

# PLEASE HOLD THE PICKLING & OIL

## Metals distributor eliminates scale, prevents rust with patented eco-friendly, dry process

BY LYNN STANLEY

**M**arket volatility and margin pressure continue to challenge steelmakers, but some companies are finding opportunities for growth and creating a more agile organization despite economic uncertainties.

Kloeckner Metals Corp. has completed several acquisitions in the past three years, expanding its network to 57 locations in the United States (including Puerto Rico) and Mexico. The company, headquartered in Roswell, Ga., provides heavy carbon long products, hot-rolled, coil plate, carbon flat-rolled products and nonferrous metal for industries that include construction, shipbuilding, automotive, agriculture, HVAC and mining.

The growth has equipped Kloeckner Metals to adapt and respond faster to changing customer demands while reducing freight and warehousing costs. The company is a subsidiary of Klöckner & Co SE, a large independent producer and distributor of steel and metal products. It's also a leading steel service center in Europe and the United States. The Kloeckner group symbol, a running dog with a red ball, tells a unique story about the company's values including its maxim of always moving fast to keep up with the demands of its customers.

According to Don Zajicek, general manager for Kloeckner Metals' Houston-based processing facility, the dog's nose represents the company's ability to "sniff

out opportunities to improve performance." And that's exactly what happened when staff noticed scrap, scale and material springback problems with hot-roll black being used in a transportation application with tight tolerances.

### Problem-solving

Kloeckner Metals' Houston location was sourcing hot-roll dry product in coil form and processing the coils on its cut-to-length precision leveling line before sending the material to be laser cut. The flat blanks were then loaded into a 3,000-ton press for final forming. "The hot-roll black carried a lot of scale and soot," says Zajicek. "We also were having issues with flatness both before and after laser cutting. Clean material was critical because the job specified very tight tolerances for the laser cut. Instead we were experiencing a high rejection rate for the laser cut blanks because mill scale and surface dirt were contributing to dimensions that were out of tolerance."

The Houston plant considered purchasing temper pass coils to minimize scale and



Kloeckner material is flattened through the stretcher leveling section of TMW's line, eliminating residual stress.



Kloeckner hot-roll black entering the EPS processing chamber for "pickling."



The special slurry solution in the chamber of TMW's eco-friendly EPS system reduces smut and doubles as a water-based rust inhibitor.



material memory. “We also looked at a pickled and oiled product to address our scrap issues during laser cutting, but both these options added production and transportation costs to the job,” says Zajicek. “We knew we had to look for a better way to solve these problems.”

The company’s search led to The Material Works Ltd., Red Bud, Ill. “They found us on the Internet,” says Christopher Liefer, director of sales. TMW’s 216,000-square-foot facility houses flat-rolled metals toll processing, but the supply chain experts also work to provide a one-stop-shop for customers by offering storage and inventory, quality control and packaging in addition to ultra-precise slitting, cut-to-length and leveling. The company’s patented Eco Pickled Surface process replaces acid pickling by mechanically eliminating mill scale. The clean, rust-resistant surface also does not require an oil coating. EPS is environmentally friendly and only uses water and fine steel grit to achieve these advantages.

## Eliminating springback

“Don called and explained the problems they were having, then asked if it was worth the trip for them to travel to Illinois and see our processes firsthand,” Liefer says. TMW demonstrated its stretcher-leveler line for Zajicek, explaining that blanks can appear flat but still contain trapped stresses. Stresses are released during laser cutting or forming that cause springback, which deflects the shape of the part. Blanks leveled on the TMW stretcher leveler have no residual stress. Because springback is eliminated, blanks remain perfectly flat.

“The Material Works’ stretcher leveler gave us the flatness we needed,” says Zajicek. “Their EPS system removes scale and gives us a very smooth, oil-free surface. As a result, we’re experiencing consistent laser cutting, we have significantly reduced our scrap rate and improved laser cutting speed.” Zajicek adds that rust also was a concern. Coils typically are given a coating of oil to help prevent rust and protect against atmospheric corrosion to accommodate storage. “With the climate here in Texas, rust prevention was very important to us,” says Zajicek. “We needed to be sure that the processed material remained clean and rust-free while en route for laser cutting. Once the blanks were cut, the parts had to remain clean and rust-free for form-



**Following stretcher leveling and EPS processing, Kloeckner sheets are flat, clean, rust-free and ready for forming.**

ing. The Material Works’ EPS dry system helps to retard rust without the use of oil.”

## Scale removal

TMW initially developed EPS to create a lower-cost, environmentally friendly replacement for the pickled and oiled process. Laboratory testing and real-time results in an actual processing environment proved the ability of EPS-processed steel to resist rusting when handled and stored without the need for the protective oil coating.

The EPS system’s slurry solution includes a water-based additive that reduces smut and doubles as a rust inhibitor. This additive together with the elimination of chloride salts [created by acid pickling] allows EPS to provide a dry surface.

“Scale removal is an absolute must,” says Liefer. “But we didn’t realize what problems oil posed for companies. The ability to offer customers a way to remove scale to acid pickled levels without oil provides the best of both worlds. Eliminating oil reduces welding fumes, improves laser speeds, reduces paint prep costs and improves paint performance.” The company’s unique process quickly has gained popularity with service centers and mills. TMW has sold 14 EPS cells worldwide, and projections in 2013 call for another 20 cells. “The EPS system really filled a hole for us in our goal to be a true one-stop-shop solution for customers,” Liefer adds.

## Teamwork

Finding the right solution was critical to Kloeckner’s customer service goals. “Our business is buying and processing coils,” says Zajicek. “The majority of our jobs don’t require this type of processing. In this case, we could have sold our customer the raw material and let them handle the laser cutting and forming. But we take pride in the fact that we are a customer-oriented and driven company. By taking on these challenges for the customer and the re-

sponsibility for laser cutting, packaging and shipping, we were able to give them a value-added product,” he continues. “Teaming with The Material Works to process these coils allowed us to eliminate the problems we were encountering on the job and provide our customer with a better, more cost-effective product.”

In addition to coil processing, Kloeckner found it could eliminate duplicate transportation costs and streamline the operation further by using TMW’s storage, inventory and shipping services. Kloeckner’s hot-roll black coils now ship from the mill to TMW for stretcher leveling and EPS dry processing. TMW then ships the material for laser cutting where the blanks are then packaged and shipped directly to the customer. “We provide Kloeckner with online inventory that allows them to log in and release material right off our website,” Liefer says. “Inventory can be challenging, so a regular exchange and flow of information is critical. We’re able to keep them updated about coils coming in from the mill, and they routinely provide us their customer usage projections.”

“Being able to partner with companies like The Material Works is essential to our ability to be customer-focused,” says Zajicek. “In this case, their capabilities allowed us to take our performance up a notch. We provide a better product and we are able to pass a cost savings on to our customer over conventional temper pass and pickled and oil product processing.”

“We’re in the problem-solving business,” says Liefer. “Our goal is to act like a branch of our customer—in this case, Kloeckner.” ■

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