

insignia's guide to: Advances in Continuous Ink Jet



Continuous ink jet (CIJ) or small character coding is the most common method for high-speed coding of use-by dates and batch codes. Advancements in printhead design, ink formulations and preventative maintenance regimes has made continuous ink jet technology more consistent, cleaner and easier to live with than ever before.

For most manufacturers, coding a product with a date or batch code is a very minor part of their overall production process, but this small task will quickly become a big issue if it causes a production stoppage.

This guide looks at how the improvements in continuous ink jet are delivering greater reliability, efficiency, and a lower total cost of ownership.

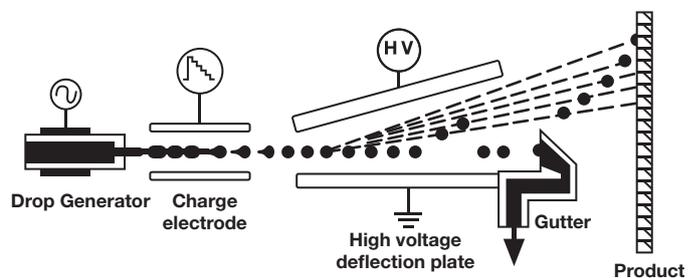
TECHNOLOGY OVERVIEW

Continuous ink jet has been the dominant coding technology since the 1980's, due to the easy to read codes, high line speeds, and ability to print onto a wide variety of substrates, including porous and non-porous surfaces.

A non-contact printing technology, the continuous ink jet process begins as the ink is broken into individual droplets. The droplets travel between electrodes where intermittent droplets are given a charge. Then, as the drops pass through deflector plates, the size of the charge determines how far out of the stream the drop is deflected and the subsequent placement of the drop on the product.

By placing a collection of droplets close together, characters are printed as the product passes under the printhead. Any ink droplets which are not deflected are re-circulated, making CIJ an efficient, cost-effective coding method.

Entry level continuous ink jet systems provide basic codes, ideal for simple batch codes or use-by dates. More advanced systems offer features to improve performance, for example higher line speeds, management tools for multiple production lines, and beyond these high performance systems are the continuous ink jet systems designed for specialty applications, like pinpoint printing, opaque inks, or extreme production environments, including suitability for wash down.



EASE OF USE

No mess, sealed ink systems

Unlike the messy systems of the past, modern continuous ink jet coders are designed for ease of use, with cartridge ink and solvent systems greatly reducing the risk of ink contamination, spillage, or incorrect fluid replenishment.

Domino's CleanFill cartridges offer easy and safe replenishment. Not only can they be changed while the printer is running, the larger volume cartridges provide extended runtime between changes.

Smarter, Simpler User Interfaces

The management and control of ink jet systems has also improved. Users can expect versatile user interface options; from keyboard to large touch panels to remote and web server interfaces, making operation easy and visible.

Domino's QuickStep offers a simple touch screen interface and is common between most Domino coding technologies for easy operator training.



RELIABILITY ISSUES AND IMPROVEMENTS

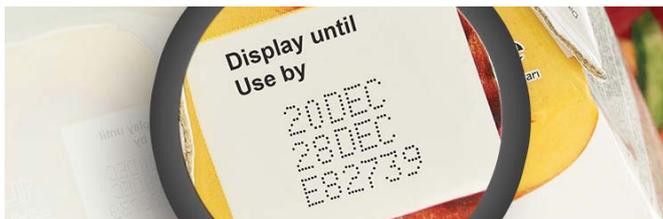
Start/Stop Performance

A common concern with continuous ink jet is the ease with which a coder will start again after a prolonged period of shutdown.

The benefit of CIJ inks-ability to dry quickly and to adhere to most surfaces becomes a challenge as it adds to the potential for blockages in the nozzle or gutter. The nozzle and gutter require flushing with solvent to overcome the risk of blockages.

Different manufacturers have different ways to address this need to flush. While some manufacturers recommend full flushing of the entire machine if it has been left unused for any more than two weeks, most manufacturers have introduced a degree of auto-flush into their current models.

***SureStart** is Domino's patented process for flushing and cleaning the nozzle and gutter and then sealing the print head nozzle at the touch of a button, allowing the user to walk away and be confident of an easy start-up. This process is automatic at both start up and shut down.*



Printhead Performance

Advances in ink filtration, independently heated print heads and measured ink viscosity control are features that contribute to the improved clarity of the printhead code and overall reliability of continuous ink jet.

Additionally, in some cases, introduction of positive pressure in the printhead can improve printhead performance. Outward airflow from the printhead nozzle inhibits ingress from either fine dust particles or micro 'splash-back' which is sometimes caused when the ink drops land on the substrate.

Compressed Air vs Pump Delivery Systems

Another major advance in CIJ technology has been the introduction of pump driven systems rather than the use of compressed air to run the coder. Pump systems improve reliability and reduce running costs as there is no need for factory air.

In older systems there is a strong link between the quality of the compressed air and the performance of the coder, as minute dust particles or condensation reduce print quality and increase the need for maintenance, resulting in costly production downtime.

Furthermore, compressed air is expensive to run in a factory environment, and as factory air services uses up to 10% of total industrial electricity use in Australia, there is significant opportunity to save energy and improve the bottom line by reducing the need for compressed air.

All Domino's A-Series CIJ coders use pump systems for ink delivery.



CONTROL OVER MAINTENANCE COSTS

Major continuous ink jet manufacturers have designed systems that require less maintenance as well as reducing the cost of maintenance.

Newer systems can be run for longer between servicing and in some cases operator performed module changes can negate the need for a service visit.

Domino's iTech Module houses the working ink and the filters for the system.

In most cases the service module only needs to be replaced annually; this can be done by the user without the use of tools and will take approximately 10 minutes.

ADVANCED INKS & INK MANAGEMENT SYSTEMS

User-Friendly inks

Advanced, environmentally friendly inks have been developed for many challenging substrates to allow manufacturers to meet their requirements for food packaging, OH&S considerations and environmental objectives.

Domino inks conform to EuPIA guidelines for food packaging. Halal & Kosher ink are available as well as inks that are ideal for cable, wire and other industrial applications.

Domino inks have been developed to be free from heavy metals and halogens, and other hazardous ingredients on the REACH list.



Efficient ink use and reduced makeup

As well as the introduction of clean cartridge ink systems, manufacturers have added features to the ink management systems to reduce waste and makeup/solvent use.

Domino's iTech Module monitors ink and solvent use and prompts the user when replacement consumables are required.

With a focus on efficiency, the iTech system minimises waste ink by up to 90%, and make-up use has been reduced to less than 1ml per hour at 20°C, a saving of up to 50% over older systems.



ABOUT INSIGNIA & DOMINO

We know how important your business is to you and how different it is from the next. This is why we work directly and collaboratively with you to understand your situation and needs, so we can create coding solutions tailored to add genuine value to your operations and help build your market competitiveness.

Since 1967, insignia has been providing identification solutions to Australian industry. Our family-owned values, our people, our products and our services are the reasons we've become the nation's leading manufacturer of labels and tags and distributor of top-tier thermal printing, marking and coding brands, including Domino, Datamax-O'Neil, Zebra, Bixolon, and Carl Valentin.

The Domino A-Series family of continuous ink jet printers are recognised as the benchmark that all others are measured against due to high reliability and ease of use. Designed and manufactured in Cambridge, England, the Domino A-Series is the preferred choice of many OEM's and multi-national companies due to its high performance and dependability.

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