

Coating Progress Keeps on Rolling

Breaking into the automotive industry can be difficult, but with some planning...

By Mindy Reed, Techmetals, Inc., Dayton, Ohio

For 120 years, Erie Wheels, Erie, Pennsylvania, has been meeting the needs of its customers. During its first 45 years, Erie was a manufacturer of cast products and performed general foundry work. For the last 75 years, the casting company has supplied wheels, hubs and drum assemblies to an ever-growing market. And, while Erie has continuously updated its wheel design and performance, it has also forged ahead in the coatings it uses.

While many companies continue to make the change from solvent-borne coatings to high-solids, waterborne or powder coatings, Erie is a generation ahead, recently shifting from one waterborne coating to a high-performance, near-zero VOC, ultra-low HAP waterborne coating.

"Heavy-duty truck and trailer manufacturers know our name," stated David Brown, manufacturing manager for Erie. "Erie's trailer wheels, hubs and spoke wheels and parts are preferred equipment for many OEMs and replacement part suppliers." The company enjoys a strategic location, centrally located to key customers in Michigan, Ohio, New York and Canada. As a division of Erie Malleable Iron, one of the country's leading casting facilities, Erie Wheels has an uninterrupted supply of wheel castings around the corner from its integrated manufacturing facility.

"We are well known for the quality of our wheels and their appearance," said Mr. Brown. Every wheel receives quality inspections as it moves through the company's manufacturing cell operation." One critical inspection is a test of the high-performance waterborne coating now used. Erie performs thickness readings, which insure the proper film thickness level above peak metal profiles on the casting surfaces.

A coating for the 21st century. Erie has always coated its wheels to provide protection from the environment and improve visual appeal. For years, a traditional solvent-borne coating was applied until the company switched to a waterborne coating five years ago. Erie turned to a long-time supplier, Beaver Paint Co., Girard, Pennsylvania, for this waterborne coating. Using technology developed in conjunction with Jamestown Paint, a sister company to Beaver, Erie was able to offer products that were more resistant to premature rusting in the field. With the benefits of the waterborne coating established and tested by Erie, the company worked with the paint supplier to engineer a new waterborne coating for its products that delivered even better performance.

"Erie is proud of its products, from the original engineering to manufacturing to the coating when it leaves our loading dock," stated Michael Kaliszewski, manager of technical services at Erie. "Five years ago, we wanted an environmentally friendly, high-performance coating with lower VOC levels and improved corrosion resistance. Beaver provided it, and we kept working together to further improve the coating's properties."



David Brown, manufacturing manager, Erie Wheels; Richard Shannon, general manager, Beaver Paint; Ray McAllister, regional sales manager, Beaver

Late last year, the paint supplier introduced a new coating for Erie's trial. Working closely with Erie's technical and production team and its strict requirements, the paint supplier formulated a hybrid waterborne paint designed to outperform the high-performance coating in use.

"We wanted to provide Erie with a coating that exceeded both its present performance and environmental standards," said Raymond McAllister, regional sales manager for Beaver. "While our existing waterborne coating was performing well, as part of our continuous improvement philosophy, we wanted to further improve product performance for Erie by offering this next generation technology for use in its plant." The new waterborne coating provided performance and environmental benefits. The performance benefits include improved air dry and handling/packing capabilities for improved productivity as well as a substantial improvement in corrosion resistance and

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All wheels are painted with a high-performance waterborne coating.

Paint; and Michael Kaliszewski, manager of technical services, Erie Wheels (shown l to r). The four worked together on Erie's requirements for the waterborne coating.

film durability. The environmental benefits include a reduction in VOC levels from 3.5 lbs/gal to 0.5 lb/gal.

Coating specification. Erie's second-generation waterborne coating is a special vinyl co-polymer. It was formulated as a solid-barrier coating to provide excellent corrosion resistance and longevity. Sprayed in a variety of colors, it is a near-zero VOC (less

than 0.05 lb/gal) and ultra-low HAP (less than 0.15 lb/gal) coating. It is applied on castings that are cleaned with a simple, mild alkaline wash. Coverage is approximately 300 sq ft/gal with a two-mil dry-film thickness. Erie was also impressed with the coating's more than 200F flashpoint and five minute air-drying time.

Another interesting aspect of the coating is its color-changing quality while air drying. When applied by Erie's operators, the coating is blue in color. Midway through the drying cycle, the coating changes to a traditional black color. This characteristic contributes to the successful quality of the product. "We operate in a manufacturing cell environment, and our operators are responsible for the entire process," noted Mr. Kaliszewski. "After the machining of the wheels, the operators apply the coating at a special in-line station. The operator ensures 100% coverage through inspection of the coating, and the blue color makes this visual inspection nearly flawless." The quick air drying also permits Erie to ship wheels almost immediately after manufacture, meeting its customers' requirement for just-in-time deliveries.

Proof in the performance. The high-performance waterborne coating has outperformed its previous version. Erie has received good feedback on the new coating. "Erie is committed to high-quality products and environmental stewardship," reported Mr. Kaliszewski. "Everything we do is directed at meeting those objectives. The coating looks great, and our customers like it."



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