its productivity, optimizing its supply chains, improving its reliability and making sure it has adequate product availability and production capacity to meet market demand.
Recognizing the automotive industry’s longstanding zero tolerance for steel defects, SR-Instruments and ArcelorMittal Global R&D developed a new detector that automatically inspects steel for roll marks at the exit of a cold mill with unprecedented precision. With extremely sensitive imaging sensor technology, this detection system has capabilities far beyond traditional surface inspection systems.

Marketed by systems integrator Glenmount Global Solutions, this innovation maximizes mill capacity, minimizes downgrading and reprocessing costs, and enhances downstream customer satisfaction.

For more information, visit rollmarkdetector.com
Early detection of cold mill roll marks can save millions of dollars

It has been estimated that it can cost producers of automotive-quality steel millions of dollars per year because of the need to downgrade and reprocess steel coils that were imprinted with cold mill roll marks. But until recently there had not been an effective technology at the exit end of steel tandem mills to detect their presence until several coils with roll marks had already been produced.

To bring this cost down, SR-Instruments Oy, Oulu, Finland, and ArcelorMittal Global Research & Development, Maizières-lès-Metz, France, have developed a roll-mark detection technology that is being marketed, distributed and integrated into steel mills in North America by Glenmount Global Solutions, Portage, Indiana, an electrical and mechanical engineering company.

The first commercial installation of this automatic roll-mark detector technology is expected to be up and running by early next year. The three companies have been named AMM Award for Steel Excellence 2018 Technology Provider of the Year.

Because it had previously been impossible, even with the most modern commercially available steel coil surface inspection systems, to detect cold roll marks as the steel coil exits the tandem mills used for the cold rolling process, the Measurement and Control group at ArcelorMittal Maizières research center approached SR-Instruments in 2006 to jointly develop a method to quickly and automatically detect these roll marks, which could be as small as 0.1 inch in diameter and tend to be invisible to the human eye.

Doing so is especially important for producers of steels used in exposed automotive applications, Mikael Kurth, SR-Instruments’ chief executive officer, said, explaining that since automotive customers will not accept any coils that have cold roll marks on them, that makes it necessary for steelmakers to downgrade those coils, sell or reassign them to someone else at a lower price, and to revise their production schedule to be able to reproduce the steel promised to the automaker on time. Consequently a single cold mill roll mark could cost a steelmaker hundreds of thousands of dollars.

Coils exiting tandem mills are conventionally manually inspected on a sample basis — often every five to seven coils given that cold mills usually produce new coils every three minutes — using chalking or sanding stone methods. If critical marks are found, that results in the replacement of the defective cold mill’s work rolls and the downgrading of all the coils that were produced since the mill mark was born. As roll marks are caused when some type of mechanical impact on a work roll takes place, such as impurities getting into the mill and damaging a work roll, they tend to repeat along the length of the strip.

Kurth notes that there are instances when roll marks are missed by current manual inspection methods and not discovered until sometime later when the coil goes through downstream processing, such as galvanizing. When such problems occur, it could necessitate downgrading and reassigning, as well as the new production, of as many as 80 to 100 steel coils.

In the effort to lessen this impact — ideally discovering the presence of roll marks before a second defective coil is produced — SR-Instruments and ArcelorMittal Global Research have developed a robust stand-alone optically measuring roll-mark detection technology that could be used at the exit end of both continuous and batch-type tandem mills. The technology is said to be simple to implement and able to match the exit speed of the cold mills — about 5,000 feet per minute.

Kurth notes that this roll-mark detection technology utilizes proprietary integrated circuits, multicores and multi-core processing units and real-time embedded software developed especially by SR-Instruments as part of the sensors that they supply.

“The idea of this system is to be able to detect roll marks from the first coil and to notify operators through an alarm that a roll mark has been detected, enabling them to determine within a minute or so — before another coil is rolled — whether to change the defective work rolls or continue,” Kurth explains. That could depend upon whether the automaker plans to use that steel for a hood or another exposed application or for an internal part. The technology also provides the operator with location information and an optical image of the roll mark to help make that decision.

A full-sized industrial pilot system has been operating at the exit of ArcelorMittal’s five-stand continuous tandem cold mill in Segundo, Spain, since 2013, where, according to Jeffery Mason, vice-president of business development for Glenmount Global Solutions, it has been getting very good results in enabling that mill to meet the initial order requirements of its automotive customers for its steel.

The three companies are expected to announce shortly who its first customers will be for the first commercial installation of this technology, only stating for now that they will be prime automotive material producers in Asia, Europe and North America. Kurth said that they are now free to supply this technology not only to ArcelorMittal but to sell it to other steelmakers as well.

Kurth noted that while automotive steel has been the first application that this technology has been used for, it can also be used for other steel end markets. “There are some applications that we are currently discussing with certain steel producers, but it will take a while for such evaluations, which will be done on a case by case basis, to be completed,” he said, explaining, “We aren’t trying to serve everybody with everything. Instead we have selectively chosen which applications to offer our technology — applications where we could become the market leader.”
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Helping clients through foul- and fair-weather markets

History has proved that the steel industry is a cyclical and, at times, volatile business. Even super-cycles can come to an end, and unpredictable political leaders can significantly impact sentiment and the outlook for its products.

It is against those underlying truths that steel producers try to remain profitable throughout the market peaks and troughs — aiming to time raw material purchases, make capital investments and adjust inventories to best advantage. They also need to judge when circumstances are auspicious for potential mergers and acquisitions and how and where to raise finance for their plans.

Step forward banks to provide advice, aid decision making and provide comprehensive solutions. The more experienced they are in the sector the better. And that is where Bank of America Merrill Lynch says that it can provide an advantage. It counts some of the best known names in the steel business among its clients — and has done so for over 40 years, the bank notes, providing a full array of banking, investment banking, risk management and wealth management solutions for its clients.

Bank of America Business Capital in particular is a leading provider of asset-based credit facilities across the range of companies in the industry and the manufacturers that use the products. It is the leader in market share for left-lead arranger for asset-based credit facilities, according to Thomson Reuters LPC data, with over one-third market share.

“Our advice and ability to deliver solutions has helped position our clients for survival during industry downturns and for success through organic growth and acquisitions as opportunities arise,” the bank says.

Asset-based credit facilities, which are commonly used in the metals industry by companies from Main Street to Wall Street, enable clients to obtain working capital financing and liquidity at attractive borrowing costs and a covenant-lite structure, especially when paired with a covenant-lite Term Loan B or High Yield Bond offering.

The advantage of these structures is to enable those using them to have liquidity and flexibility along with fewer and less restrictive covenants. That is critical in a cyclical industry with commodity price fluctuations and cyclical demand, the bank stresses.

Ira J. Kreft, senior vice president, outlined the basics of the bank’s approach for asset-based financing for Metal Market Magazine. Accounts receivable and inventories are the core building blocks of an asset-based credit facility to provide working capital financing. Establishing a borrowing base entails completion of a collateral examination and inventory appraisal, where both qualitative and quantitative information about the collateral is obtained. An important goal for clients is to maximize liquidity. Credit insurance, which many companies in the metals industries obtain even for domestic sales, can provide additional comfort regarding collectability and enhance the value of the collateral from a lender’s perspective.

The composition of inventories is also important. “We favor quick-turning highly saleable inventories,” said Kreft. The appraised and lendable value will depend on the category of inventory, the stage of completion and gross margin. Incremental liquidity can also be generated through the inclusion of FILO (First In Last Out) tranches, which provide higher advance rates against accounts receivable and inventory.

Depending on the nature of the business and the assets involved, advances against machinery and equipment and real estate in a revolving credit facility or term loans may be possible as well. Asset-based lenders prefer a structure that is more heavily weighted towards accounts receivable and inventory than fixed assets. As a result, the fixed assets are often used to provide collateral for a private credit term loan, institutional term loan or high-yield bond and maximize the credit availability from those assets.

Kreft also highlighted the benefit of asset-based credit financing for steel businesses, given its suitability for working through volatile business cycles. “Don’t forget that cash flow can dry up,” he reminded, stressing that the bank was lending even in the difficult market conditions for steel in 2015, “a down year.” Highly leveraged businesses need good financial partners when markets slump.

“The name of AMM’s annual conference changed from Steel Survival Strategies to Steel Success Strategies when prices were volatile and steel imports to the US were high,” he recalled. Back to ‘Steel Success Strategies’ this year, the event in New York in late-June saw “very positive sentiment across the board,” Kreft said. “Financial markets are finding the industry very attractive right now, which was not the case in 2015, which bodes well,” he added. “We continue to lend through the cycles.”

The bank’s risk management solutions include interest rate and commodity price hedging. Bank of America Merrill Lynch expects two more interest rate increases from the Federal Reserve this year and three next year. The bank monitors and forecasts interest rates to proactively advise its clients on an interest-rate risk management strategy. From a commodity perspective, companies can hedge the price of hot-rolled coil to enable them to enter into fixed-price contracts with their customers. Hedging can also include fuel and power.

The bank has provided and arranged the financing for companies ranging from mining companies, publicly traded and privately held metal recyclers, integrated and mini-mills, and service centers. Its clients range from middle-market companies to large corporates that are household names in the industry.

The needs of the companies vary considerably and include refinancing to provide liquidity to support growth and/or rising metal prices; geographic or product line expansion; obtaining longer term financing at attractive pricing and more flexible terms; and acquisition financing and raising equity capital whether through an IPO or a secondary offering.

Kreft also noted that serving the financial needs of owners of its clients is an area of focus and “we collaborate with our partners at Merrill Lynch and U.S. Trust who work with the owners and shareholders of a variety of metals companies (publicly traded, family-owned, and private-equity backed) in the manufacturing, fabrication, and distribution channels. For the owners of these companies, we provide customized investment management, open market stock and options execution, 10b5-1 plans, business and family custom credit facilities, life insurance for buy-sell agreements and estate planning and company retirement plans.”

On the outlook for the industry, Kreft opined that the only certainty is uncertainty.
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Advocating for fair international trade in steel

Playing an increasingly important role in domestic and international trade policy to achieve a more level playing field for its steel clients has earned Wiley Rein its second consecutive AMM Award for Steel Excellence as Legal Services Provider of the Year.

The firm, founded in 1983 in Washington, D.C., has one of the nation’s largest and most diverse international trade practices and has long represented the interests of US steel producers — large and small — on primarily trade matters. The firm uses a three-pronged approach of legal expertise, trade-policy thought-leadership and public relations capabilities to advocate on behalf of its clients and is among a limited number of practices that regularly serves as principal counsel for major unfair trade investigations.

“We have represented numerous clients in the US steel industry for many years, and during this time we have fought to level the global playing field for these companies through innovative trade remedies so that products can be made and built right here in the United States. We work hand-in-hand with our clients to represent their business interests before a variety of government agencies, courts and the Executive branch,” Price said.

“We believe that successful outcomes for our clients in the steel industry will ultimately contribute to a robust economy, a thriving domestic manufacturing base, and significant job growth,” he added. “They are already world-class competitive companies. We want to help them produce more, sell more, export more, and create more American jobs.”

During this past year, Wiley Rein has been heavily involved in many of the hot issues in trade law and policy. Much of this work has focused on the efforts by the Trump administration to toughen US trade policy toward China. Specifically, the firm has been intimately involved in the Department of Commerce’s Section 232 investigation to determine the effects of imported steel on the national security of the United States. Wiley Rein has also been a leading voice on the issue of treating China as a non-market economy and remains a leading voice on this controversial World Trade Organization case. “By winning trade cases, developing new policy directions and developing new, aggressive and successful legal strategies in rarely used trade proceedings, our goal is to support and help transform the domestic steel industry and its workforce,” Price explained.

Wiley Rein represents a wide variety of steel industry firms and trade associations. For one large producer, the firm litigated anti-dumping and countervailing duty investigations regarding corrosion-resistant steel products from five countries, cut-to-length steel plate from 12 countries and hot-rolled and cold-rolled steel from seven countries. These are among the broadest and most important trade cases filed by the steel industry in 15 years. Wiley Rein also advances that same producer’s trade policy agenda, advising on matters involving state-owned enterprises, export restrictions, trade agreements and legislation to strengthen the enforcement of US trade laws and combat circumvention of trade orders. In addition, the firm represents steelmakers’ trade interests in WTO proceedings, working with the United States Trade Representative on multiple challenges to US trade remedies against China, India and other countries.

Another steel client of Wiley Rein engages the firm to litigate appeals and administrative reviews of anti-dumping and countervailing duty orders on oil country tubular goods from India, Korea, Taiwan, Turkey and Vietnam.

In April 2017, the Department of Commerce announced its final results of the first administrative review of the order against Korea. The results included the department’s ground-breaking decision to apply its authority under the Trade Preferences Extension Act of 2015 and found that a “particular market situation” exists in Korea with distorted costs of production; Wiley Rein was instrumental in drafting the “particular market situation” provision into law, moving it into Congress and more recently arguing for its first application in a trade case. In addition to the work for the client involving oil country tubular goods, Wiley Rein has also worked on the client’s behalf on trade matters involving welded line pipe.

In addition to representing individual companies in the steel industry, Wiley Rein also works on behalf of trade associations advocating for a specific product group. For one such group, the law firm filed petitions requesting investigation of unfair trading practices by producers in Turkey, Japan and Taiwan.

Last summer the International Trade Commission found that US producers of that product had been materially injured by unfairly traded imports from those countries, paving the way for the imposition of anti-dumping and countervailing duty orders. To date, the Department of Commerce has reached affirmative determinations in the Japan and Turkey cases, and the case against Taiwan is pending.

“Our firm has unmatched experience in metals and raw materials, and we handle trade litigation and trade policy for many of the largest producers of steel and steel products in the United States. By winning trade cases, developing new policy directions, and developing new, aggressive, and successful legal strategies in rarely used trade proceedings, our goal is to support and help transform the domestic steel industry and its workforce,” Price said.
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Information Technology Provider of the Year » Quintiq

Further key enhancements to supply-chain planning software

As winner of an AMM Award for Steel Excellence last year, Quintiq had already set a high bar for finalists in the IT category this year to jump. But the company excelled again by introducing new capabilities to its supply-chain planning software that came to grips with hot casting and rolling – two elements of steelmaking that are particularly difficult to integrate into scheduling. Path optimization for hot charging allows for greater efficiency in that energy-intensive operation. And with that optimization also come savings on energy costs, reductions in carbon dioxide emissions, and increased throughput.

“We had the active participation of our customer base in this development,” said Jonathan Lin, director for the Americas. “They are eager to generate value through planning, either day-to-day or over the course of a year. So we were addressing a specific need.”

The key insight to optimization is defining the parameters. Any mill can be optimized for a single unit, or a particular line, the whole shop, or the entire supply chain. Optimization at any level imposes potential inefficiencies above it and below it; the key to scheduling is for management to make informed decisions on where to set the optimization and when to change it.

Including hot casting and rolling into the broader scheduling system had been possible previously, but required some configuration of the software. Now those capabilities have been integrated into the baseline system. That version was included in an upgrade that was distributed to all clients starting early in 2017.

“Most metals companies choose to operate the software from on their own premises,” said Lin. “They are not yet asking for working through the cloud. We can do that, but only about 10% of clients work that way.”

Planners at the mill monitor production and can intervene as they see fit. The key insight is the ability to adjust schedules if there is some operational upset, change in inputs, or an unexpected development in a heat or a treatment. As of now, the Quintiq scheduling system does not communicate directly with process-control software. That is done through an enterprise-wide system.

“We configure the process and steps that the operators planned,” said Lin. “That feeds the execution system, but not dynamically. There still need to be human planners to be in the middle.”

He explained that for there to be true optimization for each mill or line, the scheduling has to fit all the processes: The other scheduling systems are too rigid to get a complete fit, so they have to be customized to get the job done.

By its nature, steelmaking is a linear process. Once the melt starts, or the bars or coils are on the line, the melt or run has to be completed. If new rush orders come in, or there is a disruption in the supply chain, or a processing development that affects quality, there is little to be done until the run is completed.

Scheduling cannot change any of that, but it can facilitate what happens to that melt or run, and what happens next. Revaluing outputs is critical to a well-run mill,” said Lin. “Dynamic planning allows things to change day-to-day to make different decisions as they change. The important point is that those decisions can be made on a sound business basis within the system. Operators do not have to run separate spreadsheets to determine the cost of different decisions.”

Another feature is that the Quintiq system is one single piece of software, not multiple modules. Scheduling, planning, supply chain, and distribution are all integrated. There are simply different templates or models for different types of operations.

Order bundling is another benefit of the dynamic scheduling. “What do you do if a line goes down?” asked Lin. “What do you do if a customer cancels an order, or doubles an order? How do you decide what to make, where, and when? How much? Operators like to fill the mill, that is the most efficient use of assets and inputs. What if you do? What if you don’t? There are endless what-ifs. Dynamic planning is replanning.”

There are three tiers to planning and scheduling. Scheduling technically is the timeframe of minutes to weeks. It is more granular and operational. Middle-planning covers a few months to as much as a year. That will comprise maintenance operations and typical seasonal adjustments for orders. High-level planning goes from a year to several years. That will incorporate things like process expansions or upgrades.

In particular, maintenance benefits greatly from dynamic scheduling. An unplanned outage can be mitigated by taking the opportunity to bring forward planned maintenance. Conversely, a big rush order can be priced to include the delay of planned maintenance.
Founded in 1993, today Steel Dynamics is one of the largest and most diversified domestic steel producers and metals recyclers in the United States.

We are extremely proud of our accomplishments and look forward to celebrating our 25th anniversary during 2018. We are thankful to all who have contributed to the safety and performance of our growing company.

We differentiate ourselves through an exceptional and unique operating culture, a diversified and value-added product portfolio, a low-cost operating base, and an entrepreneurial spirit that permeates our entire organization. These factors drive us forward, and create long-term value for all those involved with our company – and we thank you.
The company's safety performance improved its total recordable incidence rate by 17% over the previous year, and the company reduced its incidence of accidents by 12%. Each SDI business segment has been working to maintain safety in the workplace, and the company has set high standards for its employees achieving the seventh consecutive year of record safety performance. This culture permeates our company.”

An entrepreneurial culture embraced at all levels delivers results

Since its founding in 1993, Steel Dynamics, Inc (SDI) has developed into a steel industry juggernaut, frequently outpacing most of its competitors in many performance measures. And last year was the company’s best year ever, topping prior milestones in steel operating income, shipments and production, coupled with strong performances by its metals recycling and steel fabrication businesses.

But the core of the Fort Wayne, Indiana, company’s success is the entrepreneurial culture embraced by a workforce that SDI president and chief executive officer Mark Millett said “vigorously pursues excellence and is passionate about delivering quality products and excellent service to our customers.” That workforce was the linchpin that resulted in SDI being named Steel Producer of the Year in the AMM Awards for Steel Excellence program.

Millett continued: “Our entrepreneurial culture is driven by our extensive performance-based compensation philosophy for those on the plant floor through those in senior leadership. Employees are passionate about delivering quality products and excellent service to our customers. Our common goal of ‘consistently achieving excellence in all we do’ is reflected in the esprit de corps that permeates our company.”

Overall company results were led by employees achieving the seventh consecutive year of record safety performance. Each SDI business segment improved its performance over the previous year, and the company reduced its total recordable incidence rate by 17%. The company’s safety performance remains better than industry averages.

On a consolidated basis, SDI saw record net sales of $9.5 billion compared to $7.8 billion in 2016 with each of the company’s three operating units achieving higher annual selling values. Record operating income of $1.1 billion was achieved in 2017 over the previous year’s adjusted operating income of $861 million, which excludes non-cash goodwill and asset impairment charges of $133 million. Record net income was reported of $813 million in 2017 compared to $382 million in the previous year, and the company maintained strong liquidity of more than $2.0 billion in 2017 compared to $1.1 billion in 2016.

For its steel segment, SDI in 2017 reported record steel shipments of 9.7 million tons and record steel production of 10 million tons. Its best-in-class steel operating income per ton shipped of $119 per ton bested the domestic industry peer average of $67 per ton and the next-best steel producer of $84 per ton. The company’s metals recycling assets achieved a strong performance in 2017 and, despite selling certain non-core locations, achieved 2017 operating income of $71 million, significantly exceeding 2016 results. The steel fabrication unit had record shipments of 627,000 tons despite a small drop-off in operating income to $87 million from $91 million in the previous year.

Contributing to its strong performance is the vertical integration of SDI’s assets, which results in higher through-cycle steel production utilization. Employing the power of “pull-through” volume – steel that is sourced from SDI’s mills — is a significant contributor to higher steel utilization rates. This pull-through strategy remains one of SDI’s focuses for growth.

In addition to organic growth within the corporation, SDI is also investing in facilities to meet future demands. The largest project is a new $100-million paint line at the Columbus, Mississippi, flat roll division that began operations in early 2017. The new line is capable of 250,000 tons of annual coating capability, which allows further diversification into some of SDI’s highest margin products. The new line complements two existing paint lines in Indiana. It is expected to be running close to its full annualized rate by mid-2018.

Elsewhere in 2017, the company also upgraded the hot roll galvanizing line at the Butler, Indiana, flat roll division, which added 180,000 tons of value-added coating capability for an investment of $15 million. At the Roanoke, Virginia, bar division, SDI is investing $38 million to more effectively utilize excess melting capacity by adding a rolling mill and other equipment for the annualized production of up to 200,000 tons of multi-strand slitting and reinforcing bar finishing.

SDI also stepped up initiatives to increase through-cycle utilization and profitability at its structural and rail operations. The changes include growing the production of SBQ quality blooms that are sent to the engineered bar products division, which has excess rolling capacity, to improve utilization at both facilities. The company is also further diversifying its product offerings by introducing the production of large equal and unequal leg angles. Thirdly, SDI is investing $75 million to utilize existing melts shop and casting capability by adding another rolling mill and other equipment that will result in the annual production of up to 240,000 tons of reinforcing bar, including coiled, custom cut-to-length and smooth bar.

Millett summed up 2017 as a “tremendous year for Steel Dynamics with numerous achievements, both operationally and financially. Most importantly, all were accomplished while also improving our safety performance. We executed our strategic initiatives, while further strengthening an already firm financial foundation and remained poised for continued growth.”
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Pushing a mature strategy further still

A past winner of AMM Steel Success Strategy Awards for Environmental Responsibility, in 2015 and 2017, SSAB Americas has a long-running and continuing program to protect the environment. The company won in 2018 for its sustained and on-going program of environmental responsibility and stewardship.

Over the past five years, SSAB Americas has focused on six key on-going projects to achieve its goals in environmental responsibility: scrap tire recycling; scrap metal waste recycling; waste management – general trash sorting; EAF baghouse dust recycling; refractory brick recycling; and energy efficiency projects. SSAB also says that it was the first steel company in North America to successfully register all of its environmental management systems to the ISO 14001 standard.

The company says that the results of its initiatives have been outstanding, from less waste being sent to landfills, to less energy consumption and more materials being recycled. Notably, it reports that 4.3 million pounds of trash have been diverted from landfills, more than six million scrap tires recycled, consumption of electricity reduced in certain areas by 75% due to new lighting, and more than 240,000 short tons of EAF baghouse dust have been recycled.

SSAB’s scrap tire recycling program directly benefits local communities. Through its Foundation for Education, a portion of the money saved by using recycled scrap tires is donated to local schools in Alabama. Over $100,000 per year, accumulating to a total of more than one million dollars, has been donated to schools in the last decade. SSAB has recycled over 6.3 million scrap tires as a supplement to conventional charge carbon.

To demonstrate its commitment to the environment, in 2016, the company launched its EcoSmart™ program as a way of making people more aware of the environmental sustainability of its steel. The program was launched to many of its large customers throughout that year and continued to be rolled out to more in 2017. The program enables customers to know more about what makes SSAB steel sustainable, and then to use that information in turn with their own customers. “They can feel confident knowing they are buying steel from a responsible producer,” noted the company.

“Customers who have been on-boarded to the program receive the EcoSmart imprint on their products (as a stencil on plate or a printed tag on coil) and customized documentation like test reports and invoices,” the company noted.

Jon Howley, director, Environment, SSAB Americas, told Metal Market Magazine that the company is now mainly focusing on the progression of its established programs. He explained that the EcoSmart program has entered phase 3 of its roll-out this year – to service centers.

With a mature environmental program, most of the obvious ways of protecting the environment at the facilities, and enabling environmental sustainability, have been addressed through projects already completed, and now maintained.

Nevertheless, environmental sustainability opportunities still do remain. For example, vacuum tank degasser baghouse dust is an area getting further attention, with a view to recycle the waste as opposed to disposing of it in a landfill. The potential recycling process would involve shipping the waste to an independent recycling company to extract “crude zinc oxide” by using Waelz kiln technology. The zinc oxide compound is subsequently further refined and purified for use in products such as tires, shoes, glazed tiles, animal feed and cosmetics. SSAB is seeking the local permissions needed to ship the waste to the independent recycling company to recover zinc oxide from the dust collected from emissions from the facilities’ vacuum tank degassers.

In addition, the company generates about 55,000 short tons of EAF baghouse dust annually from its two steel mills, one in Iowa and the other in Alabama. For the past 8-9 years, dust from both plants has been recycled rather than sent to landfill.

In another new initiative, SSAB Americas is looking to redesign industrial waste containers to make them 20–30% lighter, more durable and to have a greater longevity, in order to reduce fuel consumption when they are transported and to enhance load optimization to reduce total offsite shipments.

How does SSAB Americas’ program fit into the wider SSAB group’s environmental and sustainability strategy? Howley explained that he is part of a company-wide Environmental Council, supported by leadership at an executive level, involving environmental professionals from the different divisions across SSAB. It looks at both green and societal programs, company strategy and monitors results.

With senior management, the group has set firm targets for carbon dioxide reduction, energy reduction and process waste/residual minimization both in the United States and Europe, Howley explained. While those are centralized targets, they also take into account the different steel production technology used by SSAB Group: blast furnaces in Europe and EAFs in the US as of now.

In 2016, SSAB, LKAB and Vattenfall joined forces to create HYBRIT – a joint venture project that endeavors to revolutionize steel making. HYBRIT aims to replace coking coal by hydrogen with a very low carbon footprint.

A pilot plant for fossil-free steel production will be planned and designed in Luleå and the Norrbotten iron ore fields, 250 km northwest of Luleå in Sweden.

SSAB Americas has a continual focus on the optimization of its own EAF-based processes, but Howley said that the US team will also be involved in the program as the proportion of EAF-based production of steel in Europe increases.
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A growing gateway for steel transportation

Over the past few decades, as steel production shifted away from traditional industrial centers on the East Coast to the American Midwest, essential logistics and transportation services to support that growth kept pace. Growing in tandem with the “steel capital of North America” has been the Ports of Indiana, earning the organization the AMM Award for Steel Excellence as the Logistics/Transportation Provider of the Year.

The Ports of Indiana have three ports – Burns Harbor, Mount Vernon and Jeffersonville – and utilizes two waterways – the Great Lakes and the Ohio-Mississippi Rivers – to create one system that reaches the Gulf of Mexico and the Atlantic Ocean. Businesses have flocked to the ports, which today handle more than 11.8 million tons of products per year, generating more than $7.8 billion per year in economic activity and supporting nearly 60,000 jobs.

Indiana’s port authority was created as “a body both corporate and politic,” designed to be a self-funded enterprise that conducts business to generate economic growth and tax dollars for state and local governments. The Ports of Indiana operates like a business with no financial reliance on local communities or state tax dollars, and 100% of port revenue is reinvested into infrastructure to maintain, operate and grow the ports. Although the state invested $90 million to build the ports, all three facilities eventually became financially self-sufficient by developing successful revenue-generating harbor activities and land leases with companies that ship cargo by water, rail and truck.

“The Ports of Indiana have been self-funded since 2005 after implementing a new strategic plan to develop and maintain a world-class port system that operates as an agile, strategically driven, self-funded enterprise dedicated to growing Indiana’s economy,” said Jody Peacock, senior vice-president. “Steel is critical to our success and our future,” he added.

The Port of Indiana – Burns Harbor is located in the “steel capital of North America” and is home to more than 30 companies, half of which are in the steel supply chain. Two large producers, ArcelorMittal and U.S. Steel, are located on the sides of the port, and numerous other companies move materials in and out of the port. Among other steel supply chain companies located at the Burns Harbor port are Mid Continent Coal & Coke, which processes coke screenings for local mills; Phoenix Services, which processes and distributes blast furnace slag; and numerous processors and distributors such as Indiana Pickling, Steel Warehouse and Ratner Steel.

The Port of Indiana – Jeffersonville handles a million tons of steel per year and has attracted 14 steel companies to locate on-site since 1990. Those engaged in steel processing and distribution include Delaco Kasle Processing Indiana, Mill Steel, OmniSource and Steel Dynamics, with production largely going to the automotive and appliance industries. The Jeffersonville facility provides both direct and indirect support to the Midwest automotive industry, and all of the top six automakers in the United States use some product shipped through this port.

The third Ports of Indiana facility, at Mount Vernon, is less reliant on the steel industry with its primary customers being the energy and agricultural industries. However, Mount Vernon regularly handles barge shipments of steel on the Ohio River for processing in the Midwest.

All that activity contributes to some impressive numbers. On an annual basis, the Ports of Indiana at its three locations handles: two million tons of steel; 100 ocean-going ships; 200 Great Lakes vessels; 5,000 US inland river barges; 65,000 rail cars; and 710,000 trucks. Because all steel supply chain needs are met on the Ports’ property, steel companies are said to generally experience savings of $10 per ton in supply-chain costs compared with non-port activities.

The Ports of Indiana’s facilities are also classified as Foreign Trade Zones (FTZ), which can reduce, delay or eliminate import duties on certain products in the zone. As a statewide administrator of foreign-trade zones, the Ports of Indiana serves as a grantee for FTZ applications in counties surrounding its three ports and authorizes additional grantees to sponsor FTZs in other areas of the state.

“The last four years have been the best in the organization’s 57-year history and from all indications, we expect to continue this growth trajectory into the next five years,” Peacock said. Plans over the next few years call for $20 million in expansion at the Burns Harbor port, an additional $20 million in expansion at the Jeffersonville facility and a possible fourth port.

“Those investments will drive growth in steel and manufacturing operations, and we are looking closely for steel businesses that could locate at a new Ohio River port in Lawrenceburg, Indiana. We recently secured a 500-acre megasite on the Ohio River, with access to five Class 1 railroads, which is actively being marketed to large steel producers.

“Being recognized for this award acknowledges our past successes and raises awareness of what we can offer steel companies in the future. We hope this award will encourage steel companies to consider Indiana’s ports for a future home that provides ocean access in the Heartland of the country and a long-term competitive advantage for growing business,” Peacock concluded.
Schnitzer Steel Industries is proud to be recognized as AMM’s **Scrap Company of the Year** in their 9th Annual Awards for Steel Excellence. Our deepest thanks go to our employees for their dedication to excellence, which drives and sustains value for our company, customers, suppliers, shareholders and the communities in which we work.

Founded in 1906, Schnitzer Steel Industries is one of the largest manufacturers and exporters of recycled metal products in North America with operating facilities located in 23 states, Puerto Rico and Western Canada. Schnitzer has seven deep water export facilities located on both the East and West Coasts and in Hawaii and Puerto Rico. The Company’s integrated operating platform also includes auto parts stores with approximately 5 million annual retail visits. The Company’s steel manufacturing operations produce finished steel products, including rebar, wire rod and other specialty products. [www.schnitzersteel.com](http://www.schnitzersteel.com)
Helped not only by the recent strong market fundamentals but also because of the nimbleness that occurs from being much more vertically integrated than other scrap metals companies, 110-year-old Schnitzer Steel Industries, Inc has been continuing to build upon the momentum it experienced in fiscal 2017, when it achieved its best financial performance in six years.

Schnitzer Steel achieved its three-year plan to grow its ferrous scrap volumes organically to 4.3 million long tons in just two years and now plans to increase that volume to about 5 million tons by the end of 2020. It has also been successfully growing its automotive salvage business and increasing the amount of non-ferrous metals that it extracts from its shredded scrap. Because of this — and Schnitzer Steel’s ability to adapt to both upward- and downward-trend market conditions — American Metal Market has given the company its 2018 Scrap Company of the Year Award for Steel Excellence.

“In the scrap industry, the temperature might change, but the seasons don’t,” Tamara Lundgren, Schnitzer Steel’s president and chief executive officer, declares. “We have seen environments where demand is strong and where prices are strong, making it easy for scrap companies to grow and deliver strong operational and financial performance. But there are also times when demand and prices are low and when it is difficult for us to achieve our objectives.” She says it is because of this that Schnitzer Steel is committed to staying very nimble.

While most scrap companies are just focused on scrap — Schnitzer Steel’s activities are more diverse. Lundgren notes that while it is still not totally vertically integrated, in 1984 Schnitzer acquired Cascade Steel Rolling Mills, an electric arc furnace (EAF)-based long products steelmaker that uses scrap as its major raw material. And in 2003 it acquired Pick-n-Pull, a retail self-service business that allows individuals to come in, for a fee and with their own tools, to pick and pull parts which Schnitzer sells to them for a list price. Then once all the valuable parts have been harvested, or once it has been in inventory for a while, the car body is taken off the lot, crushed and sent either to one of Schnitzer’s auto shredders, if one is nearby, or to a third-party shredder.

It is with these acquisitions that Schnitzer, which had been focused upon sustainability before it became mainstream, can offer a full-circle end-of-life solution, Lundgren says. Its shredded scrap is sold to either Cascade Steel or other mills.

Lundgren says this fits nicely into Schnitzer’s business philosophy, which has always been about people, profits and the planet (including a desire to have a positive impact upon the communities where the company operates). The people piece involves being a creator of a wide range of both lower skilled and highly skilled job opportunities across many operational and functional areas. The profit part includes delivering increased value to all the company’s stakeholders, including its customers, employees, investors and the communities in which it operates.

Recently Schnitzer has also made organizational changes to increase its operational and financial performance. In 2015 the company merged its Pick-n-Pull and metal recycling operations into a new division called Auto and Metals Recycling, creating a single operating platform that enables those units to operate more efficiently and focus upon providing more value-added processes at those operations. Similarly, in 2017 Schnitzer merged Cascade Steel and its Oregon metals recycling operations into a new division called Cascade Steel and Scrap to enhance the flexibility and nimbleness of that business and to allow it to more efficiently deliver product on a timely basis and meet the quality standards of the buyers of its steel long products.

Lundgren notes that Schnitzer is also dedicated to investing in new technologies to offer the quality of ferrous and non-ferrous scrap that meets the varying specifications of mills and smelters around the world. This includes investments in the latest non-ferrous metals extraction technologies. She notes that Schnitzer typically exports 60-70% of the scrap that it processes, although that varies depending upon domestic and/or global demand for its products in any given year.

For example, this could be impacted by the new metallic content quality standards announced by China. “In fact, there has been some noise about whether China will import any scrap at all within the next year or so,” noting that this is one reason for Schnitzer to remain very nimble.

While Schnitzer does not anticipate any further big organizational moves, it is committed to further growth, including through acquisitions, through greenfield and brownfield expansions and organic growth of existing operations. Lundgren says that even though much of that growth is expected to come from its metals scrap and auto salvage operations, there are also opportunities for it to grow its steel business, which is currently operating at a very high capacity utilization rate.
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Scrap Equipment Provider of the Year » Metso Minerals Industries, Inc

Taking a lead on new equipment design and quality

For several years the claim to fame for Metso was its complete line of scrap processing equipment — from automobile shredders, to shears, balers and briquetters. Now the company has captured the AMM Award for Steel Excellence as Scrap Equipment Provider of the Year, based on both the depth of its range as well as new technologies and techniques.

More than six decades ago Lindemann Maschinenfabrik GmbH revolutionized the scrap industry through the introduction of the guillotine principle for scrap shearing. Metso is well known for its Lindemann line, as well as for its Texas Shredder brand.

Notably, Metso has taken a leadership position in re-introducing pre-shredding to North American scrap yards. Pre-shredding had been tried in previous years, but was not considered to be widely successful because most of the equipment was not quite up to the challenge. New machines, as well as new materials, now mean the approach is getting a new lease on life.

“We will take our first delivery of a pre-shredder in September,” said Keith Carroll, vice-president of metal recycling for North America. “It will be installed in October at Mill Iron in Mansfield, Ohio. We have very high hopes for the impact of pre-shredding on the scrap industry in North America.”

There were attempts to introduce pre-shredding to North America over the preceding five to 10 years, Carroll explained. The technique and equipment are common in Europe, but the first units tried in North America, “could not handle the heavier American materials. That gave the approach a bad name,” he recalled.

Jim Stepanek, general manager of sales for North American metal recycling explained: “The pre-shredder, with free-swinging hammers, becomes in effect the primary shredder, at the front of the process. And the current primary shredder becomes secondary.”

The biggest challenge today to scrap operators is lowering the cost per ton, said Uffe Hansen, president of recycling. “We are one of the few equipment suppliers that has its own foundry,” he noted, “that is integral to new casting designs to lower cost and increase productivity,” he added. “The reintroduction of pre-shredding also extends the life of existing shredders.”

Hansen explained that Metso replaced the traditional manganese hammer with a differential heat-treated hammer made of a proprietary alloy. “It has higher Brinell hardness at the bell and lower at the pin eye. If it were hard all the way to the pin eye it would just eat up the pins.”

Pre-shredders have become prevalent in Europe over the past decade or so, but are just starting to make inroads in the United States, Hansen detailed. “They have had some presence for the past few years, but through the downturn they did not have the chance to take off.”

All that gave Metso a sound basis from which to make the reintroduction. “Pre-shredding gives smaller operators the ability to process materials that they could not previously handle. And it gives larger operators the ability to expand their operations,” said Carroll.

Metso designs the equipment that is then fabricated by contract facilities. The first pre-shredder to be installed at Mill Iron is being manufactured by Metso’s existing fabricator in Europe. The company is already in discussions for a second installation of a smaller unit that would be manufactured in the United States.

“The scrap industry has come out of a prolonged downturn,” said Carroll. “There has been a lot of pressure on operators and overall reduction in volumes. That is finally coming to a close and we are seeing a nice recovery. What that means is that there is a lot of focus on rebuilding and efficient operations. There is not a lot of focus on new technology. Instead operators are looking at fine-tuning their existing operations.”

On the non-ferrous side, Carroll noted that significant changes in primary export markets have put new pressures on operators. “It used to be that operators could ship 85-95% zorba to China and make a decent profit. Now 95% is the bare minimum, and the trend is getting closer to 98%. That level of purity is quite a challenge for most operators, so there is a lot of uncertainty these days.”

The prevailing industry focus on cost control meant that the AMM Award for Steel Excellence award had a deeper meaning for Metso, said Carroll. “There was a lot of excitement because sometimes it feels like the industry is in a race to the bottom. We know we are never going to win that race, so were thrilled to be recognized for quality.”

Hansen added: “Across the group people were excited. We have won now in two consecutive years and we feel that is recognition of quality. It is important public feedback for our approach of a broad line of equipment to the middle of the market, while also introducing new designs. Two successes in two years is an important recognition.”
...soon to be the only melt and manufacture plate mill of the future with a contiguous pipe mill in North America.

"I would like to extend my special congratulations to the Pipe and Plate Divisions of JSW Steel USA. Their tireless work ethic and unwavering positivity has taken our company to the next level. I'm honored to work with this incredible team."

John Hritz, President and CEO
JSW Steel (USA) Inc.
Fulfilling a long-term vision for expansion in plate, tube and pipe

Texas is a big state, and Texans tend to think big. That sentiment can certainly apply to JSW Steel (USA) Inc, which has big plans for its Baytown, Texas, facility and beyond. But what earned the firm the AMM Award for Steel Excellence as the Tube and Pipe Producer of the Year are not the plans for the future, but the results of the past few years that have brought the mill back in a big way.

Today, JSW Steel is the only heavy and wide plate mill (one-quarter inch to 6 inch plate with up to 155 inch width) with a large-diameter (24 to 48 inch) energy transmission pipe mill in the United States. Its plate mill sources slab primarily from its owner, Jindal Group of India. The facility occupies 700 acres, just 30 miles outside of Houston, and ships finished products via barge, rail and truck. Baytown’s proximity to the Port of Houston gives JSW Steel easy access to global markets. As a Texas corporation and an affiliate of India’s Jindal Group, with more than 21 million tons of installed capacity worldwide, JSW Steel benefits from its parent’s world class engineering expertise and product knowledge. The facility was originally owned by U.S. Steel Corporation.

Over the past three years, the mill and its workforce have transformed the facility into a powerhouse in the pipe sector. Since 2015, Baytown has reduced OSHA-recordable incidents by 67%, mill downtime by 54%, overall rejections by 47%, relevelling by 76% percent, customer claims by 91%, and cost of quality by 50%. At the same time, the mill has increased its status as a qualified supplier of pipe for natural gas transmission from two or three companies to about 25 now. Chief executive officer John Hritz credits the significant improvements of the past three years to JSW Steel’s cultural transformation. Hritz, who began his long steel industry career in U.S. Steel’s four-year apprentice program, fully understands the need to actively involve “the front line operators and the front line supervisors. Fixing equipment is easy, but to be successful you need to get people to understand the business and to work together toward the same goal. That has resulted in an exciting transformation at Baytown,” he explained.

Since 2015, the company has made game-changing advances in safety, housekeeping, quality and yield, productivity and customer satisfaction. To achieve those gains, JSW Steel has got buy-in from its workforce for commitment to demanding logical attention to detail, treating every individual with respect, defining personal accountability, and acting with honestly and integrity when interacting with customers, vendors and stakeholders. “I believe we have the right recipe to build a successful company – treat people with dignity, and they will all work together,” said Hritz.

But JSW Steel’s vision is certainly bigger than Baytown’s current plate mill/pipe mill configuration. To make that dream a reality, the company is engaged in a comprehensive modernization and expansion totalling $500 million, which will see the start-up of a new electric furnace shop, new caster and upgraded plate mill in the next two years. Once completed, JSW Steel will be the only mill in the United States able to make large-diameter line pipe from metal melted and plate rolled on the same site. “We are getting the best equipment from all over the world — Tenova for the electric furnace, Primetals Technologies for the slab caster and Danieli for the plate mill of the future. The furnace can run on DRI, HBI and/or scrap. There will be nothing like it when we are done,” Hritz said. On-site “made and melt” capabilities will allow JSW Steel to participate in government-funded “Buy American” projects.

JSW Steel’s vision extends further still, beyond the Longhorn state all the way east to the Ohio — West Virginia border. This May, the company announced its intention to buy, for slightly more than $80 million, the long-shuttered operations in Mingo Junction, Ohio. That mill, now termed JSW Steel USA Ohio, will receive $250 million to restart the electric furnace and to upgrade the existing slab caster and hot strip mill. “We plan to upgrade the hot strip mill as soon as possible to supply hot rolled to tube mills and other customers, and to expand its output to three million tons. We also plan to take the plant’s hot end to the next plateau, and market conditions may dictate another electric furnace at some point in time,” Hritz said. He recalled his days as an apprentice and plans to create an apprentice program at the Ohio facility, including “engineers to get them into the field and work with their hands.”

Both Baytown and Mingo will be a flurry of activity in the coming months as they launch their “new normals.” Is there anything planned beyond the current expansion projects? Hritz left that door open. “We could expand markets, but only in a thoughtful way.”
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American Metal Market Events
Over the past five years Birmingham, Alabama-based Jemison Metals has experienced an explosion in growth. And that growth has almost exclusively come from organically growing its business rather than through acquisitions.

Although the past year has been a good one for the entire US steel service center industry, Craig Mathiason, Jemison’s president and chief operating officer, attributes much of his company’s recent success more to its commitment to be a “best-in-class” service center by better managing each individual part that it sells than its competitors.

This, Mathiason says – as well as the company’s focus upon providing its customers with the flexibility and value-added services they desire — means that Jemison has not only been attracting all the right customers, but “In fact, it has been more that they have been finding us than we have been finding them.” It is because of this, and the company’s relentless desire to continuously improve, that AMM has named Jemison Metals its 2018 Award for Steel Excellence Service Center of the Year.

With this year’s strong pricing and with the company recently picking up several new high-volume OEM customers, all indications are that Jemison Metals’ shipment volumes will continue to grow both this year and into 2019. This comes after a more stable pricing environment when the service center’s shipments grew overall by 6% in 2017, including 25% year-on-year growth in its stainless steel and aluminium business, which it entered into in 2016.

In addition to that acquisition, Jemison has increased its exposure in the coated steel market, including galvanized, galvanneal and aluminized steel products, as well as growing the fabrication services it offers. Mathiason says that the service center now not only offers laser cutting and press brake bending, but also does some kitting of parts for its OEM customers as part of strategic, long-term partnerships.

Jemison’s major focus, however, is to create value for the large OEMs that are now the service center’s target customers. The OEMs want to rely on someone who supplies them with the specific parts that they want, meeting their exact specifications, and with the processing or fabrication they desire. They also want them in the volumes that they need and to have the parts delivered on time directly at their back door at a lower cost than anyone else. They also want the flexibility to provide any variation of pricing program that strategically aligns with the OEM’s business objectives.

This all ties into their desire to manage each stock keeping unit (SKU) or product number better than anyone in the industry, which Mathiason says Jemison does by understanding its customers’ metals requirements, perhaps even better than the OEMs understand them themselves.

“We have spent an incredible amount of money on technologies to give us insights into what our customers’ needs are,” which, Mathiason says, Jemison has complemented with the development of its own data algorithms and with data analysts whose focus is to make sure that — through the company’s FIT (forecast and inventory tracking) system — the service center has the right inventory in place and for its large OEM customers’ use.

“Often we find that our forecasts of customers’ needs are more accurate than the forecasts that they give us — and any change in a customer’s forecast immediately reverberates throughout the organization: from the salesman working directly with the customer, to the operations team to determine how many finished goods to produce and the best way to produce them to maintaining operating metrics such as yield and tons per man hour, to the purchasing team strategizing all the supply chain options and managing risk from both a quality and timing standpoint, and to the logistics team to guarantee on-time delivery,” Mathiason says.

Accurate forecasting and eliminating “silos” in the organization (by creating agile processes and nimble, cross-functional teams) has saved customers a lot of wasted time and money because, for example, if they underestimate what their metal requirements will be, “They still need to make their products, so the supplier must react by going into the spot market and finding material. In many cases, the material isn’t exactly to specification or it is priced significantly higher — either way the act itself even if performed well is a complete waste of time,” Mathiason says.

“That is why we spend so much of our time making sure that we get it right, that we have the steel that our customers need. That way we don’t have to waste time looking for it later and the OEMs don’t have to waste time waiting on material and explaining to their customers why their production lines aren’t running,” Mathiason adds. As a result, many of the OEMs that have recently started to do business with Jemison have told the company that it has been a different, more positive experience than they had at previous suppliers.

Mathiason says that Jemison has also benefited from being 100% contractual, as opposed to many other service centers which do a lot of spot business. “Every pound of steel that we buy has someone’s name on it,” he says. “We do not buy steel hoping that someone calls us to buy it. That is how many service centers end up holding steel that they don’t need.”
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Steel & Raw Materials • Base Metals • Scrap (ferrous & non-ferrous) • Ferro Alloys & Minor Metals • The All Metals Package
In 2016, the leadership of GrafTech International Ltd made a fundamental decision to shed an ancillary business and concentrate on its core competency of manufacturing electrodes for the world’s electric furnace shops. Since then, while rededicating its research and development efforts, the company has seen its worldwide reach expand and financial results soar, thus earning GrafTech the 2018 AMM Award for Steel Excellence as Raw Materials/Consumables Provider of the Year.

Since its founding in 1886, the name GrafTech has been synonymous with graphite and carbon-based solutions supported by an extensive intellectual property portfolio. Today, the company is one of the world’s leading manufacturers with three of the five highest capacity facilities in the world, excluding China. The firm, with headquarters in Brooklyn Heights, Ohio, employs about 1,300 people, manufactures products on four continents and works with customers in more than 70 countries.

Things were not always so rosy in the graphite electrode business. Facing sluggish demand and low prices, GrafTech in 2016 underwent a comprehensive strategic review of its lines of business. “This resulted in the decision to divest our engineered solutions business,” said David Rintoul, GrafTech’s president and chief executive officer. “Firstly, we recognized that our core competency was the manufacture of graphite electrodes and that the pricing of our electrodes is a key factor in the success of our business. Secondly, we dedicated ourselves to the rejuvenation of our research and development and management efforts to focus on what we are good at to make our company great.”

Those efforts have paid off handsomely. Following the divestiture of the engineered solutions business, GrafTech generated about $60 million in cash proceeds and the release of working capital. The restructured business has reduced annual overhead expenses by about $65 million since 2012, allowing the firm to reinvest in its electrode business. The divestiture also has enabled GrafTech to become a more flexible and focused company while reducing corporate overhead expenses by 60%.

At the same time, GrafTech has implemented mechanical and chemical improvements to its electrodes, invested in the capability to produce super-premium petroleum needle coke essential to high-margin graphite electrodes and optimized its production of pins at its Monterrey, Mexico, plant, which are a critical component used to connect and fasten graphite electrodes in a furnace. “Our overall focus, consistent with Six Sigma principles, was on critical aspects of each step in our processes by zeroing in on the critical few and not the trivial many. We looked for opportunities to generate the biggest bang for our buck,” said Rintoul.

The possession of a facility to produce petroleum needle coke, named Seadrift Coke LP in Port Lavaca, Texas, is said to give GrafTech a quality and cost advantage over its competition. “We are the only large-scale graphite electrode producer that is substantially vertically integrated into petroleum needle coke. Although we are not 100% self-sufficient in needle coke, we do not have to solely rely on market forces,” said Quinn Coburn, GrafTech’s vice-president and chief financial officer.

GrafTech’s secure needle coke supply has allowed it to develop a commercial strategy to sell 60-65% of its production capacity through three- to five-year fixed-volume, fixed-price take-or-pay contracts. The security of its needle coke production enables the company to offer its customers fixed pricing and the certainty of a long-term electrode supply. GrafTech believes its customers benefit from long-term contracts that offer customers certainty of supply of a high-quality product at a discount to current spot electrode prices. And GrafTech benefits as well with a secure cashflow profile while mitigating the risks associated with pricing volatility.

In addition to the commercial strategy, GrafTech provides an additional incentive for its customers through a furnace monitoring system called ArchiTech. The support and technical service platform enables GrafTech engineers to work with customers to maximize the performance of their furnaces and provide real-time diagnostics and troubleshooting. “ArchiTech helps our customers monitor furnace performance and provides an early warning system to detect emerging situations that our engineers can help solve. We are fortunate to have a team that is knowledgeable about our products and their development that can help solve problems in the field and help our company and our customers move forward,” said Coburn.

Rintoul and Coburn remain bullish on the outlook for demand for their graphite electrodes. And the market appears to support that sentiment. This April, GrafTech completed an initial public offering of approximately 12% of its common stock.
## New orders

A regular review of recently placed international new plant orders, announced for new and upgraded plants, expansions, modernizations and revamps

<table>
<thead>
<tr>
<th>Customer</th>
<th>Supplier</th>
<th>Order details</th>
<th>Start-up</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>China</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Avic Guizhou Anda Aviation Forging Co Ltd</td>
<td>SMS group</td>
<td>New ring rolling machine, type RAW 400(500/200/250)-2500/800 DM, for Anshun plant, to roll seamless rings up to 2,500 mm dia and max height of 800 mm for jet engine rings made from titanium and nickel-based alloys for aerospace industry</td>
<td>Mid-2019</td>
</tr>
<tr>
<td>Angang Iron &amp; Steel</td>
<td>Primetals Technologies</td>
<td>Modernization of twin-strand continuous slab caster COM in steelworks No. 3 in Anshan</td>
<td>Q3 2018</td>
</tr>
<tr>
<td>Anshan Iron &amp; Steel</td>
<td>Danieli</td>
<td>Modernization of bloom caster at Steel Plant No. 1 in Liaoning Province to enable casting of high-quality grades in 320 x 440 mm rectangular blooms plus 280 and 350 mm round blooms</td>
<td>–</td>
</tr>
<tr>
<td>Fuxin Special Steel</td>
<td>Andritz</td>
<td>320,000 tpy Cold strip annealing and picking line for 200, 300 and 400 series flat products</td>
<td>Q2 2020</td>
</tr>
<tr>
<td>Guangpi Guoxin</td>
<td>Primetals Technologies</td>
<td>Quantum EAF with maximum tapping weight of 80 tonnes</td>
<td>Mid-2019</td>
</tr>
<tr>
<td>Guolin Pinggang Iron and Steel Co, Ltd</td>
<td>Primetals Technologies</td>
<td>Quantum EAF with 120 tonne tapping weight. Twin-ladle furnace with capacity for 120 tonnes of liquid steel</td>
<td>Q2 2019</td>
</tr>
<tr>
<td>Henan Xaixin Steel Group Co, Ltd</td>
<td>Primetals Technologies</td>
<td>Two EAF Quantum electric arc furnaces with a tapping weight of 120 tonnes each</td>
<td>Q1 2019</td>
</tr>
<tr>
<td>Jiangsu ZGR New Material Technology Co, Ltd</td>
<td>Primetals Technologies/ Southwire Co, LLC</td>
<td>SCR-7000 copper rod mill for electrolytic tough pitch (ETP) copper</td>
<td>Mid-2019</td>
</tr>
<tr>
<td>Jianlong Beiman Special Steel Co, Ltd</td>
<td>SMS group</td>
<td>Core components for 500,000 tonne per year high-speed wire rod mill for quality steel. Wire rod dia 5.5–25 mm. Rebar dia 6–16 mm.</td>
<td>Spring 2019</td>
</tr>
<tr>
<td>Lianxin Steel</td>
<td>SMS Group</td>
<td>1m tpm TMbaR mill for 8–40 mm dia rebar</td>
<td>End 2018</td>
</tr>
<tr>
<td>MeSteel</td>
<td>Danieli</td>
<td>12 metre radius CCM for large beam blanks (largest 1,300 x 510 x 140 mm with a linear weight of 2,700 kg/metre). Also to cast 550 x 280 mm blooms on four strands</td>
<td>–</td>
</tr>
<tr>
<td>Maanshan Iron &amp; Steel Co, Ltd</td>
<td>SMS group</td>
<td>New 800,000 tonnes per year section mill for heavy/jumbo beams. Includes two breakdown stands and CCS (Compact Cartridge Stand) universal mill stands in a tandem reversing arrangement with hydraulic adjustment systems and automatic program changes</td>
<td>Mid-2019</td>
</tr>
<tr>
<td>Ningbo Jintian Copper (Group) Co Ltd</td>
<td>Primetals Technologies/ Southwire Co, LLC</td>
<td>Two SCR-7000 copper rod mills. (First in Hangzhou, Zhejiang Province; second in Guangzhou, Guangdong Province). Brings total number of copper rod mills supplied by Primetals/Southwire for Ningbo to four (total cap. nearly 1m tonnes per year)</td>
<td>1st, summer 2019. 2nd, early 2020</td>
</tr>
<tr>
<td>Shandong Laigang Yongfeng Steel</td>
<td>SMS group</td>
<td>1m tpy TMbaR mill for 8–32 mm dia rebar</td>
<td>2019</td>
</tr>
<tr>
<td>Shandong Laigang Yongfeng Steel</td>
<td>Tenova</td>
<td>Two EAF Consteel Evolution plants equipped with Consteerer™ technology</td>
<td>–</td>
</tr>
<tr>
<td>Shandong Ruiying Stainless Steel Co</td>
<td>SMS group</td>
<td>A new 350,000 tpy continuous HDG line to anneal and galvanize cold strip. To process strip up to 1,350 mm wide and between 0.30 and 2.0 mm thick.</td>
<td>H2 2019</td>
</tr>
<tr>
<td>Tangshan Iron and Steel Group Co Ltd</td>
<td>Primetals Technologies</td>
<td>CRM No. 2 condition monitoring system (CMS) expansion at Tangshan plant, Hebei Province, to include two new continuous galvanizing lines. CMS already monitors a galv line, GAL and coupled tandem picking line, plus a HSM.</td>
<td>End 2018</td>
</tr>
<tr>
<td>Shandong Laigang Yongfeng Steel Corp (Yongfeng), Dezhou</td>
<td>SMS Concast</td>
<td>Two continuous casters to expand existing plant, where a new, EAF-based mini-mill will replace existing facilities. New plant to produce 870,000 tpy of high-quality SBQ steel grades, including bearing steel to be cast on CC No. 1. CC No. 2 will be used for rebar grades, to cast 1,000,000 tpy. The 165 mm square billets produced to be processed into bar and wire rod in new rolling mill supplied by SMS group</td>
<td>–</td>
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</table>
### Customer, Supplier, Order details, Start-up

<table>
<thead>
<tr>
<th>Customer</th>
<th>Supplier</th>
<th>Order details</th>
<th>Start-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>Exlabesa</td>
<td>SMS group 35 MN extrusion press for about 10,000 tpy of aluminium profiles</td>
<td>Q4 2019</td>
</tr>
<tr>
<td>Greece</td>
<td>EvvalHalcor SA</td>
<td>SMS group New four-stand aluminium tandem hot finishing mill for Oinofyta plant.</td>
<td>2020</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stands to be equipped with CVC®plus technology and X-Pact® automation and control system. To produce hot rolled strip 1.8–12.7 mm thick and 2.6 metres wide.</td>
<td></td>
</tr>
<tr>
<td>India</td>
<td>JSW Steel</td>
<td>Primetals Technologies Meros off-gas cleaning and waste gas recirculation (WGR) systems for sinter plant No. 4 at the Vijayanagar works.</td>
<td>Q1 2019</td>
</tr>
<tr>
<td>Indonesia</td>
<td>PT Sun Rise Mill</td>
<td>Danieli New 600,000 tpy push–pull picking line and 200,000 tpy 6–high cold reversing mill for strip 0.2 mm thick (min) and 1,250 mm wide (max).</td>
<td>Early 2020</td>
</tr>
<tr>
<td>Italy</td>
<td>Arlenico SpA</td>
<td>SMS group 4-stand MEERdrive® Plus finishing block for existing wire rod line at Caleotto (wire rod from 4.5 to 27 mm dia).</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>Feralpi Siderurgica SpA</td>
<td>4-stand MEERdrive® Plus finishing block for existing wire rod line (wire rod from 4.5 to 27 mm dia).</td>
<td>–</td>
</tr>
<tr>
<td>Japan</td>
<td>Harada Metal Industry</td>
<td>Andritz 20-high cold rolling mill to produce phosphor bronze strip.</td>
<td>Q1 2020</td>
</tr>
<tr>
<td></td>
<td>JFE Steel</td>
<td>Primetals Technologies Meros (maximized emission reduction of sintering) off–gas cleaning system for new Fukuyama 3 sinter plant.</td>
<td>Q4 2019</td>
</tr>
<tr>
<td>South Korea</td>
<td>SeaAH Besteel</td>
<td>Danieli Upgrade of EAF No. 3 with Q-Melt®.</td>
<td>September 2018</td>
</tr>
<tr>
<td>Kurdistan</td>
<td>United Brothers Holding</td>
<td>Danieli New steelmaking plant with 70t EAF and 70t LF to produce 500,000 tpy of 150 mm x 150 mm square billets.</td>
<td>Summer 2019</td>
</tr>
<tr>
<td>Malaysia</td>
<td>PMB Silicon Sdn Bhd, Sarawak</td>
<td>SMS group Two 24-MW submerged arc furnaces to produce 32,000 tonnes per year of silicon.</td>
<td>Autumn 2018</td>
</tr>
<tr>
<td>Netherlands</td>
<td>Van Merksteijn International</td>
<td>Danieli Scrap–based mini–mill to produce 900,000 tpy of 5.5–20 mm dia wirerod. 1.0 Mtpy meltpool with 100t EAF fed by EES scrap charging system. 3–strand billet caster (with space for 4th to increase capacity to 1.2 Mtpy).</td>
<td>H2 2020</td>
</tr>
</tbody>
</table>

Exlabesa has awarded SMS group the contract to supply two 35 MN extrusion presses for production in Doncaster, UK, and in Minden, Germany. Each extrusion press will have a capacity for about 10,000 tpy of aluminium profiles.

The new press for Doncaster will be used to extrude profiles for automotive, architectural and industrial applications from aluminium billets with a diameter of 10in (254 mm) and maximum length of 1,400 mm. The press will expand exlabesa group’s production capacity at its Minden works in Germany, enabling it to respond more quickly and flexibly to the growing demand for aluminium profiles for the automotive, mechanical engineering, construction, electrical engineering, furniture and retail sectors.

Both presses will be equipped with an ecoDraulic system, which has an intelligent, automatic start-stop control function that switches off all hydraulic pumps that are not required during the extrusion process. SMS group says that the use of the system enables average energy savings of 10% compared with modern presses without this system.

Enabling expansion into new geographic markets, Ningbo Jintian Copper (Group) has signed contracts with Southwire Company, LLC of Carrollton, Georgia, USA for two identical SCR 7000 copper rod mills to be supplied by Primetals Technologies in 2019.

Primetals Technologies is responsible for the engineering, manufacturing and commissioning of the rolling mill and coiler equipment for the Southwire SCR 7000 rolling mills to produce electrolytic tough pitch (ETP) copper for the building construction wire and cable market.

The contract scope includes a Morgan No-Twist mill with 13 independently driven roll stands, which will produce 2–4 ton coils of 8, 9.5, 12.7, 16, 18 and 25 mm dia rod from an 8,200 sq mm cast bar at a production rate of 48 tonnes per hour. The arrangement will include the latest inline recirculating coil handling system.
## New orders

<table>
<thead>
<tr>
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<tbody>
<tr>
<td><strong>Russia</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MMK, Magnitogorsk</td>
<td>SMS group</td>
<td>Revamp hot strip mill 2900, to include modernization of the finishing train equipment and installation of a new automation system. Total capacity will be increased by 500,000 tonnes per year. Work to be completed in 4 shutdown periods by mid-2020.</td>
<td></td>
</tr>
<tr>
<td>MMK</td>
<td>Danieli</td>
<td>Modernization of wire rod mill IT0 by introducing Danieli HB (high productivity, quality and efficiency) to improve mechanical properties of finished products.</td>
<td>2018</td>
</tr>
<tr>
<td>NLMK Group</td>
<td>SMS group</td>
<td>New bow-type thick (up to 400 mm) slab caster for steel mill no. 2 in Lipetsk. Width up to 2,800 mm. Max. capacity of 2 million tpy.</td>
<td>December 2019</td>
</tr>
<tr>
<td>OEXK</td>
<td>Danieli</td>
<td>Heat treatment complex for 70,000 tpy of bars with 19–90 mm dia and 3–12 metres long.</td>
<td>Q4 2019</td>
</tr>
<tr>
<td>Severstal, Cherepovets</td>
<td>Primetals Technologies</td>
<td>Modernization of hot strip mill HMS 2000. Work includes edger upgrade, short-stroke HAGC (hydraulic gap control cylinders) installation for finishing mill and a power cooling unit (reducing alloy consumption for high-end steel grades).</td>
<td></td>
</tr>
<tr>
<td>Severstal, Cherepovets</td>
<td>Danieli</td>
<td>New 2 million tpy continuous pdding line No. 4. Max. width 1,850 mm; thickness 1.2–6.0 mm</td>
<td>February 2020</td>
</tr>
<tr>
<td>JSC Ural Steel (Metalloinvest)</td>
<td>Tenova</td>
<td>Installation of two Flexible Modular Furnaces® to replace existing EAF in melt shop upgrade.</td>
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<tr>
<td><strong>Spain</strong></td>
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<tr>
<td>Celsa Barcelona (SMS Concast)</td>
<td>SMS group</td>
<td>Upgrade of 1 million tpy-plus 6-strand beam blank caster, for billet, bloom and beam blank sections, with a seventh strand, fitted with Condive oscillation drive.</td>
<td>End-2018</td>
</tr>
<tr>
<td>Exlabesa Extrusion Padron SL, A Coruña</td>
<td>SMS group (Hertwich Engineering)</td>
<td>Continuous homogenizing furnace with air cooling station, long billet stacker, billet saw, semi-automatic strapping and automatic weighing station. Billet dia, 178–406 mm, length on entry 6,500 mm, capacity of 32,000 tonnes of aluminium</td>
<td>End-2018</td>
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<tr>
<td><strong>Turkey</strong></td>
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<tr>
<td>Diler Demir Celik</td>
<td>Danieli</td>
<td>Caster upgrade for 180–180 mm square billets.</td>
<td>Q1 2019</td>
</tr>
<tr>
<td>Karabük Demir Celik Sarayi ve Ticaret A.S. (Kardemir)</td>
<td>Primetals Technologies</td>
<td>Two Meros off-gas cleaning systems for sinter plants Nos. 1 and 2 and upgrade to a Meros plant previously ordered for sinter plant No. 3</td>
<td>End of 2018</td>
</tr>
<tr>
<td>Kromon Celik</td>
<td>Danieli</td>
<td>Modernization of high-speed wire rod mill to include addition of twin-module block and high-speed shear before the sizing block.</td>
<td>Summer 2019</td>
</tr>
<tr>
<td>Tatmetal Celik, Ereğli</td>
<td>Danieli</td>
<td>New 6-high, 5-stand cold rolling mill for 1.2 million tpy of high-strength strip 0.2–3.0 mm thick and up to 1,550 mm wide.</td>
<td>Q4 2019</td>
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<tr>
<td><strong>UK</strong></td>
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<tr>
<td>Exlabesa</td>
<td>SMS group</td>
<td>35 MN extrusion press to produce about 10,000 tpy of aluminium profiles from 10in dia billet up to 140 cm long.</td>
<td>Early 2019</td>
</tr>
<tr>
<td>Tata Steel UK, Port Talbot</td>
<td>SMS group</td>
<td>330 tonne converter, new trunnion ring, lamella-type vessel suspension system, secondary gear unit for the installed converter tilt drive, new doghouse for the converter, and replacement of dust collecting ducts and alloying chutes leading from the bin systems into the converter</td>
<td>2019</td>
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<tr>
<td><strong>Uzbekistan</strong></td>
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<tr>
<td>Toshkent Metallurgy Zavodi (TMZ) and MetProm</td>
<td>Danieli</td>
<td>Cold mill complex to process 500,000 tpy of cold rolled, galvanized and painted coils (300,000 tpy color-coating line)</td>
<td>Ramp-up during 2019</td>
</tr>
<tr>
<td><strong>USA</strong></td>
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<tr>
<td>Emerson Electric Co, Russellville, Kentucky</td>
<td>Primetals Technologies</td>
<td>Roller hearth, lamination annealing line, based on Flinn &amp; Dreffein technology, including an atmosphere generator, to heat-treat low-carbon and ultra-low-carbon steel to soften and impart specific magnetic properties for air-conditioning units</td>
<td>Spring 2019</td>
</tr>
<tr>
<td>AW Aluminum</td>
<td>Tenova</td>
<td>Pomini Tenova roll grinding machine</td>
<td>End 2019</td>
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<tr>
<td>Nucor Steel Kankakee</td>
<td>SMS group</td>
<td>New 16-stand, 500,000 tonnes per year merchant bar mill. Products to include equal and unequal angles from 3 to 7in inches, channels from 3 to 10in inches, flats up to 12in, rounds up to 3 5/8in and rebar from no. 14 to no. 18. The mill will use a wide range of starting billet sizes, ranging from 6.25in square to 5 5/8in x 11.5in</td>
<td>2019</td>
</tr>
<tr>
<td>Steel Dynamics, Inc (SDI Pittsboro)</td>
<td>Tenova</td>
<td>NexGen® off-gas analysis system, iEAF® dynamic process control and water detection technology (WDT®) for 100 t AC EAF</td>
<td>November 2018</td>
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<tr>
<td><strong>Vietnam</strong></td>
<td></td>
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<tr>
<td>High Son</td>
<td>Danieli</td>
<td>Two Zero Scale Pit™ water treatment plants to complement order for two casters and bar and wire rod rolling mill projects.</td>
<td></td>
</tr>
</tbody>
</table>
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• The capabilities of a mature SCP&O solution
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Screening (separating dry material based on particle size) is a complex task that requires sophisticated machinery. An optimized screener needs to be designed with consideration of countless variables, including:

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• Loading mechanics: feed rate/unit area, etc.
• Material characteristics: particle size distribution, particle shape, bulk density, moisture, friability and static charge.

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Brunel University launches additional metal R&D center

The UK’s Brunel University unveiled its new Advanced Metal Processing Centre (AMPC) in London on June 13. It will provide materials specialists and partners — such as Constellium and Jaguar Land Rover — with workspace and infrastructure to develop light alloys and components for cars.

Funding for AMPC mainly came through a £15 million ($20 million) award from the Higher Educational Funding Council for England UKRPIF programme (now Research England).

The industrial and pilot-scale metal processing equipment at AMPC will test high-performance aluminium alloys for making lightweight car parts through innovative technologies. It will match researchers from CCAST, said.

Constellium expands UTC at Brunel

Constellium has announced the expansion of its University Technology Centre (UTC) R&D unit at Brunel University after it opened in 2016.

The move will allow Constellium to rapidly test prototype aluminium structural automotive components, and transition the know-how from laboratory to its global manufacturing sites. It will aim to meet automakers’ stringent specifications in the process.

The UTC first looked at aluminium alloy development, using dedicated industrial-scale casting and extrusion equipment to reduce the time to market for new alloys by 50%.

Capabilities at Brunel’s new R&D center include freeform 3D bending, electromagnetic pulse forming, sawing and joining techniques such as welding, flow-drill screws and self-piercing rivets.

“The UTC has been a tremendous benefit for Constellium and its customers to speed up development of new alloys and trial novel extrusions,” Paul Warton, president of Constellium’s Automotive Structures and Industry business unit, said speaking at the dedication of the new Advanced Metals Processing Centre (AMPC) at Brunel.

The company is now set to test and analyze prototype crash management systems, body structure components and battery enclosures for electric and hybrid vehicles.

Metalysis teams with Australian Mines to evaluate scandium oxide

Metalysis’ R&D center is teaming with Australian Mines to evaluate the scope of scandium oxide as a feedstock to support its master aluminium-scandium (AlSc) alloy production in the UK.

Scandium oxide from Australian Mines’ Sconi project in northern Queensland will be used in Metalysis’ modular, electrochemical technology to make a new high-value AlSc alloy.

Metalysis’ new partner will provide feedstock for qualification in H2 2018. The move follows 12 months of R&D activity at Metalysis’ Materials Discovery Centre in South Yorkshire to study the high-value AlSc alloy, which offers manufacturing potential for its Generation 4 industrial plant.

At the center, Metalysis assessed the high cost and supply constraints associated with using scandium in industrial applications, as well as its strength and lightweight capabilities.

Australian Mines is currently developing cobalt-scandium-nickel projects in Australia and is focused on the production and supply of battery and technology metals to global markets.

Metalysis’ Generation 4 technology builds on Generation 1-3 and is capable of producing “hundreds of tonnes of speciality powder alloys”.

The material will be attractive to the growing demands of automotive, advanced manufacturing and additive manufacturing applications because of its lightweight capabilities.

Metalysis’ R&D Center opened in mid-2017 (see article ‘Making the most of metal powders’ in the Metal Bulletin Magazine archive, July-August 2017, p54).
ArcelorMittal Steligence® steel construction concept targets cost savings and efficiencies

ArcelorMittal has unveiled an innovative concept in construction that will allow architects and other stakeholders to target efficiencies in the lifecycle of buildings through cost savings and the sustainable re-use of material.

One of the economies achieved by using Steligence®, according to ArcelorMittal, comes from implementing the system’s Angelina® 13 meter long-span beam infrastructure, for “easier configuration of office space and therefore increased rental value”. The reduction in the number of columns needed is an additional saving.

The concept also allows more building storeys within a given height. Efficiencies also come from needing fewer construction staff, less equipment rental time, and reduced site traffic and number of deliveries – all resulting in less environmental impact.

ArcelorMittal’s CofraPlus® 60 compact floors – another part of the concept – require lighter steel foundations of “less than half the weight of equivalent structures.” The company’s Magnelis®, meanwhile, offers metallic coating where applicable, as opposed to conventional hot-dipped galvanized.

The dynamic concept will allow for a “better dialogue” between designers and engineers to facilitate the modularization of steel components, compared with traditional builds. Thus, it will create a more “holistic” approach to construction, says ArcelorMittal.

A higher level of certification for the system was awarded by global rating schemes: the Building Research Establishment Environmental Assessment Method (BREEAM) and Leadership in Energy and Environmental Design (LEED), awarded for sustainability performance.

“Steligence® is the culmination of several years’ intensive scientific, independent peer-reviewed research to develop specific-use steel for the construction industry,” Greg Ludkovsky, global head of research and development, said.

Its vision of sustainable construction that delivers for future generations builds on advances in steel technology and therefore makes the material more attractive in the industry, says ArcelorMittal.

Homes come to the fore in the UK Galvanizers Association Awards

With many recent building projects completed and under construction in the UK and Ireland being focused on housing and mixed-use residential construction, it was natural that they were prominent among the winners of the Galvanizers Association Galvanizing Awards 2018.

Old Shed New House, by Tonkin Liu, won the prestigious Architecture Award – a project that saw a large existing agricultural building converted into a home for a lifetime’s collection of books and art (see photo).

The original steel frame and ground slab were reused and enlarged. Externally, the building was newly clad in shot-blasted timber and galvanized steel fins. Internally, galvanized steel was used to form a slender-profiled bridge and mezzanine in a gallery and library, as well as for sliding perforated flyscreens.

In addition to its strength, galvanized steel was chosen for the contribution that its silvery, light-catching appearance contributed to the aesthetics of the building.

Other main winners included two mixed-use multi-storey buildings, for galvanizing in detail and the Duplex Award, and a treehouse for the sustainability award. A new dairy building was the only non-housing winner, for galvanizing in engineering.

Iqbal Johal, Galvanizers Association marketing manager, also pointed out a nascent trend for projects to enhance exposed galvanized steel through additional treatments. He noted, for example, that the highly commended – architecture award, which went to 6a architects for Blue Mountain School, London, treated the coating to accentuate the process by applying lacquer to the weld areas.

In another example, one of the shortlisted entries – a multi-storey residential building at 15 Clerkenwell Close, London, designed by Groupwork + Amin Taha – used galvanized windows that were chemically treated to create a weathered bronze effect.
You too can bring immortality to your lips. Aluminium can be endlessly regenerated, without losing its essential qualities. And for added allure – it has the slimmest recycling energy cost of any metal.