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Heavy Gage Cut-To-Length by Red Bud Industries®

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Lake Erie’s Project Icebreaker relies on a novel method of setting steel wind turbine foundations.

An invigorated energy market helped pull the U.S. economy out of the dark. The industry’s newest technologies ignited demand for and development of metal products through the first half of 2014.

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Caterpillar Inc. is one of the largest individual purchasers of metal products in North America and sources around the world for steel plate, sheet, tubing, special sections, special-bar quality, forgings and castings, rings, fasteners, aluminum alloys, magnesium, etc. For many metals suppliers, Cat is a top customer. So when Cat’s financial and sales executives put together a forecast, the market listens. We at Modern Metals pay attention, too, because Cat’s forecasts are never too rosy and rarely as foreboding as Wagner’s “Götterdämmerung” (listen on YouTube—you’ll get it). Their outlooks are based in reality and that’s what you need in order to check your own expectations and plan accordingly.

Cat says its outlook for 2016 sales “does not anticipate improvement in world economic growth or commodity prices.” Sales in the Peoria, Illinois-based machinery builder’s Energy & Transportation business are expected to decline 10 to 15 percent from 2015 as a result of low oil prices. Continuing weakness in economic conditions in much of the world is expected to be negative for sales of power generation equipment, industrial engines, marine and rail as well.

Cat predicts Resource Industries sales will slip 15 to 20 percent this year due to still-falling prices on such commodities as iron ore, copper and nickel, plus miners are facing difficult financial conditions.

Quoting activity for mining equipment remains at a very low level, especially as some machines remain parked. “We expect to see parked machines brought back into service and machine rebuild activity pick up as early indicators of a potential upturn—unfortunately, we have not seen these signs of improvement yet,” the company states.

Globally, construction equipment sales may shrink 5 to 10 percent but improving labor market conditions and relatively stable economic growth in the United States should continue to support the wider economy and construction. “While the U.S. and European economies are showing signs of stability, the global economy remains under pressure,” Chairman and CEO Douglas R. Oberhelman told shareholders Jan. 28.

As of Dec. 31, Cat’s order backlog was about $13 billion, down about $700 million from Sept. 30; the decrease was primarily in Energy & Transportation. Compared to year-end 2014, the order backlog narrowed by about $4.3 billion. The decrease was split about evenly across Construction Industries, Energy & Transportation and Resource Industries.

A Thomson Reuters Base Metals Review from October declared “the landscape for the mining sector looks rugged [because] the clock has turned back commodity prices and revenue to levels last seen in 2008-2009.”

However, Dodge Data & Analytics predicts total U.S. construction starts for 2016 will rise 6 percent to $712 billion. The strength will be more on the residential side of the equation, with Dodge forecasting a 16 percent rise for housing, but commercial building activity was expected to improve 9 percent.

In other words, domestic suppliers should plan for metal product sales for earthmovers but not for oil rigs or electric shovels.
WHAT’S NEXT?

Establishing a succession plan is important. Leon Resnick discusses how to begin and follow through.

MM Why did you choose the niche of succession planning for private and family held businesses?

Leon Resnick: We’ve chosen to focus on this area because private and family owned businesses comprise 90 percent of all businesses in the United States. Unfortunately, the vast majority of these companies will not survive to the next generation due to a lack of planning or improper planning.

MM What are some of the most common mistakes you encounter?

Resnick: Often, major issues haven’t even been addressed. Business owners know succession planning needs to be done, and they plan to get to it, but they rarely do. A sadder instance is the people who have taken the initiative to do the planning, but their plan is not good or outdated. As time goes by, even a very good plan that’s not updated can become inconsistent with business objectives or an evolving family structure.

MM How often should a company review its succession plan?

Resnick: We recommend an annual review. Even if nothing has changed, it’s a good reminder for determining what plan is in place. A lot of companies, especially successful privately owned businesses, once they do the planning, may have a pretty good understanding of the potential outcomes. However, once they are immersed again in their day-to-day activities, it’s hard to retain the knowledge of what’s important within the plan.

If there are any material changes to the family or business situation, then owners should review and address those immediately. A lot of times we see family businesses that establish a plan when one child works for the business. Ten years later, there are two or three children in the business, and those children aren’t even mentioned in the existing succession plan.

MM How can privately held businesses achieve a successful succession plan?

Resnick: First and foremost, deal with specialists in each facet of the planning: The attorney, the accountant, the consultant providing business valuation and the life insurance agent. We encourage people to outline their objectives for each advisor: What do they want to happen with their personal estate plan? How do they want to take care of their children? Based on the objectives of the business owner/parent, the specialists should be able to design a plan that meets those objectives and educate the client about potential concerns.

MM What about the estate tax situation?

Resnick: The estate tax situation has been in flux at least 10 years. We now have the highest exemptions in our country’s history. That’s a good thing. It helps protect business owners to a certain threshold. But we always encourage people not to become complacent and think these exemptions and the lower tax rate will last forever.

MM How does a family business that has active and inactive children handle succession?

Resnick: It’s a challenge for individuals who wear two hats as parents and business owners. We are huge proponents of specifying that only children active in the business own company stock. That’s not to disinherit or neglect heirs who don’t participate, but there are estate equalization techniques that can take care of the other children while ensuring only members of the family who participate in the business receive stock. Beyond the financial reasons for doing this, it actually creates and maintains family harmony because it’s unfair for active children to be co-shareholders with inactive children. It generally puts both parties at odds.

Communication is key. A business owner needs to communicate with both active and inactive family members so everyone knows what’s going on. That way, if the children have questions, they can be addressed now. As a parent and business owner, it should be an obligation to create and maintain a succession plan.

MM What basic advice can you give for the owner of an established privately held business?

Resnick: We strongly recommend that a business owner work with specialists for each part of the plan, conduct annual reviews and address any material changes to both the family or business immediately. Don’t put it off.

Leon B. Resnick is a partner in Resnick Associates, an estate, business succession and life insurance advisory and implementation planning firm with offices in Overland Park, Kansas, and Harrisburg, Pennsylvania. Lee can be reached at 913/681-5454 or lee@resnickassoc.com.

WHAT’S NEXT?

Establishing a succession plan is important. Leon Resnick discusses how to begin and follow through.
BLANK MANUFACTURER INSTALLS NEW DUPLEX MILL

TCI Precision Metals has installed an Amada THV430 duplex mill at its Gardena, California, shop. The THV430 provides a fourfold increase in throughput over traditional milling machines and will help TCI shorten customer lead time and handle increased demand for its proprietary Custom Machine-Ready Blanks. TCI’s blanks are milled in width and length using the duplex mill’s twin spindle in a single setup. One or more blanks can be produced simultaneously.

Pennsylvania service center joins NASA

M. Glosser & Sons has joined the North American Steel Alliance, bringing the metal distribution cooperative’s membership to 120 companies. M. Glosser & Sons has been serving Western and Central Pennsylvania for 117 years and over four generations. The firm has warehouses in Johnstown and Camp Hill, Pennsylvania, that supply mild carbon structural bar, channel, pipe, tubing, plate, sheet, beams, expanded metal and cut shapes, Glosser also provides such value-added as burning, shearing, cut to size, painting and piece work. A separate Tygart division outside Pittsburgh produces steel counterweights for the elevator and mobile equipment industries.

FLACK STEEL LTD. ACQUIRES SOUTH CAROLINA SERVICE CENTER

Flack Steel Ltd., Cleveland, has purchased select assets of Consolidated Metal Products. The acquisition expands Flack Steel’s product offering and market penetration opportunities for bare and painted carbon, galvanized, stainless steel, and aluminum. It will also raise Flack Steel’s consolidated annual revenue to more than $300 million. Terms of the deal were not disclosed. CMP will retain a staff of 20 at its Columbia, South Carolina, office.

Coil processor installs ERP software

Southwest Steel Coil Inc. has implemented the Stratix metal service center software from Invera in order to manage on-line production planning, on-line slitter and cut-to-length setup functions, shopfloor receipt of goods, shopfloor production recording and packaging with bar code scanning, toll processing, and on-line shipment planning.

Pennsylvania Steel Co. acquires Erie Metals

Pennsylvania Steel Co. finalized its acquisition of Erie Metals in January and appointed Bob Noonan to general manager of the new division. Noonan was promoted from the inside sales manager position at Pennsylvania Steel’s Allentown division. He will oversee the expansion of the Cleveland-area sales team, service area and facility to accommodate planned growth for both product lines and inventory.

See more NEWS at www.modernmetals.com

COMPONENT BUILDER NAMES SAMUEL ITS NO. 1 SUPPLIER

Samuel Son & Co. Inc. again won the Supplier Performance Award from Precision Resource, which performs fine blanking of metal and produces components for the automotive, heavy duty, tools and hardware, electronics, and medical industries. The award was established last year, and Samuel is the only recipient to date. Its Mississauga, Ontario-based service center network supplies carbon steel sheet and strip to Precision Resource through the Samuel Automotive and Samuel Midwest divisions.
Novelis wins additional Ford business

Novelis is supplying high-strength, military-grade aluminum for the upcoming Ford F-Series Super Duty lineup of trucks. Novelis aluminum alloys will be featured in the body and bed, reducing vehicle weight by up to 350 pounds. Novelis will roll aluminum sheet for the F-Series Super Duty trucks at its plant in Oswego, New York, which is commissioning its third automotive sheet finishing line and will begin shipping product to support Super Duty production this spring.

Esmark, Almetals order new gauges

Advanced Gauging Technologies LLC, Plain City, Ohio, has received five new thickness gauge upgrade orders from Esmark Steel Group and Almetals Inc. Esmark ordered four AGT400 gauges to replace obsolete GR200 gauges at its Chicago Heights, Illinois, facility. Almetals, in Wixom, Michigan, ordered an upgrade to its 36-inch Ruesch slitter D.M.C. 410 thickness gauge.

Concept Systems receives award

CFE Media awarded Concept Systems, Albany, Oregon, the 2016 System Integrator of the Year Award for its development and installation of complex manufacturing automation solutions for a wide range of industries. The award recognizes business skills, technical competence and customer satisfaction. Winners are inducted into the System Integrator Hall of Fame. Concept Systems won the same award in 2007.

PAT MOONEY EXPANDS FACILITIES, OPENS TEST CENTER

Pat Mooney Saws’ new 48,000-square-foot location houses a fully staffed 10,000-square-foot Test Center featuring 15 different saw sets. The new facility also allow the company to provide a greater breadth of technical support and service as well as a large inventory of spare parts and blades. In addition, the technical support staff answers customers’ questions.
**Kaiser Aluminum Corp.** appointed Keith A. Harvey, a 35-year veteran of the company, as president and chief operating officer. He has served as executive vice president—Fabricated Products since June 2014. Meanwhile, Kaiser’s board of directors extended Chairman and CEO Jack A. Hockema’s employment contract through 2018.

Lisa Goldenberg won the Association of Steel Distributors’ 2015 Steel Man of the Year Award, and is the first female recipient. She is president of Delaware Steel Co., Washington, Pennsylvania.

Shiloh Industries Inc. named W. Jay Potter as chief financial officer and senior vice president.

Damon Wos, former manager of inside sales/marketing/product control and pricing for Central Steel & Wire Co., Chicago, joined Charter Steel as vice president—sales and member of the executive team.

Chicago Tube and Iron Co. promoted Bill Zielinski to executive vice president and COO, Curt Roe, senior vice president, will retire in May. Randy Holndoner was promoted to Corporate Manager of IT. Sean Vietti was promoted to assistant general manager of the Romeoville (Illinois) Division. Rod Van Rite was promoted to assistant GM of the Fond du Lac (Wisconsin) Division. Rob Powers was promoted to director of marketing—pipe, valves and fittings.

The Cold Finished Steel Bar Institute elected new officers. Bill Geary, president of Nelsen Steel Co., was elected chairman. Mark A. Redding, president and CEO of Banner Service Corp., was elected vice chairman. Tony Verkruyse, CFO for Niagara LaSalle Corp., continues to serve as treasurer. In addition, William Jaworski, director of sales and marketing at Charter Wire LLC, was appointed chairman of the Government Affairs Committee.

Formtek Group promoted Mike Roy to Southeastern regional sales manager to supervise sales of Formtek coil metal processing, flexible fabrication and roll forming divisions. Roy has 17 years of experience with Formtek’s coil handling, processing and forming equipment.

Phil Simonpietri has joined Chicago Slitter, maker of heavy-duty coil slitting, blanking and cut-to-length lines, as sales executive. Simonpietri previously worked with MAE-Eitel selling specialty presses and custom automation for machine loading, part processing and assembly.

**NOVELIS ENDOWS COLLEGE TECH PROGRAM**

Novelis will launch an Advanced Manufacturing Institute at Cayuga Community College’s Fulton, New York, campus. Endowed in part by $80,000 from Novelis, the institute will include an industrial maintenance technician program and a laboratory and training center.

**PRECOAT BUYS METAL PROCESSING PLANT**

Precoat Metals, St. Louis, has acquired the metal coil coating and processing assets of Consolidated Metal Products, Columbia, South Carolina. That business will operate as a toll processing facility in Precoat Metals’ Southern Region, applying paints, films and other coatings to metal coils, in addition to slitting, blanking, leveling, embossing and packaging services.
**HIGH-SPEED SAW MITERS NONFERROUS MATERIALS**

The KM14HS saw is a 14-inch, high-speed machine that can miter nonferrous materials, such as aluminum and brass, 45 degrees left or right. The saw is now part of Kalamazoo Industries’ standard equipment line, but it was originally built because of a customer’s special request for a rugged, high-capacity, high-spindle-speed saw. It features cast iron construction mounted on a steel base, 4,400 rpm spindle speed, sealed ball bearings, dual V-belt drive and dual cam vises that open to 6 inches. The saw can handle 2-inch by 6-inch material at 90 degrees and 4-inch by 3.5-inch material at 45 degrees.


**Five new semiautomatic metal cutting band saws**

DoAll Sawing Products has expanded its Continental Series product line to include the DC-280SA, DC-330SA, DC-500SA, DC-560SA and DC-800SA high-production, semiautomatic band saws. These saws are suitable for operations that do not require indexing or automatic cutting cycles. Semiautomatic operation differs from traditional automatic or manual operation because once an operator has set the desired feed rate, blade speed and initial vise opening and a cut is complete, the band shuts off and the head returns to the upright open position and locks. The operator must manually reposition the material for another cut. Semiautomatic operation increases blade life and cutting accuracy because the operator is not manually pressuring or overloading the saw blade during the cut.


**HXT KNIVES HANDLE AHSS**

ASKO Inc. has launched its new HXT line of knives. The patent-pending knives can be used for trimming the edges and slitting AHSS strip and sheet in pickle line side trimming operations and other demanding applications. In more than 12 pickle lines and processors, HXT knives have demonstrated three to six times the performance of conventional knives when cutting AHSS. Because of the HXT knives’ unique physical and metallurgical properties, they are able to process high tensile strength materials without interruption or coil edge deterioration.


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In the U.S. Energy Information Administration’s “Electric Power Monthly” report for October 2015, the agency found utility-scale net generation of power via solar photovoltaic plants from utility scale facilities increased 50 percent during the first 10 months of the year versus the same 2014 period. In fact, utility-scale solar power generation, as measured in thousands of megawatts, increased 38-fold when comparing all of 2005 to the first nine months of 2015, EIA data show.

A relatively young company whose predecessor or sibling entities built up experience with metal fabrication, as well as starting up solar power facilities, switched gears in order to invent a racking system for photovoltaic panels that could be scaled up fast and installed in the most efficient and economical way possible.

It was a circuitous route, but GameChange Racking President Andrew Worden says he’s glad to be serving a growth industry that’s good for the earth and his company will be looking for vendors to expand with him.

Throughout his career, Worden has employed a “follow your nose” strategy of entrepreneurship, he says. He runs a private equity firm that invested $490 million over the past 14 years. The firm made acquisitions in metal fabrication and forging. It started a construction company and used $50 million of its own capital to build a total of 10 solar power plants, which were later sold.

The initial solar power plant projects were delayed due to the slow production of racks, recalls Worden. “As we waited for delivery of racks to put panels on and studied the engineering behind them, we thought that we could do this way better ourselves,” saving customers money through improved engineering and by using fewer parts.

Soon, Worden started up another firm so that, “for the last six power plants, each one used our own racking designs.” GameChange Racking began work supplying its sister company, the construction firm, then soon started selling to external customers as well.

“About three years ago, we finished building the power plants and decided to sell them, and said, ‘we are doing racks.’ The growth has been absolutely phenomenal—the solar panel industry is growing...
30 to 40 percent a year. We grew tenfold the first year, doubled in year two, tripled in 2015 and we expect our sales to triple again in 2016,” Worden predicts.

“We are cash flow positive, we have no debt, we pay vendors really fast, and we have earned a profit every year,” he adds.

**Business model**

GameChange Racking found it does not need to be vertically integrated to get the required quality in its finished racks.

“Our model is, there are a lot of companies out there that are really good at making metal and roll forming, that already have lines and have been doing it for many years. We own the tooling but the roll formers are rolling our steel. We get the capacity we need from them and can scale up our business by using these third parties,” Worden explains.

All racks go through a rigorous in-house quality assurance process. “If you aren’t doing it right with outsourcing, you might run into problems so we are always checking. We have great vendor relations,” says Worden, adding that GameChange just entered a new agreement with a Detroit-area metalformer. “They will increase their capacity for us. They may even be adding people—creating jobs in the U.S.”

**Material choices**

After aluminum prices rose, GameChange Racking turned more to pre-galvanized steel as its preferred material. Coated sheet is also expensive, according to Worden, so pre-galvanized coil provides “the best bang for the buck.” The company places blanket orders with steel mills for certain rollings and then has the material shipped to the metalformers.

“We also buy roll-formed tubes, seam welded and re-metallized on the seam.”

In 2014, GameChange sourced about 40 million pounds of sheet and tubing; in 2015 the volume tripled to 120 million pounds. “Tubes are growing a lot. We use square tube for our racks. We have some stamping capacity, to make brackets and fasteners. We do a limited amount of extrusions for some bearings.”

**Winning adherents**

GameChange Racking’s end customers include some of the largest electricity producers in the nation but the systems are sold primarily to contractors that build solar projects for utility companies.

L&D Landfill in Burlington County,
New Jersey, is the biggest Superfund site in the United States. GameChange Racking developed a proprietary technique to install racks at landfills. Because posts cannot be installed, as they would perforate the cover and release methane, landfills typically installed large precast slabs of concrete aboveground, “and those cost a fortune to make and transport,” Worden claims. “Also, they weren’t level.” Overall, the method for these projects proved to be “slow moving.”

GameChange launched its pour-in-place solar panel rack-anchoring technology a few years ago and is now a leader in landfill installation, he says. The cost is 40 percent below precast concrete bases.

With GameChange’s method, the contractor “puts a plastic form down, inserts the racks, levels it, and pumps in concrete with a hose. It used to be so expensive—40 cents a watt to do precast. We are down to 12 to 17 cents a watt. The numbers work partly due to pour in place.”

GameChange sells the whole racking solution, says Worden. “We do the permit layout, all calculations, and submit plans to state environmental protection agencies. We sell the rack and the pouring forms, all the parts to mount the panels and the electrical connections. We follow all state and federal regulations.”

The company makes sure that all its products comply with all performance standards so they work in snow and wind, on rooftops, in landfills, etc. An outside firm performed due diligence on every part of the production and installation process, even visiting vendor factories, says Worden. “It forces us to be tight. And if you get through all that, there’s a good chance you have your head screwed on straight.”

Product development
New York City-based GameChange Racking developed and now sells three Post Ground systems, three Ballasted Ground systems, a single-axis tracker system, a carport system, and three roof systems. The latest product, Genius Tracker, will be introduced in March.

Trackers are rack systems that can turn in two directions so that the installed panels follow the sun rather than being stationary and collecting the rays only part of the day.

With Genius Tracker, says Worden, GameChange is adding robotics, machine vision and artificial intelligence. “Most tracking systems are fixed and don’t move with the sun, but Genius Tracker will move to track the sun, which means they are gathering more energy.”

Using Genius Tracker, utilities may see a 20 percent gain in energy gathering in most solar fields and up to a 30 percent gain if employed close to the equator. Plus, says Worden, “the cost to buy this system is not much more than the fixed unit. It’s no longer twice the price of fixed solar. A lot of projects that couldn’t afford Tracker now can. It opens up doors.”

The tracker market is large, he says, and the revenue per megawatt—at 17 to 18 cents per watt multiplied by 6 to 8 gigawatts projected in 2016 in the U.S.—will total $1 billion, just for trackers. “The world market is a multiple of that and that will grow,” Worden adds. Indeed, Zion Research Analysis forecasts $3 billion in worldwide tracker revenues in 2016, growing to $6 billion by 2020.

Because legislators in late December extended tax credits for renewable energy investment, American utilities “will build capacity that they wouldn’t have built out had they not continued to receive tax breaks.”

Worden thinks his company’s engineering expertise and innovations such as Genius Tracker will be well received worldwide. “We are looking to export and grow internationally.” The more solar energy systems are built, the costs decline as usage rises, he notes.

And growth won’t come solely from established power generation companies. “We are seeing Apple and Amazon starting to run data centers with solar power. We started doing smaller commercial installations and we are now at utility scale. The utility scale installations will continue to be 90 percent of our business,” Worden says.

“We want to change the world by making solar energy affordable. We want to do a million panels at a time.”

As sales volume expands, he says, vendors that offer standard roll forming capabilities, tube forming, welding, bending, punching, etc., will perceive opportunities to grow alongside GameChange. So far, the company works with fabricators in Michigan, Ohio, Kansas, Florida, New Jersey and Utah.

But, “we are going to need more capacity. We will do 300 million pounds in 2017 and 800 to 900 million pounds in 2018.”

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THE RELIABLE PARTNER
No matter what else they do, service centers typically must have a bare minimum of two months of desirable material on hand or they won’t be able to stay in business. But 2015 proved to be unpredictable, in a bad way, for those selling high-cost inventory into a market in which prices were dropping each and every month. That was pretty much everybody. Even those trying to beat the heat with foreign steel got schooled—Chinese hot-rolled coil prices kept falling dramatically, ending the year at $225. Most sources we talked to found this distressing, to say the least.

Given last year’s bleeding margins, service centers and processors took their lumps and are preparing for the opportunities and challenges this year presents.

James Bouchard, chairman and CEO for Esmark Inc., Pittsburgh, says the company started reducing inventory in August and September in the face of overwhelming amounts of imports pushing into every nook and cranny of the market. However, “we started replenishing at the end of December and we have a bunch of material coming in for both contractual and quarterly activity.”

Still, Esmark will be risk averse. “We are in hunker down mode. We don’t foresee any major improvement on consumption.”

Meanwhile Bouchard expects it may take a while for everyone to shed excess high-cost volume. “There is significant hot-rolled and cold-rolled sheet in Midwest warehouses that will take until April to clear out.”

And, given liquidity issues on Wall Street and across the manufacturing supply chain, “we pushed out our view of a pickup in activity to May and June.” In the event
that rise comes sooner, Esmark is adding about two weeks' supply above where it finished 2015 because some of the consumer goods markets (such as automotive) remain “pretty steady and that is 80 percent of our business,” Bouchard says.

‘Cascade’ effect

“No one wants a death spiral in prices, but we started 2015 with hot-rolled coil at $615 a ton and ended at $350,” says Don McNeeley, president and COO of Chicago Tube and Iron Co., Romeoville, Illinois. “Nobody had that degree of a cascade of declining prices in their budget forecast. When the glide path goes down, we have to protect ourselves, so if we sell 10 tons, we’ll buy only 7 for replacement.” Still, he believes most distributors ended 2015 with inventory too high.

McNeeley expresses hope for the construction market, noting that even a slight increase in the prime rate—25 basis points—helps push consumers and commercial entities to buy or build. The rate increase serves as “validation the market hit bottom.” In the same way, a December hike of $40 a ton on sheet is meant to build confidence in the market and stem further price erosion. Sources tell Modern Metals that the price increase gained wide acceptance. That development was helped by “saber rattling on trade cases,” says McNeeley, which cover hot-rolled, cold-rolled and coated sheet.

“I am convinced we hit bottom and I am cautiously encouraged,” he says. “Imports are down, there has been shuttering of domestic capacity, the dollar is stable.” Chicago Tube and Iron will marginally build inventory, he notes, but more is unnecessary because mill lead times quoted during the first week of January were a mere 14 days.

Fresh start

At Sabel Steel Service Inc., Montgomery, Alabama, the strategy during fourth quarter was to lower inventories, write down assets and “start 2016 fresh,” President and CEO Keith Sabel says.

The bottom may not have been reached with certain long products, he says. “Every product has gotten slammed harder than beams in the domestic market. Although the margin between domestic and foreign is wide, beam mills had not responded with a price change. We kind of still expect one.”

Sabel Steel will keep inventories in line with incoming orders. Then, “as we feel the level of prices go up, we will add inventory. I am concerned, however, that the manufacturing base is weak. The Chinese stock market had a big whammy [Jan. 4], and they halted trading.

“The whole premise of oil is there is too much,” he continues. “So if oil stays in the doldrums, there is a whole lot of steel-related stuff attached to that.” Like his peers, Sabel expects planned capital-intensive building projects may languish this year, especially in the energy sector.
In response to that and the rest, “we will take a measured approach and observe market conditions. The key to growth in our market is confidence. If the Chinese economy stabilizes, that will be good for everyone.”

Overall, Sabel is not forecasting a substantial improvement—“except for one thing: we won’t be constantly cascading down.”

**Matching orders**

Pat Notestine, president of Custom Steel Processing, Madison, Illinois, is buying material strictly to match firm orders, contracts or memorandums of understanding during 2016. “Our contracts are three months or 12 months, based on firm pricing or an index. Our strategy is simply to buy what we need and keep inventory at a level that we think is workable.

“We have a pessimistic view of 2016,” Notestine continues. “I perceive the United States to be in a manufacturing recession so demand won’t increase.”

It’s worrying for the industry at large.

“When you see final audited financials of publicly held companies that have to ‘fess up their sins, they started write-downs early last year. Some folks are in trouble, living week to week. For us, I forecast a slight downturn in tons and revenue compared with 2015.”

Steven C. Bergman, president and CEO of Premier Steel, Englewood, New Jersey, says he is more positive than negative, given that a long-term infrastructure spending bill was finally passed, plus automotive is still hot.

Bergman has ordered material to stock for certain Premier customers looking for securely priced product, and added a little for himself.

A Mississippi Valley distributor says customers have been poor at forecasting their needs but with the “basis of historical perspective to draw on, we’ll make purchasing decisions within those parameters.

“Automotive appears to be steady and strong. Oil and energy is weak. Construction may see modest gains year over year. We would characterize most markets as steady,” the distributor says.

Last year many companies, including OEMs, “got burned on hedging so that it’s become the dirtiest word there is,” says an Upper Great Lakes processor.

His philosophy is that “we are in a buy-sell business. The important thing is to keep it moving.” For those long on inventory, “2009 was difficult but 2015 was right there. Whatever you bought, it was worth less by the time it arrived. So our strategy for this year is hand to mouth, light inventories, and we remain fortunate to have customers on indexed contracts. We’ll get through it.”
Our world is so interconnected that when a smelter idles in Iceland, the ripple effect could quickly lead to a shortage of premium billets in France.

We picked two prominent names as examples of companies that appear able to adapt very quickly—despite their scale—to react to what happens in real time, in terms of demand and supply and technological innovation. The brands are Alcoa Inc. and Shiloh Industries Inc. The first produces raw and finished aluminum, titanium and other products, backed by engineering solutions. The second has pushed itself beyond stamping out blanks for a short list of U.S. carmakers to making value-added, in-demand complete systems for a much broader range of global vehicle builders.

Alcoa Inc.’s chairman and chief executive officer, Klaus Kleinfeld, went over the Pittsburgh-based company’s annual performance during a Jan. 12 earnings call. “When you look at our Global Rolled Products (GRP) business, auto sheet shipments are up 18 percent,” Kleinfeld told investors. “We continue to shift the [product] mix to higher value, higher margin products, and this has been driving a 90 percent year-over-year increase in adjusted [profit] per metric ton.”

Citing the capacity and capabilities provided by the acquisitions of RTI International Metals and Firth Rixson,
Kleinfeld said Alcoa last year won multi-year aerospace contracts valued at $9 billion, which was more than twice the volume awarded during 2014.

Alcoa has “basically used every lever you can think of” to mirror gyrating market conditions, including “fixing, selling, curtailing, closing [assets, and] changing the portfolio.” Upstream in the aluminum supply chain, for example, “once all the announced refinery and smelting curtailments or closures are completed, 25 percent of our refining capacity and 42 percent of our smelting capacity will be closed, curtailed or sold.”

The value-added (midstream and downstream) parts of the business are “basically advanced multi-material product and solutions providers,” Kleinfeld told shareholders.

Yes, Alcoa has always been an integrated company but today, it seems to have something to offer virtually any material-hungry industry.

“GRP consists of aerospace and automotive products, structured products, brazing and commercial transportation, industrial, micro-mill products (which is just ramping up), global packaging. We then come to power and propulsion, fastening systems and rings, forgings and extrusions, titanium and engineered products.” Another unit sells into building and construction and wheeled and transportation systems. The “magic sauce” that holds these business lines together, said Kleinfeld, consists of joint technology plus talent.

“Through innovation and acquisition, we have created a very strong portfolio,” and Alcoa has widened its share in numerous end markets. “Firth Rixon alone doubled [our] content on jet engines and provided us with processes we didn’t have before. RTI has given us access to titanium.” Its integration within Alcoa is ahead of plan and “performing better than we expected.”

**Capitalizing on trends**

At Shiloh Industries Inc., Valley City, Ohio, President and CEO Ramzi Hermiz cites moves by automakers to “add content to the vehicle to improve safety, technology, comfort and entertainment, [which] tends to simultaneously add weight. This content-to-weight correlation is also seen in the industry’s move toward autonomous driving. Shiloh continues to capitalize on this trend by collaborating with our OEM and Tier 1 partners to lightweight the vehicle, effectively offsetting the weight of additional technology-rich content.”

During the company’s Jan. 14 earnings call with shareholders, Hermiz explained how Shiloh keeps moving “forward on our strategy to develop and commercialize new proprietary technology, expand our suites of products and establish a global presence.”

Much like Alcoa, Shiloh won significant pieces of new business last year and the momentum is expected to continue through the end of this decade. It is matching market requirements by diversifying the customer base and broadening capabilities.

“We see more and more customers seeking lightweighting solutions for their vehicles with products manufactured from aluminum, magnesium and steel. Shiloh continues to develop its lightweighting portfolio and now has a product offering inclusive of each of these materials,” Hermiz explained.

“Our ability to design, engineer and deliver a multi-material solution is critical for future vehicle platforms. An example is the new Volvo XC90, which was awarded Motor Trend’s SUV of the Year for 2016 and also won North American Truck of the Year. In total, Shiloh has more than $130 worth of content per vehicle ranging from steel...
brackets and aluminum shield to magnesium cross car beams. Very few suppliers have the capability to deliver this type of comprehensive solution set," he claimed.

In 2015, new business wins exceeded $1.3 billion over the life of program contracts, with more than 60 percent focused on lightweighting technologies such as cast aluminum transmission components, ultra-lightweight magnesium cross car beams and laser-welded frames.

Shiloh secured new customers in Asia, Europe and North America last year. A new line built in China is exporting to Korea; its North American plants are shipping to customers in Europe. “We had a record 527 product launches and production approvals in 2015 compared to 175 in 2014,” Hermiz noted.

All this shows Shiloh has moved well beyond blanking commodity grade steels. “We are innovating new multi-material products,” Hermiz informed investors. “For example, we developed and were awarded a hybrid oil pan utilizing an aluminum cast upper pan technology with a steel stamped lower structure, incorporating our ShilohCore laminate technology. This solution leverages three different Shiloh processes and is another example of the differentiated solutions that we bring to market.”

Some of Shiloh’s proprietary solutions can be seen as “disruptive technology,” or new-to-market solutions such as Shiloh Core, BlankLight, ThinTech, laser welding aluminum and steel together, and squeeze casting.

At a casting plant in Clarksville, Tennessee, Shiloh is ramping up production of structural magnesium parts to supply BMW and Mercedes. These product developments are expected to “generate meaningful higher margins.”

“We are now at a point where we have resident engineers with our customers on site helping them design their product,” Hermiz added, a close partnership Shiloh was not even in a position to offer a mere two years ago.

Shiloh’s program contract wins are for “very diverse types of products not necessarily processes. When you are winning business for 2018, 2019 and quoting opportunities for 2020, [customers] are not quoting you on a process; they are buying a product and they want you to help them design a solution. We have made the investments to do that.”

Shiloh, claimed Hermiz, is one of the few companies that can bring a mixed material solution to the industry, not only through distributing materials but by distributing process technology. To date, that includes coil processing, casting and stamping, laser welding, machining and modular assembly. No doubt the company will develop more capabilities as fast as the market demands them.


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The happiest place on earth wouldn’t stay that way if it wasn’t built securely. Behind the animated existence of Disney World are highly mechanized parts. Such parts are carefully placed in the hands of job shops capable of meeting steadfast tolerances. “No one would believe the maintenance and upgrades that go on at both facilities in Florida and California,” say Roger Byers, owner of Byers Precision Fabricators Inc. One faulty finish and the part is rendered useless—with potentially harmful consequences.

Precision to the tiniest millimeter wasn’t always the main focus of the Hendersonville, North Carolina, fabricator. In fact, the shop signed a one-year lease for a waterjet cutter from Omax Corp. 14 years ago. “We tested it for one year and it worked great but we just didn’t have the workload needed to justify the investment,” says Byers. “We did what we set out to do, which was to get familiar with the technology and see how it worked.”

But as the nuclear power industry started to ramp up demand for parts, Byers Precision found itself in a position to reconsider the value in purchasing a waterjet cutter. “We didn’t hesitate,” Byers says. “We were comfortable with the company and with the management team at Omax.”

Details, not volume, prompted an investment in new cutting tools

**BY GRETCHEN SALOIS**

An IntelliCAM 3-D part, detailing all necessary measurements, is laid out via programming for an Omax waterjet cutting machine.

On the left, an example of prefinished parts at Byers Precision Fabricating. On the right, roughed-in parts before final finishing.
Up until its machinery purchase last year, Byers Precision was outsourcing high-tolerance work. “But we couldn’t find people to provide the quality and tolerances required for our customers’ work,” he says. “We needed the ability to cut fast and accurately. We’re not cutting tens of thousands of parts here. We need to be able to cut a piece of 6-inch steel with the same results as with ¼-inch-thick plate.”

Expanding capabilities
Byers Precision’s Omax 120X table is 120 inches by 240 inches with a dual head 5-axis. The machine can cut two parts at the same time. The job shop cuts mostly stainless steel and aluminum as well as the occasional thick steel plate. “The majority of our work is for the nuclear and turbine/aerospace industries, which require pristine cutting conditions,” Byers says.

Byers Precision’s Omax 120X is a custom configuration with dual bridges and multi-axis cutting heads, creating production capacity and the capability for bevel cutting and more “exotic geometries,” says Stephen Bruner, vice president of marketing at the Kent, Washington-based waterjet manufacturer. “We outfitted the table with two, 50 hp direct-drive EnduroMax pumps that efficiently deliver hydraulic horsepower at the nozzle.”

While horsepower may seem to be the driving factor behind what makes an effective waterjet, Bruner says that is not the case. How the waterjet “thinks” is where time is saved and material best managed. “How well a waterjet can cut complex geometry is really about the software, not about pump horsepower,” he says. “Waterjet technology itself is no longer a novel idea, it’s now about the ownership experience. We are working on making waterjets more reliable and capable.”

Careful consideration
With the advanced cutting tolerances Byers Precision can meet, its customer
base is expanding into the aircraft industry. “Breaking into the aircraft industry wasn’t the idea when we bought the waterjet, but it looks like the type of parts they need fits with what we can do,” Byers says, adding that if a part isn’t conducive to waterjet cutting, the shop can also use one of its other cutting methods, like laser or punching, when needed.

As nuclear and turbine industries take up more and more shop time, “You can’t leave the mouse out—Disney takes up a lot of our time too,” Byers says. “Everything under the sun in those parks is carefully designed and parts are held to the tightest tolerances.”

Byers Precision uses Omax’s IntelliMax software suite. “We develop our software in-house and offer Omax line owners software upgrades for life—that means progressive developments in our software enables faster cutting performance over time,” Bruner says.

Ease of use is also a universal concern. “Some of our customers have turnover at the operator position,” Bruner says. “Or they may be dealing with folks that are not highly trained engineers.” The IntelliMax software suite is easy to use for those new to waterjets or even the machine tool industry. Omax also offers eLearning modules that allow waterjet users to study at their own pace, or they can book classes at the manufacturer’s newly expanded training center.

Safety is always a consideration, which is why every millimeter counts. “I’ve been to the DisneyWorld facility a number of times now and it still amazes me the engineering behind each and every ride,” Byers says. “They’re tough when it comes to tolerances and we’re able to meet those expectations.

“The industries we work for require extremely high-quality work,” he continues. “We’re not making tons of the same part over and over, but we have brought any specialized work in-house to keep a handle on both quality as well as timeliness.”


As automakers continue to move forward with efforts to reduce emissions and improve gas mileage, the materials used for body components are also changing. Ford’s aluminum F-150 pickup truck shifted a paradigm, using recycled aluminum instead of standard steel to shed nearly 700 pounds.

Long assumed was that only steel could be strong and cost effective enough to handle the rigors and safety requirements of 21st century vehicle manufacturing. No longer the case, Novelis rolls aluminum sheet for the automaker’s next generation of pickup trucks.

This requires efficient movement of material and traceability. After casting, scalping and preheating, a material-handling robot built by Tebulo N.A. Ltd., Hamilton, Ontario, provided the most accurate and consistent coil marking for Novelis coils. “Tebulo was able to accommodate all of the project’s needs ranging from mechanical design, electrical design, programming and integration into our control systems,” says John Piscitelli, hot mill project engineer at Novelis’ Oswego Works in New York.

Tebulo’s ability to maintain an accurate account of coils has helped Novelis’ operations overall. The robotic system’s main challenge within Novelis’ hot mill project was ensuring the custom-produced marking ink would work with hot aluminum coils, says Harry Scholtens, sales manager at Tebulo, which is a subsidiary of Tebulo Industrial Automation, Warmenhuizen, the Netherlands. “Tracking is critical in the metals industry and especially important in automotive applications,” he says. “Products are designed based on specific compositions. A variance in the composi-
tion of a metal component could have catastrophic results.

“For example, if the assembly of a Ford F-150 pickup truck requires high-grade aluminum components, but the assembly plant receives mixed metals, both the supplier and manufacturer could face fines, legal action and lost revenue because of correction costs. Identifying metals at the point of production eliminates [those concerns].”

**Painful process**

When rolling mills receive raw coils from the hot mill, the material is held together by steel banding, says Vince Wilbur, mechanical engineering tech at Steelscape Inc., Kalama, Washington. Cutting steel bands has typically required a worker to wedge a band cutter tool by hand between the coil of steel and steel banding that is harnessing hundreds of pounds of pressure. Workers are required to use some elbow grease—often to the detriment of their joints. The struggle is real at many rolling mills as carpal tunnel syndrome and elbow injuries often plague those workers in charge of debanding coils in preparation for processing. “These steel bands are cinched tight to each coil and operators had to drive manual band cutters between the coil and steel band in order to cut them off,” Wilbur says.

After identifying the safety concerns associated with debanding, a companywide push ensued to reduce pedestrian and forklift interactions (a forklift with a coil ram is used to lift coils during the debanding process), Wilbur says Steelscape launched a search for a safer method. Steelscape receives coils with varying thicknesses, each wrapped with seven bands, four I.D. and three O.D., but coils sometimes arrive with fewer and are removed or are inconsistently placed during processing and transport. “The bands are under tension and once cut, would often spring open, potentially striking the operator,” Wilbur says. “We used to set coil in a V-block, allowing operators to cut the bands off the coil, which would then have to be raised using a forklift because the bands were pinched beneath the coil and V-block.”

What Steelscape needed was not remedied easily by the solutions they looked into; there were limited resources as most robotic debanding was performed in integrated mills, where only one band had to be removed. “We basically had a couple of choices and it came down to how versatile the robot could be with varying bands and thicknesses,” Wilbur says.

Tebulo was tasked with supplying a robot that could deband a wide variety of coils while ensuring a seamless flow entering the Steelscape pickling facility, Tebulo’s Harry Scholtens says. “The hot band debanding robot was required to remove up to eight bands from the inner and outer diameter of various coils, indexing back and forth between two lines of coils,” he says. Tebulo also had to integrate the robotics system with the walking beam conveyor systems that transport coils to Steelscape’s pickle line.

Of the available options, Tebulo proved to be the one that offered a way to maneuver inconsistent banding issues. Robots are typically set in place at one pass line in one location. Tebulo’s design for Steelscape worked between two pass lines and multiple bands and rotated coil instead of being stationary. The robotic debander was also retrofitted into Steelscape’s existing operations, a feat in itself, adds Wilbur.

Now, instead of workers cutting bands manually, the robot can do it by scanning each coil and detecting where the bands are located. In the event the robot misses a band, the operator can easily intervene and instruct the robot to go back and catch any that were missed.

“Our process line operators can interact with the robot via push-button selections that preselect debanding programs that aid the robot in efficiency,” Wilbur says. “Basically the operator can tell the robot if the coil has I.D. or O.D. bands, or both, to save the robot from scanning the entire coil, which helps improve efficiency, time and compensates for inconsistencies.” While the actual robot and cutting heads weren’t designed much differently than those built for other Tebulo customers, it was the programming and Tebulo’s previous coil handling experience that stood out to Steelscape. The coil processor worked with Tebulo to incorporate blocker rolls into the design to rotate the coil for the robot to help with band removal. Human interaction has
dropped significantly. “We’re at 97 percent efficiency [so] only 3 percent of the time does an operator need to manually cut the bands,” Wilbur says. “The way this robot is set up, there is no person working around forklifts, reducing the forklift/pedestrian interaction.”

Robotic roadmap
The project scope for Tebulo’s marking system package at Novelis included an automated marking robot, coil banding requirement, and modifications to the hot mill finishing process, including weighing, temperature, product tracking, etc., Piscitelli says. The mill averages 130 coils per day. “The identifying data marked on each coil varies by product type,” plus cast alloys, in some cases, are heat treatable.

“The accuracy and consistency of the coil marking certainly helps traceability of the product through the manufacturing process,” says Chris Smith, plant manager at Novelis Oswego Works.

Increased safety and greater accuracy drove both Novelis’ and Steelscape’s decision to purchase robots from Tebulo. “The automated features of the Tebulo are a dramatic improvement on ergonomics and safety,” Piscitelli claims. “A large portion of the project was justified based on those qualities alone.”

Tebulo’s automated robot was the first 6-axis robot installed in the Novelis Oswego Works facility. “With Novelis and Tebulo working in collaboration, the implementation process went very smoothly throughout the entire project,” Piscitelli says.

Using robotic systems to track material also helps eliminate misinterpretation of data. Coils are marked exactly as programmed and commissioned, Tebulo’s Scholtens says.

From a programming perspective, Tebulo had to ensure the robot could handle Steelscape’s raw hot band from the coil storage yard with oxidized, dirty bands. The robot needed to be able to detect and remove coils. “The 6-axis robot, mounted on a seventh axis indexing base, is agile enough to deband coils on both lines, ensuring a seamless flow of production,” says Scholtens.

Steelscape’s robotic debanding project was “truly a team project,” says Wilbur. Each department from operations to upper management participated. “My hat goes off to Tebulo’s engineering team, both mechanical and electrical. It was really fun working with them.”

“I must say a special thanks to Tebulo’s automation engineer Willem Bijlsma,” continues Wilbur. “He is the guy that made the project a success through programming. He just kept at it until we achieved the efficiency we were looking for. He didn’t give up.”

Customer centricity ranked No. 1 on the Top Ten Manufacturing Predictions for 2016. The idea of building a customer-driven business over one that is product-oriented is well established but the forecast suggests that interest in the topic is heating up among manufacturers looking to grow. Customer-based business practices are an intrinsic part of Unison Ltd.'s culture. A tube and pipe bending machine builder headquartered in the United Kingdom, Unison also provides integrated software packages for optimal manufacturing productivity. Growth has been a natural by-product. A quick rewind of the company’s activities, production milestones and awards over the last two years alone explains why.

In 2014 and 2015, Unison engineered and produced two of the largest all-electric pipe bending machines in the world and earned the Queen’s Award for International Trade. The company experienced 70 percent of its turnover through sales to Angola, France, Germany, Ghana, Mexico, Norway, Russia and the United States. Export volumes have doubled year over year. Purchase orders in America alone grew more than 100 percent in 2015, prompting Unison to open a service and sales office in Asheville, North Carolina.

The key to Unison’s forward momentum is “the ability to work with customers to understand what they wish to achieve and then engineer and manufacture a bespoke machine to help them accomplish that,” says Head of Sales Stuart Singleton.

Taming giants
Research and development also play a critical role. In the early 1990s Unison invented a series of machines using electrical servomotors to control bending motion. Singleton claims these products were “the world’s first all-electric machines for tube bending.” Fast, repeatable software-controlled setup, low power consumption and clean operation led to widespread adoption. In 2014 Unison de-
veloped a servomotor-driven machine capable of bending thick-walled pipe with diameters above 8 inches.

“It is how we’ve built a reputation as the go-to company for complex and difficult tube bending applications and it underpins our export growth,” he says. “Our development of features like laser spring-back correction and a swing-away wiper die position us at the top of the market in terms of waste reduction. This is a massive advantage for manufacturers working with exotic materials such as Inconel, titanium and super duplex steels, which are extremely expensive.”

The trend favoring exotic metals requires solutions that make sense. “With exotics there is the need to bend these metals on ever tighter center line radii,” Singleton adds. “This allows designers to reduce total space requirements for applications like aircraft heat exchanger coils and fluid transmission systems. A smaller footprint means greater cost efficiencies.”

Interest in bending thicker-walled pipe is also expanding. Newport News Shipbuilding in Newport News, Virginia, commissioned Unison to build what—at the time—was the largest all-electric tube bending machine ever produced, Singleton says. This customer is the sole designer, manufacturer and refueler of U.S. Navy aircraft carriers and one of two suppliers of U.S. Navy submarines.

Its custom tube bender can generate 360,000 Nm of torque and bend pipe up to 8 inches NPS with an outside diameter of 8.625 inches and with a Schedule 80 wall thickness of 0.5 inches.

The ability to bend pipe of this size with an all-electric, servomotor-controlled machine versus hydraulically powered equipment gives manufacturers like Newport News a substantial production advantage, Singleton says. “Servo control also supports smart software-controlled setup and right-first-time precision bending for enhanced accuracy and repeatability.”

Precise bending is aided by a laser-based automatic measuring system that adjusts bend angles to correct for springback.

But then Unison topped its own record of largest/most powerful bender when it engineered a machine last November capable of precision-bending 10-inch O.D. thick-walled carbon steel pipe for Westcon Yard AS, a Norwegian offshore and maritime services company. Westcon got its feet wet earlier in the year by purchasing a 3.5-inch single-stack Unison tube bender.

The customer previously fabricated pipe up to 2.4 inches in sections using multiple cut-to-length straight pieces and outsourced pre-formed bend parts. Individual sections, bends and end connection flanges were welded together to create the final assembly. Each weld required cleaning, inspection and non-destructive X-ray testing—a labor intensive process that relied on the speed of outside suppliers to meet tight delivery schedules.

With the smaller Unison tube bender, Westcon can produce its 2.4-inch pipe in house from straight piping stock. It eliminated the need to outsource pre-formed bend parts and reduced the number of cutting, welding and testing operations.

Tommy Nilsen, Westcon’s head of prefabrication, notes the company is achieving superior bend accuracy and repeatability with good throughput. “Now that we have the larger tube bending machine in place we expect to significantly reduce production times for all pipe sizes. It’s like going from 1950 to 2016 in one stride.”

Transplant

Unison’s sales, service and support have also reached across the pond with dedicated field staff spending up to 75 percent of their time installing new machines and maintaining those already in place. “It made sense to locate here permanently,” says Dale Coates, vice president for the newly minted Unison Tube LLC.

Less than five weeks after its launch, Unison Tube received an order from Byers Precision Fabricators in Hendersonville.
Byers produces parts and assemblies from sheet and tubular aluminum and 3/8-inch to 1-inch ANSI Schedule 40 and 80 stainless steels. Outsourcing tube and pipe bending requirements was becoming increasingly expensive and often created production bottlenecks.

“Bringing our tube bending operations in house greatly enhances our flexibility to meet complex shape requirements, tight delivery schedules and last-minute design changes,” Byers Precision Fabricators President Roger Byers says.

“We chose a Unison machine primarily on the strength of its performance and the company’s reputation. Their support is also proving exemplary. The company has handled some specialist pipe part production for us until we take delivery of the new machine.”

With plans to eventually manufacture tube benders in Asheville, Unison CEO Alan Pickering also wants to transplant a program to promote career opportunities and improve recruitment. Pickering and Non-Executive Director Peter Wilkinson partnered with Scarborough Ambassadors Forum and Scarborough Council to establish Scarborough Engineering Week, which is now in its sixth year and attracts more than 3,600 young people from British primary, secondary schools and colleges. “The events and activities bring engineering to life for youngsters,” says Wilkinson.

“There’s a lot of opportunity here,” says Coates. “North Carolina’s Community College System is forward thinking and adaptable. We hope to partner with our local campus, Asheville-Buncombe Technical College, which already offers curricula that support local industries, including the area’s breweries. We want to connect with these resources to help expose young people to this type of work.”

“We need to get back to being a society that values learning a trade,” she adds. “It would be fantastic to have some homegrown people interested in tube bending.”

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Meeting all challenges

Engineering plasma cutting technology to provide quality, accuracy and speed for every job

BY LYNN STANLEY

Golfers dream of hitting a hole-in-one. So how hard is it? For an amateur the odds are one out of every 12,750 swings. Statistically the elusive shot is most likely to occur on a par-3, the shortest hole on the golf course. Par-4 and par-5 aces are rare. Until recently, plasma operators looking to cut “holes-in-one” in mild steel plate without secondary operations, like drilling or reaming, found the task equally tricky.

“In the last five to 10 years the need for bolt-ready holes, better edge quality and faster cutting speeds has driven our industry,” says Timothy Joslin, cutting machine product manager for Koike Aronson Inc./Ransome. Using plasma to cut holes was long plagued by two primary issues: One, poor edge quality invariably resulted in a ding or divot along the hole’s edge, making it susceptible to stress fractures; two, taper was subpar because the top of the hole was often wider than the bottom, missing tight tolerances.

“Then Hypertherm’s True Hole technology entered the plasma industry. Enabling Koike cutting machines to support the technology’s HyPerformance Plasma HPRXD auto gas system,” says Joslin, “forced us to upgrade our electronics because machines equipped with True Hole have to run faster and with greater accuracy. It also prompted us to take machine design in a different direction.”

Press ‘go’

“Approximately 70 percent of the cutting machines we sell now are True Hole capable,” says Joslin. The software powering the equipment has also improved. For example, “the task used to require an operator highly skilled in programming the machine and cutting parts. Now True Hole looks at the
hole area and applies values that are predetermined by Hypertherm. This makes it easy for the operator—regardless of skill level—to program and run the machine. The operator checks to make sure he has the right consumables, lines up the plate with the controller and presses ‘go’. The result is bolt hole quality produced automatically without operator intervention.”

Programming, software and a CNC control work together to maintain the right position of the plasma arc to ensure the accuracy of the surface cut. The partnership between Koike’s cutting machines and True Hole isn’t surprising when you consider Koike’s track record.

For more than 90 years, Arcade, New York-based Koike has designed, engineered and built metal cutting, welding and positioning equipment for service centers, heavy equipment, general fabrication, energy, shipbuilding, pipe and vessel, transportation, education, construction, tank fabrication, repair and maintenance, and other industries.

Big and strong
Koike machines are not one size fits all. The Plate Pro Extreme provides dual side drive, plasma/oxy fuel cutting that is fast, accurate, versatile and durable. It’s a mid-range machine that can cut plate up to 4 inches thick and 10 feet wide. The Master Graph Ex2 is True Hole capable. It can accommodate multiple plasma/oxy fuel torches and perform bevel cutting.

Koike designed the Versagraph Extreme to do the heavy lifting at shipyards, service centers and heavy equipment manufacturers. The machine’s cutting area can run from 16 feet wide to 30 feet wide and up to 300 feet long.

“Lately a growing number of manufacturers want to get into high-definition plasma cutting but they have a small budget,” Joslin notes. “To help meet that need we’re building a cost-efficient dual side drive machine that has True Hole technology and can run as a plasma or accommodate both plasma and oxy fuel.”

The new product, called Plate Fab, has a unitized design and it has already attracted a customer that builds farm implements. “The machine is suited to the needs of small general fabricators but it can also support a manufacturer that is growing its business and has exceeded capacity,” Joslin says. “Plate Fab is the next step up.”

While Plate Pro Extreme and Master Graph Ex2 continue to attract the largest customer following, Koike uses customer feedback to make additional improvements to its popular models. “Time is money,” says Joslin. “We have targeted speed and accuracy to push production to new levels for customers. And we build our equipment to last.”

Reveling in bevels
Plasma beveling is another trend Joslin has seen gain traction in the last three years. “We’ve sold over 100 units of the 3D-LT full contour plasma bevel unit,” he says. “Ninety-nine percent of the time the need for weld prep is what dictates a requirement for beveling steel.”

Like hole-making, plasma beveling often proves a tough task for those shaping metal. “Typically an operator would use a machine to cut plate, then lift this large rectangle off the plasma cutter and either hand grind or use a hand-operated nibbler to put an angle on the material. Operators could also use a track torch to trim desired angles,” Joslin explains.

Since the Master Graph bevels parts during the cutting operation, the need for secondary processing disappears. Finished parts are accurate to size. “A good weld prep is critical especially in applications like tanks,” Joslin notes. “The manufac-
turer rolls plate into large cylinders that have to be welded along the seam. This process is often performed by a robot. If there are any errors in the weld prep the robot will follow that, so it has to be perfect.”

In addition to plasma cutters, Koike also engineers cutting tables. Water tables offer one method for use with plasma cutters. Koike designed a downdraft table that is self cleaning. “You can have two to three days downtime while the operator manually cleans the [water] table,” Joslin says. “With our self-cleaning table, a bar scrapes the table bottom and moves debris and dirt into a pit or raised discharge pan while the machine continues to cut. When the pan gets full from either the pit or raised discharge table, the operator can dump it. There’s no downtime.”

Like other developments, the self-cleaning table was designed in response to customer feedback and is especially efficient for shops with heavy workloads where stopping production to tackle large clean-up jobs can put a dent in a company’s bottom line.

“We are always listening to our customers,” says Joslin. “We want to be able to anticipate what they need and then implement that feature or function on our machines. Their feedback and our ability to adapt to it is how we continue to grow. We keep our engineering department busy.”

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