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## From The CORNER OFFICE

by Mike Dolder  
PRESIDENT

It was 20 years ago that my wife and I went to the bank and took out a loan to start American Industrial Machinery. Our five children were aged 12 to 5, and we already had a mortgage and a car loan. Yet my wife, Marilyn, let me quit my job and give it a try. My first day on the job was August 19, 1996, and I didn't even have an office.

We have been blessed to have developed a staff of extremely talented people. Our collective accomplishments have let us deliver equipment throughout much of the U.S., plus Mexico, Canada, and Asia. Our commitment to quality was confirmed when we achieved our ISO 9001:2008 certification back in 2011.

Some of our customers produce steel, aluminum, copper, brass, and specialty alloys. Others manufacture furnaces, ovens, and machine tools. To all of them I say thank you for the work you've given us these past 20 years, and also for your continued confidence in AIM Machinery!



## How It's Made:

### Giant Gantry, Miniscule Tolerances

Last year, Nucor Steel gave us an order to design and manufacture an electric arc furnace gantry structure for one of the steel maker's plate mills.

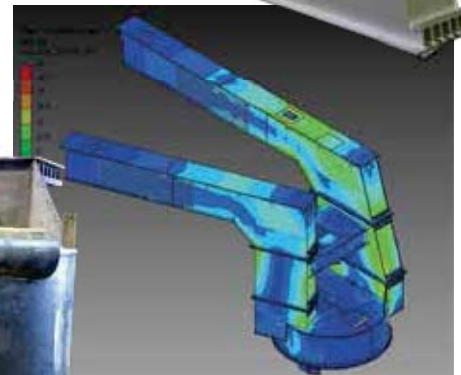
Nucor was seeking a design change to allow the addition of a continuous DRI feed system, a sanding hopper, and additional access platforms on the roof support arms, portions of which are water cooled. A finite element analysis (FEA) of the entire structure was performed which provided a visual representation of stress levels throughout a structure, as is shown here.

With the design work completed, the truly big job of manufacturing the structure began. At 35' tall and 40' long, an assembled roof gantry is enormous. The structure mounts to a slew bearing on the furnace tilt platform and supports the furnace roof lift system and the electrode mast hoist and guides.

The base and middle sections weigh in at 37,000# and 21,000#, respectively. The long and short arms weigh 31,000# and 24,000#. With the remaining pieces, the total weight approaches 150,000#! Pictured are the base section and long arm.

Even with such a big structure, there is still a need for precision in the construction. At the bottom, the base that mounts to the slew bearing is over 13' diameter, but the machining tolerance was held to several thousandths of an inch. The other connection points were also machined, to ensure fast, accurate on-site assembly.

It took five trucks to move all the pieces from Indiana to the customer's facility. Following a recent maintenance outage, the assembled gantry structure was placed into service. This project is a good example of the diverse challenges AIM Machinery can handle.



# The brains behind the machines: An Inside Look

## Matthew Pukoszek: Analyze this!

At AIM Machinery, we take pride in our analytical abilities. Matthew Pukoszek, Project Engineer, is one of our analytical heavy hitters. One of Matthew's recent projects was the furnace gantry structure where he applied his skills in finite element analysis.

Matthew grew up in Munster, Indiana. He attended Munster High School, played trumpet in the marching band, and in Scouting earned the rank of Eagle Scout. Matthew earned his BSME with honors from Purdue University. He played trumpet in Purdue's marching band, which gave him the opportunities to march at the University of Notre Dame's stadium and in Macy's Thanksgiving Day parade in New York City. He also spent a summer working in the University's vibration laboratory where he helped build a wind tunnel.

Matthew's academic experience included one semester spent studying in China. He enjoyed the travel and cultural experiences, but the gastronomical offerings led to him losing weight, and longing for a good old hamburger.

Matthew is engaged to be married this fall. He met his fiancé when she was marching to the same drummer as him, playing trumpet, in the high school band.



## Good, Better, Best. Never Let It Rest. Aftermarket Sales – It's a Big Deal at AIM Machinery.



On average, people who purchase a new 'light vehicle' keep it about six years, performing maintenance and replacing parts as needed. Our customers expect our machines to last much longer than six years. But they know that maintenance and replacement parts are necessary for safe, reliable long term use.

When we deliver equipment, we also provide complete sets of drawings, maintenance manuals, detailed parts lists, brand identities/manufacturers' names and part numbers. But even though our customers can source spare parts, we get orders for replacement parts nearly every week.

Our spare parts success starts with our sales group. We usually generate a quote within two days. As an Original Equipment Manufacturer, we get favorable pricing from component suppliers and we also machine or fabricate spare parts within our normal network to add efficiency. We inspect and perform build-up at our assembly facility here in Indiana.

The result: cost effective and high quality spare parts consistent with our mission of maintaining long term, mutually prosperous relationships with our customers.



## Performance by Design Pushing the envelope for Nucor.

An incredible amount of force is required to push 400 tons of billets through a reheat furnace. To get the job done, AIM customers specify either electro-mechanical or hydraulically powered pusher systems. For this project, our customer chose an electro-mechanical system for its long-term efficiency and cleanliness.

What does it take to generate hundreds of tons of pushing force? We started with two 150 HP motors that weigh about one ton each. Each motor drives a parallel shaft reducer rated over 6,000,000 lb-in, with 15" diameter output shafts, and weighing 13 tons. It takes four size 11 couplings, at 1-1/4 ton each to drive the rack and pinion system for pushing. Gearing was made from heat-treated alloy steel, machined and finished following AGMA standards. The pusher head is 38' long and has eight wedge-retained pusher blocks to interface with the billets.

The furnace pusher was only one part of an AIM manufactured billet handling system for an entirely new furnace. Installation and start-up went smoothly, and the equipment continues to provide superior performance.





# FINISHED BUSINESS

## RECENTLY COMPLETED PROJECTS



**INGOT HANDLING SYSTEM**

A complete ingot handling system was provided to support a new scalper operation in Asia. Included are roller conveyors, two cross-transfer systems (one is in the depressed floor in the foreground), an ingot turnover device (orange), and an ingot rotator. This equipment was assembled and shop tested in Indiana, then disassembled and packed in shipping containers for ocean transfer. Note the cleanliness of this new facility.



**LOW PROFILE, HIGH SPEED COIL TRANSFER CAR**

This car and transfer station automates the process of moving coils several hundred feet away from the galvanize line delivery car; a job formerly done manually with an overhead crane. The car is designed to carry coils up to 60" wide, 80" diameter, and 30 tons. It can reach speeds of 235 feet per minute. It is equipped with 8 wheels so that it can smoothly travel over embedded rails crossing its path.



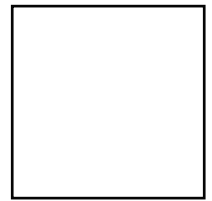
**SLAB DEPIILER CRANE**

This crane operates in the slab storage area of a hot strip mill in Mexico. Stacks of slabs are delivered to storage saddles, and the crane automatically stages them on the reheat furnace charge conveyor. Magnets are used to grab the slabs, and the hoisting action is hydraulically actuated. Slabs can reach 30' long, and weigh up to 35 metric tons. The semi-gantry style design has a 35' span.



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## NEWS YOU CAN USE!

### AIM at AISTech

To the many visitors who stopped by our booth at the AISTech 2016 Conference and Exposition in Pittsburgh, thank you! For those of you that couldn't be there, here's a picture of the friendly crew that you missed: Matthew, Neal, Cameron and Jeremy.



### Moving On

A few weeks ago we shipped two 160-ton coil transfer cars to a steel mill in the southeast. Not shown is the upper parts of both cars, which are polyurethane lined coil saddles. We always enjoy saying farewell to our equipment. The truck drivers enjoy securing their loads outside in mild weather.



### Rebuild to Restore Performance

Want better line performance with a lower capital investment? No problem. Whether you need a single component or an entire rebuild, AIM can help you restore your line's output, quality, efficiency and profitability. For superior performance by design, AIM is your partner in productivity.

