



Application Note



Automotive and Aerospace

Addressing multi-faceted coding needs for tire production

The challenge

Tire manufacturing facilities run nearly non-stop. They are hot and dusty environments, and there is ever-changing variability in the size and type of tires being produced on the line. Add the need to create high-quality, high-contrast codes on dark-colored materials with the ability to print upside down, and the importance of selecting a quality coding solution that is tough enough for your production environment is evident.

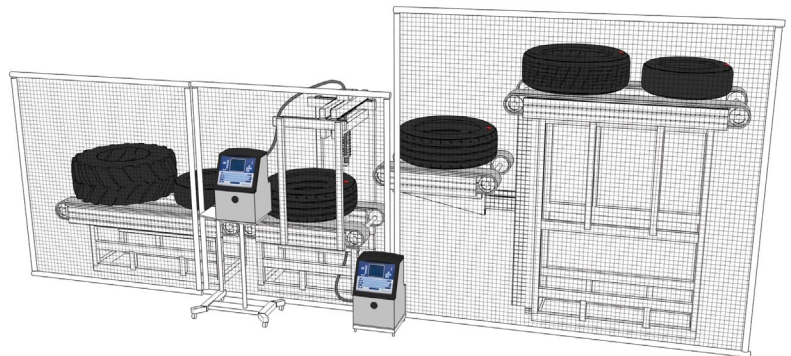
The Videojet advantage

Videojet coding solutions are engineered to provide high quality codes and to help maximize uptime in tough production environments. Our patented anti-clog CleanFlow® printhead design means less ink mess, reduced maintenance frequency and clean, consistent codes. Videojet Continuous Ink Jet (CIJ) printers can produce superior resolution text and graphics with high contrast inks—making them an ideal solution for the rigors of tire manufacturing. Combine this with one of the largest global service networks in the industry, and you'll find that Videojet is an ideal partner for your tire marking needs.

The customer need

Tire marking can be challenging for several reasons. Tire production is usually a non-stop enterprise and the environment is characterized by temperature extremes and dust particles in the air. This busy and ever-changing landscape can be very challenging for printers where high-contrast coding is required. One issue to consider is whether or not your coding solution is contact or non-contact. Contact printers can damage the rubber substrate being coded which is a concern when it comes to the quality of your final product. Downtime is also an issue when it comes to nearly non-stop productions, so it is ideal to have a coding solution that can consistently print high quality, high contrast marks with pigmented colored inks without requiring excessive maintenance due to clogged printheads.

Marking is used in variety of tire applications. The marking process is used for two main purposes, to identify extruded layers of rubber for tracking within the manufacturing process (extrusion rubber coding) and to mark the walls of finished tires per OEM specifications (high point printing).



Videojet CIJ printers marking tires of varying sizes above and below the conveyor

Extrusion rubber coding

Extrusion rubber coding is performed in different steps of the production process for purposes of tracking materials throughout the manufacturing cycle. Items such as batch and product code, lot number, as well as date and time are often included. One example of the importance of these codes is the accurate identification of batch information so that when the type of tire being produced varies on the line, the wrong type of rubber isn't accidentally used. This code allows operators to visually check product on the line and helps them to reduce error and scrap.

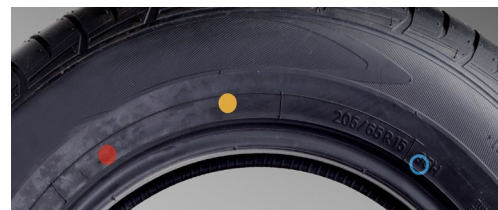
High point printing on finished tires

High point marking is usually specified by OEMs and includes the printing of a dot or character on the outer rim of a tire. This mark is used by the OEM on the vehicle production line, in conjunction with machine vision, to install the tires correctly and to help ensure that the tires are balanced. High point marking is also used by some tire manufacturers to indicate that a tire has passed quality inspection.

With so many possible combinations of codes and meanings across varying tire types (e.g. SUV, compact car, motorcycle, spare tires, etc.), it is very common for different colored inks to be used to assist in identification of the marks. To accommodate the varying tire types and ink colors, multiple printers are commonly used as are electric arms to automatically adjust the printing distance depending on the height of the tire being printed on. Having multiple printers allows manufacturers to meet the specifications of each OEM where one might require inside coding, one might require outside coding or another may require both. It is also important to note that each printer can use only one color of ink.

The importance of a trusted partner

When it comes to tire marking there are many things to consider, including the challenges of your production environment, required code quality and the importance of meeting your customer's strict specifications. Downtime can create big problems on lines that run almost non-stop, and the selection of a coding solution and partner that best meets your needs and helps limit your maintenance requirements is paramount to your success. Videojet Technologies has over 40 years of experience engineering and producing continuous ink jet printing solutions for tough environments and we are already a trusted partner of top tire manufacturers around the globe.



High impact codes in red, yellow, blue and white

The Bottom Line

Videojet has the printers, inks, proven experience and support experts to help you identify and seamlessly integrate the optimal coding solution into your tire lines. And with the option of integration into your programmable logic controller (PLC), we can also help improve your production by taking away the need to manually enter date and code information into the printer. This virtually eliminates changeover time and human errors, which helps keep your lines running and minimizes scrap.

To find out more on our proven solutions for tire marking, ask your Videojet representative for a production line audit and for free sample testing on your tire substrates.

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