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Parts identification for extreme environments

Marking technology designed to endure cleaning, galvanizing, and other harsh processes

This isn't a paper tag, but a metal tag with a white coating. The tag remained on the girder throughout the hot-dipped galvanizing process.

By Tim Heston, Senior Editor

It's not uncommon for a galvanizer to batch two or more jobs together. But what if those jobs are from separate structural fabrication shops? Perhaps the structural beams are similar but still different and destined for construction sites? Immersed in a kettle of zinc at more than 800 degrees F, most part identification marks don't stand a chance.

"It's common procedure to remove everything from the steel [before galvanizing). So if you have paper tags on your steel and I have plastic tags on mine, those will be removed. The work orders will be dipped together in the same process.

So said Doug Fry, sales manager at Chillicothe, Ohio-based InfoSight Corp., and it's for this application that InfoSight CEO Dr. John Robertson saw a need for traceability a little more than 10 years ago. Whence came a new marking technology that could withstand hot-dip galvanizing.

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In the 1970s Robertson started Telesis Marking Systems, and as part of that business he developed a part marking system for steel mills. The system laser- marked bar codes on metal tags that could be attached automatically to hot billets and slabs. Telesis divested this and other large, custom marking systems in 1993, and from this divesture InfoSight Corp. was formed.

As Fry explained, to call the technology "laser marking" oversimplifies it. The company dubs its marking method LabeLase®. What makes the mark durable isn't just the laser itself, but the reaction it causes on the label's white coating and metal substrate. Technically, the laser doesn't just burn a mark into the metal label but instead induces an interaction between the coating and metal substrate. The resulting mark, Fry said, is designed to be permanent enough to withstand harsh processes like hot-dip galvanizing.

The company does produce automated marking systems that mark directly onto a part. In these instances, the system applies a specialized coating to the area where the label will be, and then marks the bar code (or anything else) onto that coating.

This metal bar code tag was sent through blast cleaning and painting. Aft.er painting, the tag's clear protective laminate cover was removed, revealing the bar code and part number undemeath.

As Fry explained, most structural fabricators start using the identification tags for beams and other components that leave the facility, be it for outside processing like galvanizing or to the job site. Parts are scanned as they leave the structural fabricator and scanned again once they arrive at the galvanizer or job site. Thanks to a bar code tied into a company's enterprise resource planning (ERP) or similar software, every part has an identity. This ensures that the right component arrives at the right place at the right time.

"Once [fabricators] start using the tag, they see that they have a bar code now, instead of using a basic wax marker or relying on a stenciling kit," Fry said. "The part now has an identity."

At first workers in the fab shop's shipping area may apply the tags to components before they head out the door. Eventually, though, tags often are applied earlier in the process, such as before blast cleaning and painting. If paint needs to be applied, a fabricator can use a metal tag with a clear protective laminate cover. After blasting and painting, the cover can be removed to reveal the bar code underneath.

Finally, workers at a structural fab shop may apply a tag just after the saw or other primary cutting operation. "As soon as they cut a piece, they put a tag on it," Fry said.

If parts spend a lot of time between cutting, punching, and welding or there is a holdup at blast cleaning or painting, parts tracking can reveal these inefficiencies between processes and provide a baseline for improvement. Fry added that the marking technology isn't limited to bar codes. Drawings, company logos, and anything else that can reasonably fit on a metal tag can work.

As Fry explained, a simple mark, say, "left" or "right," on a metal tag can help error proof an operation and, ultimately, free persistent bottlenecks.

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Images courtesy of InfoSight Corp., 20700 U.S. Highway 23, P.O. Box 5000, Chillicothe, OH 45601, 740-642-3600,www.infosight.com.