Fibre laser coding for the beverage industry

Market background

The thirst for canned drinks is stronger than ever among both brands and consumers, as industry reports continue to indicate sustained growth across the beverage canning sector. The global market for canned beverage reached 245 billion units in 2015, representing 23% of packaged beverage. That figure is forecast to reach 278 billion units by 2020, equating to a 2.4% increase since 2015. Among the top canned beverage producing countries are the USA, Japan, China, Brazil, UK, Spain and Canada, which combined account for 73% of global production. Clearly, drinks manufacturers and brewers continue to recognise the benefits of beverage cans, influenced also by consumers' preference for canned beer and soft drinks over other types of beverage packaging.

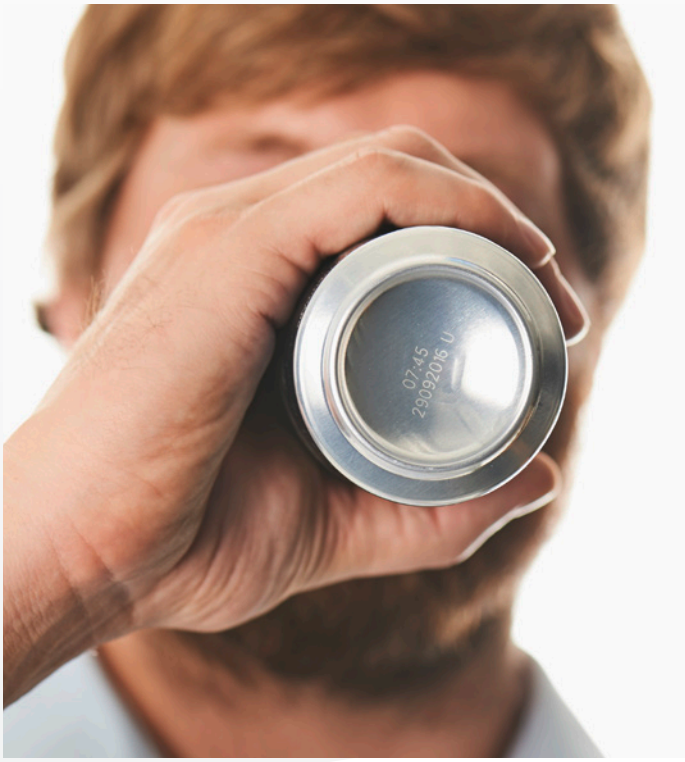
The need for traceability

This sustained growth will be a driving factor behind manufacturers' choice of beverage processing equipment, which also includes coding and marking systems. Traceability and item identification are vital in canned products.

The ability to identify the origin of a canned beverage is a key requirement, which is why every canned item must be assigned a unique identifier in the form of a human and machine-readable code that is read and recorded at all stages of its progress throughout the supply chain. Traceability codes play a key role in identifying, recalling or withdrawing faulty products. They also empower consumers by giving them the opportunity to access targeted and accurate information concerning the products they buy.

Consequently, an effective coding solution is a priority for beverage manufacturers. But system selection is not an easy task and complicated by many factors, including production environment, speed, consumable choice, overall equipment efficiency and environmental considerations.

This white paper aims to explore the coding challenges faced by companies in the beverage canning sector, offering a qualitative comparison between the available coding solutions and outlining which are best suited for beverage canning lines.



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Challenges in beverage can coding

Every industry presents its own set of obstacles when it comes to coding and marking, and beverage canning is no different. When investing in a coding solution, manufacturers should take into consideration the following factors:

Production speeds

To satisfy customer demand, companies have to deliver a high volume of canned units on a daily basis, which means that speeds on canning lines are high and prone to changes (high output during summer months, lower productivity off season). Continuous advances in technology mean production line speeds are rapidly increasing, resulting in higher numbers of cans being processed. Today's fastest soft drink canning lines are capable of filling up to 2,000 cans per minute, all of which require codes. The coding system must be able to keep pace with these high production rates.

Harsh production environments

The production environments for beverage canning can be wet and sugar-laden, with temperatures capable of reaching 45°C on the production line. These conditions can seriously affect code quality, which is why best suited coding and marking systems should be able to withstand such a demanding environment and deliver the high quality codes that businesses expect from their equipment supplier.

Coding surface

The majority of codes are printed on the bottom of cans, where the surface is concave and therefore uneven. This challenge is exacerbated by the speed of the production line. A code that appears stretched or smudged is often linked to the production line speed, but it can also be the result of the coding system's incompatibility with the packaging surface.

Smooth integration

For a coding system to be effective, it needs to easily integrate on the canning line. This requires optimal print head design and a small machine footprint enabling installation in a location that will not cause bottlenecks or downtime along the production line.

Environmental awareness

A growing number of companies are committed to their social responsibility and prefer to invest in technologies that advance their environmental credentials. Coding and marking technologies can be energy-intensive, as well as consuming volatile organic chemicals. A coding system that minimises energy consumption and waste will therefore be the preferred choice.

Late stage customisation

Developments in the supply and distribution of beverage cans are stimulating a growing need to promptly modify codes on the production line. Late stage customisation enhances marketing capabilities and also allows manufacturers to be more flexible with decision-making on site, whether it involves changing 'best before' dates and production data or adding in promotional codes that can be used for interacting with customers, raising brand loyalty and running sales campaigns.

CIJ – the traditional coding choice in beverage canning

Ease of use and installation, as well as extreme versatility that enables printing at high speeds and on uneven surfaces, have made continuous ink jet (CIJ) the traditional coding technology of choice for canning applications.

CIJ coding systems are designed to print easy-to-read text that enables product identification on canned products. A CIJ printer's ability to produce high-quality codes rests on a combination of its print head and its inks. The best systems provide high quality codes at production line speeds and offer a versatile range of inks designed to optimise performance even in the most demanding of filling and packaging environments.

Domino's **Ax-Series** of printers is re-writing the rules of traditional CIJ applications, by delivering higher resolution print at faster line speeds, with no preventative maintenance and less cleaning. The new **i-Pulse** print head and inks provide perfect drops every time and an entirely new user experience. The **Ax-Series** represents the state of the art in CIJ, whilst retaining traditional benefits of high flexibility and low cost of entry.

Fibre laser – the alternative coding solution for beverage canning

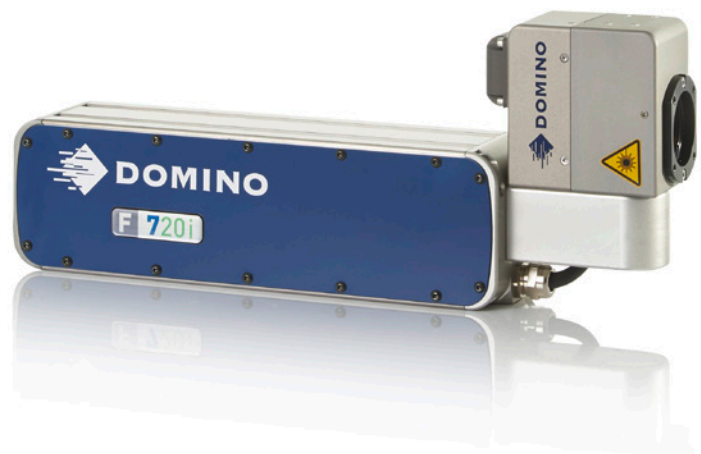
Fibre laser technology represents an alternative option to CIJ, with key benefits for customers that have to code large volumes of product, but also wish to avoid fluid usage.

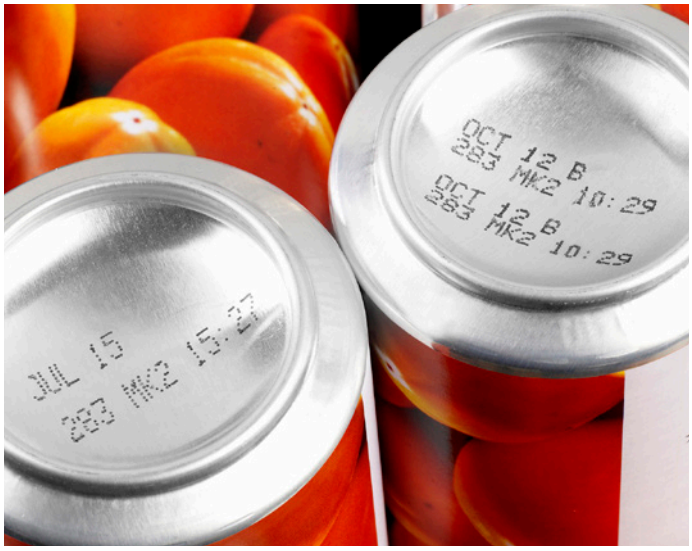
Laser coding technology has a long heritage in the beverage industry, as it is flexible enough to be applied to most types of packaging, while reproducing high-resolution fonts and graphics.

While CO_2 laser radiation is unable to generate codes on uncoated beverage cans due to its reflection off metal surfaces, the latest fibre laser systems are perfectly suited for these type of applications: thanks to their high pulse peak power they can code bare aluminium, as well as coated or anodised aluminium, leaving an indelible mark by anodising the surface (a process that does not engrave but actually creates a protective layer on the aluminium). A fibre laser can also achieve a successful balance between high-resolution marking and high speed coding.

The **F7**20i fibre laser

The **F7**20i is Domino's latest addition to its range of high performance, high speed fibre lasers. Designed to deliver clear, legible and durable codes on aluminium cans, and with an IP65 rating, the **F7**20i fibre laser is especially suited to withstand the harsh production environments and high speed coding demands of the beverage canning sector.





The **F7**20i is capable of delivering high quality codes at line speeds of 600 m/min. The unique 3D power concentration can achieve this kind of superior coding through coding with short and intense pulses, which significantly increases the marking speed while also resulting in a high resolution mark even on the most challenging of surfaces, such as the concave surface of the bottom of a can. Thanks to the high ingress protection (IP) rating it can maintain the same non-stop high speed production even in the harsh, humid, sugar-laden environments of beverage canning, which would pose a challenge for most coding and marking systems.

Increased demand for late stage customisation and the ability to generate personalised codes on the canning line means it is not solely about the quality of the code, but also the quantity. The **F7**20i fibre laser systems can mark more than 60 characters per can at a line speed of 42,000 cans p/h. With standard message sizes of between 10 and 26 characters in length, the line speed can increase to over 90,000 cans an hour. The ability to generate longer, more complex codes opens up more marketing and promotional code opportunities for beverage canning.

Arguably the most compelling benefit of fibre laser is environmental performance. Laser does not require any fluid, so waste is not an issue. Deploying a coding and marking system that requires no consumables and reduces waste improves a company's green credentials, while also making a visible commitment to improving the sustainability of beverage canning.

For more information on how Domino's fibre laser coding and marking offering can answer your application requirements, please visit **www.domino-printing.com**