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INSIDE

COATED COIL

Telling Industries uses Galfan, a galvanized steel product from **The Techs**, to manufacture light-gauge framing components.

A star is reborn

Galvanized steel manufacturer adds unique coil product to its line

BY LYNN STANLEY

Mention Galfan to someone in the steel business and chances are you'll see some eye-rolling. Introduced in France in 1981, the zinc-aluminum alloy gained early acceptance for its ability to provide superior anti-corrosion protection at half of the coating weight of standard galvanized material. Galfan is widely established in Europe and Asia. But the alternative alloy has yet to gain market traction in the United States. Jim Anderson, general manager for Pittsburgh-based The Techs, thinks this is about to change.

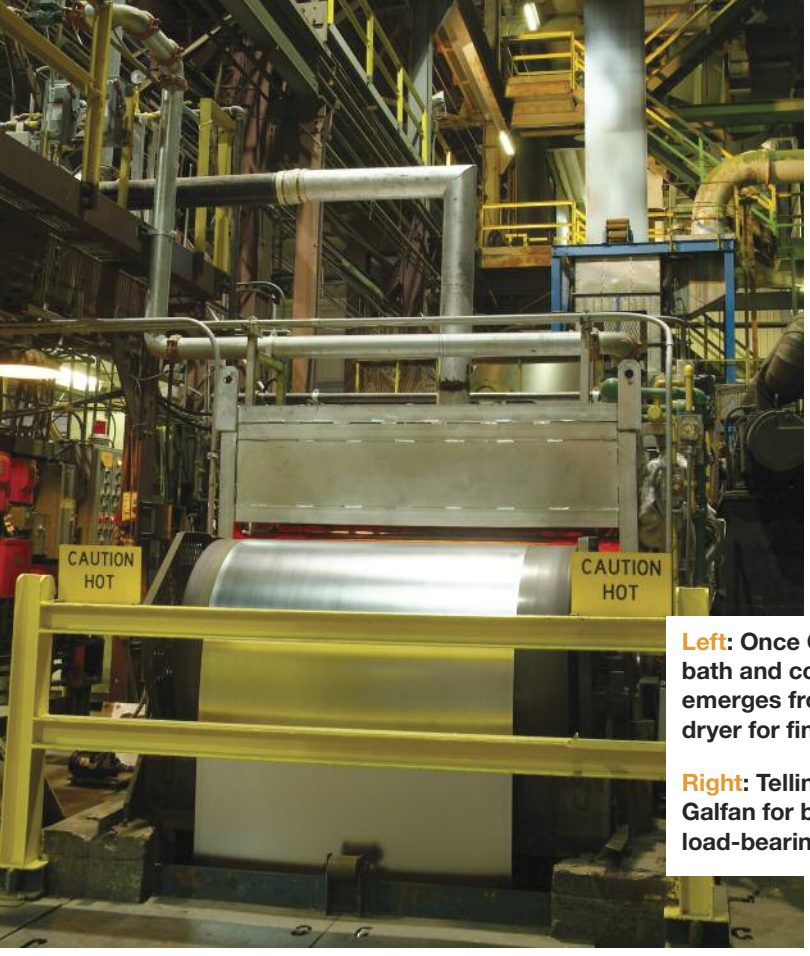
The Techs is the brainchild of a group of forward-thinking businessmen who recognized a market opportunity for high-quality, cost-effective galvanized steel. The Techs' three plants—MetalTech, NexTech and GalvTech—produce hot-dipped galvanized steel sheet in ultralight to heavy gauges. In 2007, The Techs became a division of Steel Dynamics Inc., the fifth-largest steel producer in the United States.

Anderson says appreciation of Galfan's technical attributes and cost savings has been lost with a generation of people who have moved through the industry. But the high cost of zinc, the persistent push among customers to reduce costs and the coil product's unique performance advantages are setting the stage for Galfan to achieve star status with a new North American audience.

Where it started

Anderson, who has a background in metallurgy, says the company was exploring new products to add to its line. "We were working to commercialize a nano-galvanized product where zinc is applied in nano-thick layers for improved corrosion resistance," he says. The Techs' work led the company to Galfan Technology Centre Inc. right in its own backyard. The Centre, located at the University of Pittsburgh Applied Research Center, has been instrumental in the development and application of Galfan and licenses the technology to a select group of producers. "We found that what made Galfan so corrosion resistant was its layered microstructure, similar to the nano-galvanized product. Our research and studies showed that with Galfan high zinc phase and high aluminum phase freeze into very thin alternating plates. This lamellar microstructure retards corrosion of zinc by interrupting its conversion to zinc oxide and zinc carbonate. That's when the light bulb went off and we thought, 'there's something here.'"

The growth of hot-dip galvanizing using pure zinc has grown dramatically over the last two and a half decades. So has the price of zinc, explains Anderson. "Zinc is roughly a dollar a pound today versus $0.35 per pound in the 80s," he says. "It's part of the whole basket of commodities and materials that have doubled and tripled over the last decade due to higher costs to extract, refine and bring these metals to market. Materials management and science have to play a bigger role in



Left: Once Galfan exits its molten bath and cooling tower, the strip then emerges from a chemical treatment dryer for final processing.

Right: Telling Industries is using Galfan for both non-load-bearing and load-bearing framing components.

developing innovative ways to offset these costs. We feel this fundamental shift is the primary driver that will allow Galfan to really take hold here in the U.S."

The Techs began test trials with Galfan in January 2012 and became a licensed producer the same year. Anderson adds one of the biggest challenges has been setting up internal operations to accommodate the plant's transition from galvanized production to Galfan and back to galvanized. "It's a bit like a NASCAR pit stop," says Anderson. "Our operations and maintenance personnel have really risen to the challenge to develop creative methods for making the transition quickly and safely."

"Galfan offers a high level of corrosion protection while using significantly less zinc. The product was cost-effective for us and has maintained exceptional levels of quality and performance."

STEVE LINCH, TELLING INDUSTRIES

Lighter coating weights

Production for Galfan essentially is the same as the process for galvanized. Material is run through an annealing furnace and submerged in a molten bath. What's different is the chemistry. Galfan is a mix of 95 percent zinc, five percent aluminum and specific amounts of mischmetal [a complex alloy of rare earth metals to aid adhesion] versus galvanized material, which is 99 percent zinc. Because Galfan is a eutectic alloy, its chemistry produces the lowest melting point of any zinc-aluminum composition. Galfan's chemistry also has a lower viscosity than galvanized, which is where much of the magic for customers happens. "We can achieve GF20 with Galfan," says Anderson. "GF15 is currently under development. The lowest you can achieve with galvanized is G30 [0.30 ounces per square foot of coating]." Typically, coating designations are defined as the total coating weight [mass] on both sides of the sheet with the total coating distributed equally per side.

Galfan's success in Europe and Canada has led to several established markets, including automotive applications for deep-drawn unexposed parts. Until now U.S. users have had to import the material. The Techs' domestic supply source could make the high-performance material even more cost-effective for automakers but also for new markets such as agriculture, building and construction and a wide range of other fabricated metal products.

"U.S. automakers have used Galfan for years on unexposed parts like hose clamps and motor housings," says Tom Lazar, product specialist and inside sales leader for The Techs. "We didn't realize until we got into it how many people were importing Galfan for these types of uses. In the unexposed world, parts can number in the hundreds when you consider under body components and hoses. Galfan is especially suited for deep-drawn parts because its surface has a lower coefficient of friction. It has a lubricity or smoothness that allows a fabricator to form parts you can't normally make with galvanized."

The marketplace is beginning to recognize that there are performance advantages associated with using Galfan, but ongoing education continues to be a critical factor. "We also have to look at whether or not Galfan is specified for these applications and

whether or not it meets their customers' specifications," says Dave DiNardo, manager of sales for The Techs. "We funnel a lot of our products through our distributors so we're working to educate them as well as their end users about Galfan."

DiNardo adds The Techs have enjoyed early success by working with OEMs. "They are closer to the specific needs of their products and have a firm understanding of the potential cost savings," he says.

A Galfan coil is wrapped (top) and packaged (bottom) for shipment.

Saving costs

When The Techs reached out to Steve Linch, vice president of purchasing for Telling Industries to see if he would be interested in test driving Galfan he says he did his homework first. "I did some research," he explains, "and the reality is that the product offers a high level of corrosion protection while using significantly less zinc. Galfan was cost-effective for us and has maintained exceptional levels of quality and performance."

Telling Industries, headquartered in Willoughby, Ohio, is a full-line manufacturer of light-gauge metal framing and accessories. The company operates three manufacturing facilities in Cambridge, Ohio; Osceola, Ark.; and Kingman, Ariz., and is recognized internationally for its light-gauge metal framing. Telling's products meet all ASTM International and International Building Code light-gauge metal framing standards and requirements.

"We performed our own studies on Galfan," says Linch. "We knew it was being reintroduced to the U.S. but was established in Europe and accepted in the International Building Code for the light-gauge metal framing industry. That was a hurdle that for us was already taken care of."

Telling has used Galfan in the field for non-load-bearing and load-bearing framing components. The manufacturer is finding that Galfan's metallic coating provides equivalent protection when compared to a galvanized product. "We've been wildly successful with Galfan," says Linch. "It provides a superior level of corrosion protection while allowing us to achieve greater economies of scale." On average, Linch estimates Telling can use up to 40 tons of light-gauge metal framing for smaller jobs. Large jobs can take more than 1,000 tons of light-gauge metal framing. "It's a new economy," he says. "It's all about the money, from stricter lending practices for projects to customers trying to squeeze out every drop of savings. Anything we can do to help our customers is a plus on our end. Commercial construction has been very tight over the last several years, and as demand comes back to the commercial construction market, I see Galfan becoming a bigger player in our product offering."

In addition to corrosion resistance and the ability to reduce weight, Galfan offers enhanced paintability. Galfan has demonstrated the ability to minimize cracking with painted products fabricated with severe bends. Lazar adds that there also will be opportunities where customers can mix Galfan and galvanized to optimize their overall cost savings. "The lighter the gauge the greater the opportunity for savings," he says. "You wouldn't want to mix the two products if you have a cosmetic requirement. If that is not a factor. you could specify Galfan for parts that would benefit the most from a lighter coating weight and use galvanized for other items. The ability to tailor a job offers customers the flexibility to recoup additional savings where it makes sense for them." ■

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