By Ed Weber

EBERSPÄCHER GROUP AND THYSSENKRUPP BUDD CO.

No Room for Error

Part identification and error-proofing prove central to two suppliers' goals within their internal continuous-improvement processes.

A wise man once said, "If you can identify a part correctly, error proofing is easy." OK, maybe I made up the wise man part and maybe it's never easy. But there is still some truth to that statement. Automotive suppliers have a significant incentive to ensure that parts are identified accurately and consistently for two primary reasons: first, internally, it can guarantee error-proofed packing and shipping, and second, for their customers to use for identification in assembly. In this case study, we will look at two companies who have taken this advice to heart.

Eberspächer Group

Eberspächer Group is a Tier One automotive supplier headquartered in Esslingen on the Neckar in Germany with North American headquarters in Novi, Mich. Eberspächer is comprised of over 25 companies in 16 countries with approximately 5,100 employees worldwide. The company has two divisions: exhaust engineering and vehicle heaters. The plant in Brighton, Mich. makes catalytic converters for various automotive OEMs.

As part of an internal continuous improvement process, Eberspächer was facing a challenge. One of its catalytic converter parts was about to undergo a change for the new model year. The wash coating was going to be different for the new model year and both parts (old and new) needed to be identified correctly although they looked the same. The customer requirement was for a human readable label to be placed on each part produced. There was no room for error. The current process required that an operator place a preprinted label on the part, which would open up the potential for error when multiple parts were introduced. As such, an internal team began to research alternative error proofing solutions.

The first option identified was to change the tooling process, but this was rejected as being too expensive. The second option identified was to label the part at the first stage, but this was rejected because of the subsequent processes requiring that 100 percent of the surface be coated, and a label would not allow that. The third option the team investigated was to mark each part with a Data Matrix code and then somehow use that to create the appropriate label after coating. The solution they eventually settled on was combining pin stamping with a read/print error proofing solution from ToolWorx.

Eberspächer had a pin-stamp machine in place dot-peening human-readable code on the part. The company decided to add a data matrix code containing part number, lot code, Julian date, shift ID and a unique serial number. This data is fed to the pinstamp machine from its PLC.

Then, the part goes through the coating process and eventually ends up at a reading/printing station which consists of a reader and a bar-code printer. The part is placed into a fixture that performs a series of tests to ensure pass/fail. If the part passes, the reader is then triggered to read the data matrix code sent to the printer.

The printer software first checks to make sure that the serial number has not been read before. If it has, the

When the scanner successfully reads the Eberspächer part mark, a customer part label is printed.

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printer displays an error message. If not, the printer creates a customer-part label which consists of the customer part number and a three-letter line identifier. The operator then places the customer label on the part.

By following this process, Eberspächer created an error-proofed process to ensure that no parts are misidentified. In addition, the company eliminated the need to purchase pre-printed labels. The next step in its continuous-improvement process is to capture the data matrix data and process data to provide complete lot/part traceability for every part produced.

The ThyssenKrupp Budd operator removes a part label from the printer.

ThyssenKrupp Budd Co.

ThyssenKrupp Budd operates 30 facilities in North America, with headquarters in Troy, Mich. The company belongs to ThyssenKrupp Automotive AG of Germany, one of the largest automotive suppliers in the world. ThyssenKrupp Budd designs and makes parts for more than 100 vehicle models on the road today. It employs approximately 11,000 people, whose efforts bring the company annual revenues of more than $2.5 billion.

Eliminating the possibility of errors in packing and shipping wasn't just desirable for ThyssenKrupp Budd—it was crucial. Automaker studies have identified errors in parts shipping as one of the main causes of assembly line stoppages. As a result, OEMs began warning suppliers that hard consequences would follow labeling mistakes that forced line shutdowns. While ThyssenKrupp Budd's shipping accuracy was fine, it had a pretty strong incentive to keep it that way.

At the ThyssenKrupp Budd plant in North Baltimore, Ohio, parts are molded in separate areas. Two different parts that look similar might be made 50 feet apart, so the likelihood of mixing them up is small. But some of those parts are toted to the paint line with other parts for a coat of color and a baked finish. Now the potential for mistakes greatly increases.

ThyssenKrupp Budd decided to create a two-step process. At the work cell, they print a part label and apply it to each part produced. At shipping, they scan each part label into the ERP software to create a shipping label. Now all they would need to do is to find a way to ensure that the right label was placed on the right part. The solution: a ToolWorx printer that plugs directly into the part-making machine. As each part is stamped or injection-molded, its part-making machine sends a digital signal to the printer, which is programmed to know the part number that corresponds to each signal. The printer then creates a bar code label that matches the part.

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As a part comes off the line, a worker attaches its freshly printed label. Each label is created singly, from the command of the machine that made the part. With each part bearing the correct bar code label, newly minted pieces can travel throughout the plant, mixing with parts that may look identical. Their labels will reveal their differences. One place parts are found is the paint line. For instance, on the paint line, a batch of hoods might get a coat of paint and be baked in an oven to set the finish.

The heat-sensitive labels, which had to be specially produced (Intermec Media Products), remain in their inconspicuous places on the parts, withstanding the 325-degree temperature. In the finishing department, parts are packed into boxes for delivery. The bar-code label on each part is first scanned with a cordless scanner. Workers can walk freely about the department, scanning parts up to 50 feet away from the scanner's base station. Each scan sends bar-code label information wirelessly to ThyssenKrupp Budd's R/3 system. Once the standard pack quantity of the same parts is packed, a shipping label is printed. Previously, shipping labels were printed in batches, and it was up to the workers to ensure that the appropriate label found its way to the correct container.

If someone scans something incorrectly, the system sends a visual alarm that shows up on the computer monitor. ThyssenKrupp Budd cites customer satisfaction as the greatest benefit of the smart-printing system. Having an error-proofing system in place can be the deciding factor for automakers choosing between two vendors quoting the same bids on future business. Client preference is clear—it pays to error proof.

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