



Choosing the best coding solution for automotive components

Modern vehicles require thousands of individual components, most of which have specific part numbers. From suppliers manufacturing the smallest parts to vehicle makers relying on the correct coding for traceability through the assembly process and beyond, the inclusion of information which stays in place on metal, rubber, plastic, glass, fabric or card is a crucial part of the process. There is no room for error in the selection of coding and marking equipment.

INDUSTRY CONDITIONS

Even with pandemic-related factory stoppages and supply chain issues, U.S. automotive parts manufacturing remains strong and is trending up, with an estimated 872,900 employees in 2021.¹

The auto parts manufacturing market size in 2022 is \$68.4 billion and growing. Although the U.S. auto parts manufacturing growth trend is currently slower than the manufacturing sector in general, there is potential for it to ramp up and exceed the pace of the rest of the economy once it recovers from pandemic turmoil.²

These market conditions clarify the key importance of robust coding for traceability and supply chain management. In 2022 alone, Ford, GM, Goodyear and Tesla had recalls. These recalls and others like them are leading manufacturers to look for global traceability and containment solutions to maximize their responsiveness and minimize the impact of vehicle recalls due to faulty parts.

¹ Mathilde Carlier, Statista, 'Number of employees in U.S. automotive industry by sector 2020-2021' 2 May 2022.
<https://www.statista.com/statistics/276474/automotive-industry-employees-in-the-united-states-by-sector/#:~:text=The%20number%20of%20motor%20vehicles,is%20higher%20than%20in%202020>

² <https://www.ibisworld.com/industry-statistics/market-size/auto-parts-manufacturing-united-states/>



Direct part marking, especially 2D and QR codes, combined with the use of vision systems make the traceability process as smooth as possible.

The cost of dealing with the consequences of a defective part to a vehicle manufacturer can be huge and include not just recall costs but possible fines, loss of share value and damage to reputation.

Effective coding also helps in the fight against counterfeit auto parts. Fakes, including counterfeit brake pads, tires, suspension components, steering linkages and other accessories, are being universally distributed and sold to consumers in greater volumes.

Current sourcing issues and increased global inflation combined with the proliferation of online shopping puts consumers at greater risk of exposure to low quality and suspect components. The International Chamber of Commerce and the International Trademark Association estimate the total global economic value of counterfeiting and piracy could reach \$2.3 trillion in 2022.³

³ Sophie Peresson, Business Action to Stop Counterfeiting and Piracy, World Trademark Review 'Counterfeit automotive parts increasingly putting consumer safety at risk' 13 May 2019. <https://www.worldtrademarkreview.com/global-guide/anti-counterfeiting-and-online-brand-enforcement/2019/article/counterfeit-automotive-parts-increasingly-putting-consumer-safety-risk>

FACTORS TO CONSIDER

Choosing the right coding solution is not easy. Because no two applications are the same, the following factors should be considered when choosing a coding solution:

- **CODE CONTENT:** Will increased code complexity, such as additional lines of print or printing in different orientations, be supported by the printer you choose, or will you need to purchase another printer?
- **SUBSTRATE:** What is the range of materials on which you will need to code? Obtain a coding sample for each of the printers you are considering. Is the code legible? Also consider the colors of the materials onto which you will code. Could one coding solution be suitable for all?
- **LINE SPEED:** Will the coding solution keep up with your line speeds? If not, will the print be compromised? Do you need to code across multi-lane production lines now or will you need this capability in the future?
- **FACTORY ENVIRONMENT:** If your coding environment is hot and dusty, ensure that your solution has the right ingress protection (IP) rating and features to perform reliably.
- **AVAILABLE BUDGET:** Consider not just the initial purchase price but the overall cost of ownership and reliability. By compromising on the price, you may pay more with unexpected breakdowns. Is leasing a better option than capital cost?
- **TESTING:** Will your coding and marking provider offer a free trial so you can be sure the machine meets your demands?

Customer research conducted by Linx Printing Technologies' suggests that the no-compromise demand for traceability is the key driver behind coding purchases in the vehicle components industry. This is combined with the need for coding and marking equipment to work reliably. These and other factors are often interconnected.

TRACEABILITY FROM THE START

Durable, clear and accurate codes are a must for monitoring components through the assembly process and stock control or to meet customer expectations. Designed to withstand the effects of even the harshest production environments, inks which are resistant to heat, dust or oil can deliver long-lasting codes.

High contrast pigmented inks offer better clarity coding in the industry for durable traceability. These inks are available in a range of colors from white and grey to yellow, black and blue and provide clear, legible codes on any color material.

The latest coders are easy to set up and manage on busy, highly automated production lines. Simple message selection, intuitive user interface and large capacity message storage help ensure the right code is always selected the first time. Automated message selection and remote monitoring (even by a smartphone) further reduce the risk of code errors.

Coding and marking technologies also help combat the growth of counterfeiting in the automotive industry.

Counterfeit goods pose a serious threat to safety as well as profits. The World Trade Organization has highlighted areas where coding and marking can help, including scannable barcodes and anti-counterfeiting printing inks used to mark surfaces invisibly.⁴ In addition, smartphone technology is available that sends the end user a text message with the unique code that is printed on a product, allowing end customers to confirm that a product is genuine at the point of sale.

Effective coding and marking technology delivers robust, legible and traceable coding on any substrate with the ability to permanently print in a range of colors as well as a variety of styles.

⁴ World Trade Organization, 'Securing Supply Chains Against Counterfeit Goods' 31 May 2012.

<https://www.ip-watch.org/weblog/wp-content/uploads/2012/06/US-Paper-on-Supply-Chains-June-2012.pdf>





HARD WORKING AND RELIABLE

Less downtime on your production line means reduced costs to your business. That's why leading coders are built for durable coding during continuous operation and are ultra-reliable with long service intervals and low-cost maintenance that maximize production performance while minimizing operating costs.

IP55- and IP65-rated steel enclosures offer protection against water and particle contamination such as carbon or rubber dust, preventing stoppages and offering high-quality continuous coding. Other features such as positive air to the print head also help achieve reliable operation even in exceptionally dusty production environments.

Built for busy production lines where coding requirements frequently change, multiple coders and coding technologies can be monitored and deploy messages from a centralized PC or laptop to reduce the chance of manual errors when producing multiple products.

Some printers are easily transferrable between lines, adding extra flexibility and saving time in production. Traversing print heads offer greater flexibility for larger components such as sheet metal or for applications across multi-lanes.

Vehicle manufacturers often manage their supply chain on LEAN principles and effective coders enable them to be well positioned to react quickly to fast-changing customer requirements.

DIFFERENT CODING TECHNOLOGIES

A range of coding technologies is available, each with unique strengths in different applications.

LASER

Laser coding is particularly strong at delivering the 2D and QR codes commonly required for effective automotive traceability. It also provides a permanent code on a wide range of materials at high line speeds, including rubber (e.g., rubber door trims) and plastic (e.g., windshield wipers). Because there is no ink involved in the coding process, drying time is not required and there is no risk of smudging when the coded product is in contact with other products or handling systems soon after coding. Laser coders are particularly attractive due to their low downtime and high-speed capability.

Another benefit is there are no consumables. These benefits can make the long-term cost of ownership lower than some other technologies.

Steered beam laser systems are highly versatile as they provide clear, consistent and perfectly formed characters in a range of fonts and message formats and enable the use of high-quality graphics and logos across a wide range of print size. They are particularly suitable where high-quality codes are required, for example when reproducing a customer's logo.



CONTINUOUS INKJET (CIJ)

Perhaps the most cost-effective choice, CIJ maintains an important place in the industry as it can print on almost any substrate. A wide variety of inks are available to use with CIJ printers including inks of different colors that ensure legibility on any color substrate. Other inks available include UV-readable inks for anti-counterfeiting or water-removable inks for internal traceability, adding yet another dimension to the coding process.

CIJ can print one to multiple lines of text and simple graphics at speeds over 2600 characters per second. Further versatility is available by situating the compact print head above, beside or beneath a production line – even traversing from side to side across a line if necessary. With lighter models increasingly available, the CIJ printer is more capable of being easily moved from line to line and is quicker to install and set up than laser coders.



LARGE CHARACTER MARKING

Case coders are particularly well-suited for printing variable information on secondary packaging such as cardboard boxes that contain components. These outer cases usually require easy to see text and graphics.

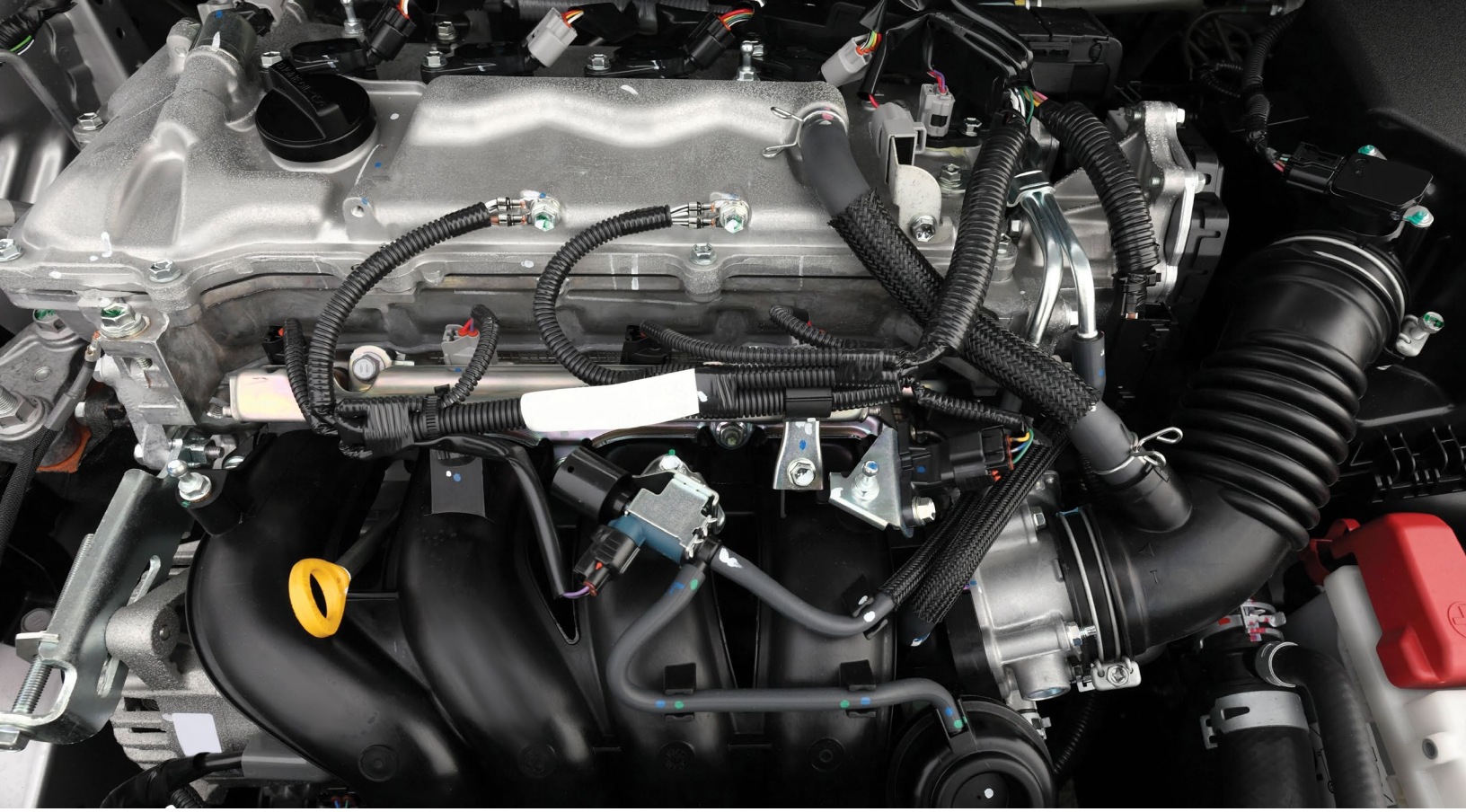
Case coders offer a high-resolution quality and are versatile enough for use on a variety of surfaces and materials. Easy to set-up and adjust, their reliability and predictable cost of ownership endear them to production lines in a range of industries. They are also a cost-effective alternative to pre-printed boxes or labels.

THERMAL INKJET (TIJ)

TIJ printers offer a flexible coding solution for both primary and secondary packaging. Although offering a smaller print area than case coders, these high-resolution coders generate superb print quality for premium packaging and are a cost-effective solution for slower production lines or where production is not 24/7.



There can be extensive challenges across the automotive industry. This routinely means there is no one-size fits all solution. Give us a call today to speak to our sales team about your particular organization needs.



CONCLUSION

In an industry which requires printing information onto individual components at various stages of the process, coding and marking equipment must be able to reliably meet complex demands.

Robust coders are required to operate reliably in challenging production environments, with trouble-free integration into production processes.

Code functions vary in the industry. Codes may need to be removed for internal traceability, be discreet for anti-counterfeiting purposes or be long-lasting to meet customer traceability requirements.

An effective coding solution tailored to the manufacturer's requirements can help facilitate smooth manufacturing and assembly processes as well as help vehicle manufacturers deliver top-quality aftercare to drivers.

Contact us today to discuss the best options for your operation.