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Magnet wire industry success boosts local economy

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Posted: Friday, July 10, 2015 12:00 am

By Doug LeDuc dleduc@kpcmedia.com | 0 comments

The world of magnet wire would provide a good case study for a business class lecture on globalization.

Fortunately for Fort Wayne and the surrounding area, it also can be used to illustrate how a growing trend such as the ever increasing adoption of green technology can bring new business to a mature industry.

The future of magnet wire production is well worth watching in northeast Indiana because it is important to the region's economy. It accounts for several businesses that provide employment for hundreds of area workers, if not thousands when its ripple effect is considered.

Solar panels stand on a large scale photovoltaic power plant operated by FP Lux Solar GmbH in Marienfliess, near Berlin, Germany, on Tuesday, April 21, 2015. In one of the most ambitious political undertakings of a modern industrial economy, Germany is shutting down all its nuclear power plants by 2022. Photographer: Rolf Schulten/Bloomberg

The thin, metal wires, coated with a thin layer of insulation, are used in the construction of numerous products, including transformers, speakers, motors and electromagnetics.

"When I came into the industry, all these products were manufactured predominantly in the United States," said Charles Thurman, executive director of the Electrical Manufacturing Coil Winding Association, which was formed to serve the interests of magnet wire users and producers.

"You had Superior Essex, Phelps Dodge Magnet Wire Co. and Rea Magnet Wire Co. all headquartered in Fort Wayne."

Alconex Magnet Wire was founded in Fort Wayne as a magnet wire producer in 1987, much later than Essex, Rea and Phelps Dodge. Several startups also were launched in the area to supply the magnet wire producers.

Among the industry's better known suppliers with a local headquarters are Ampac International, which makes magnet wire testing equipment, and Fort Wayne Wire Die, which makes diamond wire drawing dies.

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“As time went along, a lot of this production shifted from the upper Midwest to the South and ultimately to Mexico; then the transition started to where a majority of these products are now manufactured in the Pacific Rim,” Thurman said. “(In 2006) Phelps Dodge sold off their magnet wire position (in the form of plants and related assets) to Rae Magnet Wire.”

As the manufacturing of many appliances and other types of motor-powered equipment relocated from the U.S. to be closer to foreign markets and cheap labor, overseas magnet wire production increased, and not all of that was handled by U.S. producers or through joint venture partnerships with them, he said.

U.S. producers remain extremely competitive for any domestic use and for any magnet wire business where innovation or a technical edge matters.

International business always has been important to Ampac, 1336 Maumee Ave., but over the years “the majority of our machines go overseas to places like China, Japan, Denmark and Mexico,” said Glen Bowers, an Ampac machinist.

Ampac does a great deal of product innovation and customization. Some competitors put a lot of effort into reverse-engineering Ampac products without successfully replicating the quality or durability, he said.

T.K. Wong “started this business in a one-and-a-half car garage and now has a 2,000-square-foot facility,” Bowers said.

The grandfather of Brad Scherer, vice president of Fort Wayne Wire Die, learned to make wire drawing dies at Rea’s predecessor, Dudlo Co. When Dudlo changed hands, he started Fort Wayne Wire Die and began making them in his basement.

The diamond dies are used to transform copper rod into wire and to elongate wire. The process involves pulling the copper rod or wire through the tool in such a way that it gets progressively longer as it gets progressively smaller.

For motor windings, the wire generally is coated in enamel. Fort Wayne Wire Die makes dies ranging in size from more than an inch in diameter to one tenth of the diameter of a human hair, Scherer said.

“Diamond is the hardest material known to man and wire is drawn at very high speed ... and anything softer than that would wear out too fast,” he said.

Green initiatives have increased demand for magnet wire and are helping the company’s business. But Fort Wayne Wire Die’s products are used to make other types of wire, which have seen greater impact from green initiatives and other technology trends.

Demand has been growing for semiconductor bonding wire, which is made of gold, sliver and other precious metals in sizes smaller than a strand of hair.

A saw made of brass-plated steel wire drawn through a diamond die is used to cut the silicon wafers of a solar panel. The quest for sustainable energy led to a boom in solar panel production that ended in 2011. Production of solar panels is starting to come back after lagging for a few years while the industry dealt with excess inventory.

Fort Wayne Wire Die employs about 150 at its local plant and headquarters at 2424 American Way, Scherer said. It also has North American plants in North Carolina and Ontario, Canada. It opened a plant in 2001 in the Philippines to service Asian markets.

China saw a great deal of growth with magnet wire production as manufacturing relocated there from around the industrialized world to benefit from low labor costs. But, “the companies that were thinking of moving to China have moved; I don’t see a lot of movement anymore,” he said.



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“Some have come back even,” he said. “They have decided if you don’t need to sell into Chinese markets, the labor costs there are getting higher.”

While China has contributed to the industry’s growth, the tide is turning, said Mike Connolly, chief marketing officer for Rea.

“China’s increasing cost to manufacturer and retrenchment into supporting domestic market growth versus export could change this dynamic in North America,” Connolly said. “We do see a positive trend in the relocation and/or expansion of global manufacturers into Mexico.”

With Fort Wayne headquarters at 3600 E. Pontiac St., Rea is the world’s largest magnet wire producer. Its seven North American plants include one in Fort Wayne and one in Lafayette. It has seven plants in China. It employs more than 1,000 worldwide, with about 200 in Fort Wayne.

As global competition intensifies, “continuous improvement is required in everything we do, from the supply chain to continually investing in new technologies, to incorporating lean methodologies in our business and manufacturing processes,” Connolly said.

“Sharing best practices between our operations in North America and China helps us to standardize cost effective processes.”

Domestic demand for magnet wire has not returned to pre-recession levels, according to National Electrical Manufacturers Association data, he said.

Rea expects domestic demand for magnet wire to remain relatively flat in the coming years, with increasing demand in the transformer and automotive segments offsetting some continued decline in U.S. motor production, Connolly said.

“There have been a number of energy efficiency initiatives over the last several years in the motor and transformer industry that have had a positive impact on curbing the electrical energy requirements in the U.S.,” he said. “This has generally helped increase the demand for magnet wire. More conductor is required in the motor or transformer to make it more energy efficient and compliant with the regulations. This also is true for transformers.

“In addition, the electrical grid is going through a replacement cycle to ensure reliability. This is leading to increased demand for large power transformers (and the magnet wire that goes into them) for the next several years.”

With much of the nation’s electrical grid already 40 years old, as it continues to age, the replacement cycle will be underway for the next 20 years and all of the wire required for transformers will be made in the U.S., Connolly said.

An energy efficiency mandate goes into effect for transformers next January. It is expected to increase the amount of magnet wire required for their production by about 5 percent, according to Gene Andert, a marketing manager for Rea.

Transformers account for 35 to 40 percent of the domestic magnet wire business, with another 35 to 40 percent in motors not used in the transportation business and the balance in automotive products.

At the Essex Group division of Atlanta-based Superior Essex, Craig York, president of Essex Magnet Wire, North America, is upbeat about the impact green initiatives are expected to have on the industry. The company owned by LS Cable & System operates plants in Fort Wayne and Columbia City.

“As a leading manufacturer of magnet wire, we see a bright future for copper and aluminum magnet wire utilized by North America’s manufacturing sector,” he said. “As our tagline says, Superior Essex wire is, ‘Everywhere you live and work,’ with magnet wire used in many industries ranging from automotive to energy, industrial, and commercial and residential. We

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are proud to service these industries and the green initiatives that they support such as hybrid electric vehicles and more energy efficient motors and transformers.”

Essex operations in northeast Indiana face less competition now that it has sold assets at a Kendallville plant to Elektrisola, a Germany-based company that makes fine and ultrafine copper wire.

The Kendallville plant made fine magnet wire, which goes into small applications. Because production is more labor intensive for fine magnet wire than other varieties, much of that business has moved to China.

Domestic demand for fine magnet wire is down and the company already operates U.S. plants in New Hampshire and New Mexico. Elektrisola could not be reached for comment, but industry experts say the company was not out to expand production capacity but to acquire assets associated with the plant.

The Kendallville plant is scheduled to close during the first quarter of next year.

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