



Application note



Egg

Continuous Inkjet vs. Laser for egg coding

The challenge:

The two primary ways to print traceability and marketing information on shell eggs are Continuous Inkjet (CIJ) and laser.

The vast majority of egg coding today is done in Europe, and nearly all the printing is done with CIJ. But some believe that laser may be a viable option for coding in the future.

So which technology is best?



The Videojet advantage

Videojet is a world leading manufacturer of CIJ and laser printing equipment. Our printing solutions are designed to provide unrivaled uptime to ensure the highest level of productivity in your operation. Videojet solutions have been in operation for many years and code on billions of eggs every year.

Videojet develops and manufactures its own inks to ensure the best print quality and compliance with regulations.



Comparing CIJ and laser coding

The optimum solution for egg coding depends on the following six factors. Let's compare CIJ and laser egg coding for their safety, cost, simplicity, and performance to determine which is the best solution for egg coding.

Egg integrity

How does marking affect the egg?

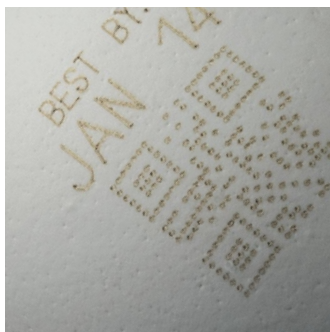
Continuous Inkjet



CIJ deposits ink on the surface of the egg and poses little risk to the integrity of the egg's surface because the drying process bonds the ink to the shell.



Laser



Laser marking is a process of ablation, where the laser etches the top surface of the egg. It 'bleaches' the surface of brown eggs and darkens the surface of white eggs.



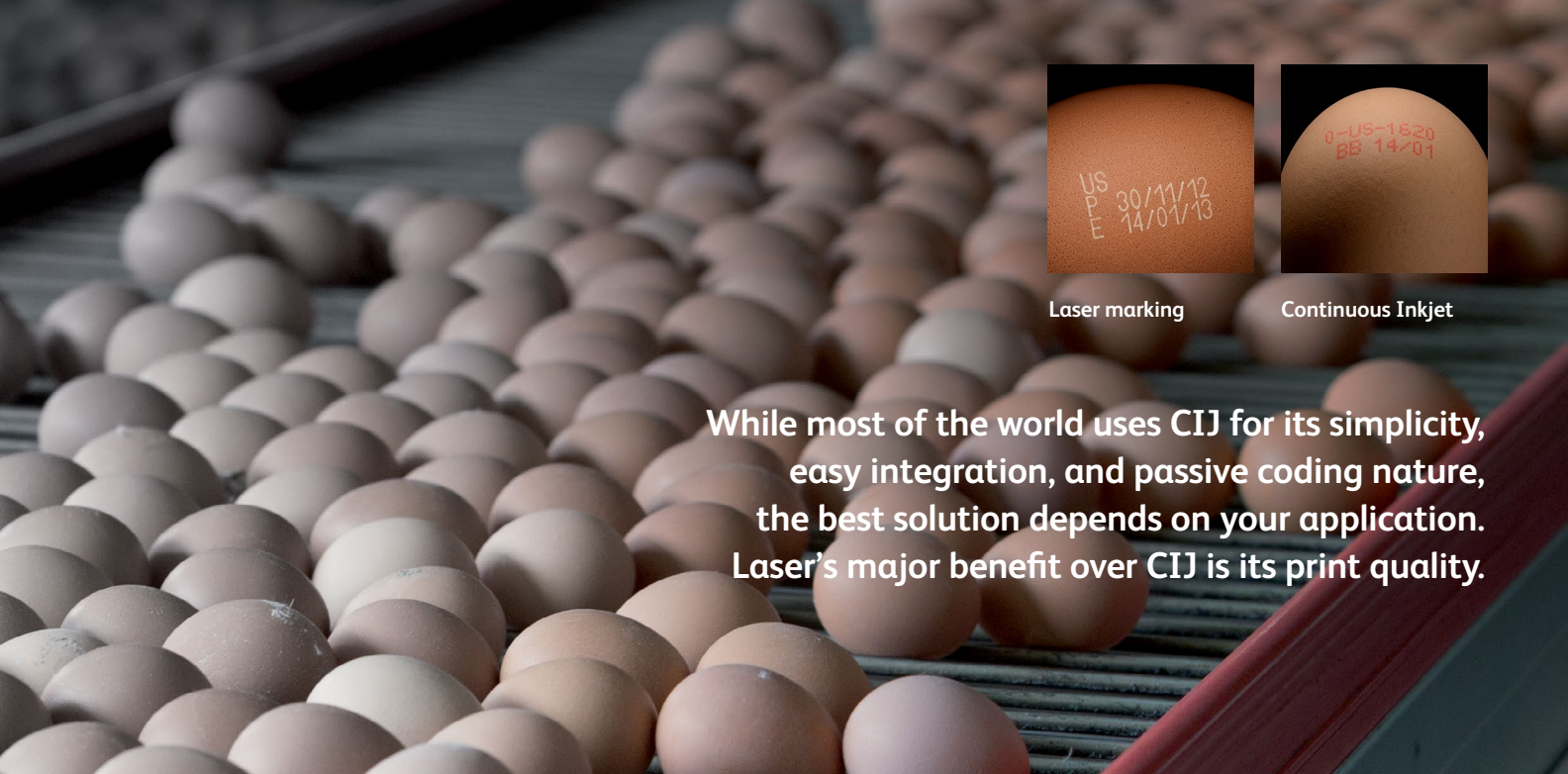
Integration

Integration with the grader and its control system is critical to a successful installation. The model and age of the grader will determine the extent to which the printers can be integrated with the grader controller.

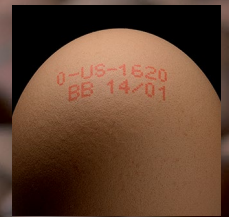
With CIJ on a compatible grader, the operator can control all printers from a central location at the grader. Laser printers require a printer interface which isn't directly controlled by the grader.

Installing one CIJ printer per track just after the transfer area provides 100% printing coverage with the fewest number of printers. Because CIJ printheads are smaller and faster than larger laser printers, they can be placed in the tracks where they have a size and speed advantage over laser.

Laser printers can be installed in the tracks if there is enough room, and if there isn't a lot of information being printed. Lasers can also code the eggs in the packing lane just before the carton is closed. This solution requires multiple lasers per carton to code all of the information in a few seconds before the carton is closed.



Laser marking



Continuous Inkjet

While most of the world uses CIJ for its simplicity, easy integration, and passive coding nature, the best solution depends on your application. Laser's major benefit over CIJ is its print quality.

Cost

Laser solutions require a larger up front investment in both laser marking equipment and ventilation systems to remove the fumes generated by egg coding.

Once in operation, a laser solution requires filter changes and can generate significant heat, requiring periodic maintenance. Unlike laser, CIJ systems typically require a lower initial investment, with the purchase of supplies and periodic maintenance.

Readability

Typical printing is 10-12 characters per line of text; printing more than 12 characters requires a smaller font which reduces readability.

Both CIJ and laser solutions create different readability results on brown vs. white eggs. Because of the "bleaching" process that occurs as the eggs are marked, laser produces a more visible image on brown eggs than the red food grade ink of CIJ printers. On the other hand, red food grade ink looks great on white eggs, while lasers produce a slightly darkened image with less contrast.

Which solution is best?

That depends on any restrictions imposed by local or export requirements, the mix of egg colours that are run at the facility, egg wetness if the eggs are washed, and the number of characters that need to be printed.

Print quality

Laser has better overall print quality for both text and logos, and can vary the sizes of text on the egg.

This is because laser draws continuous segments of text, whereas CIJ prints with ink at a lower resolution. Lasers installed in the packing lanes also benefit from long print time and eggs that aren't moving. Printing in the tracks is more difficult no matter the technology because the eggs are moving rapidly past the printer.

Permanence

Laser coded eggs have the highest level of code permanence because the laser etches the surface of the egg.

But CIJ can create a very durable image on an egg printed with a permanent food grade ink. Videojet inks will more than withstand the handling from production to consumer and will adhere through cooking in boiling water.

The bottom line

Choosing the best egg coding technology depends on your overall grading needs and which coding solution has the fewest trade-offs for these needs.

While most of the world uses CIJ for its simplicity, easy integration, and passive coding nature, the best solution depends on your application. Laser's major benefit over CIJ is its print quality.

Make sure that the solution meets your customer's needs and complies with the laws that apply to them, especially for export eggs. Getting customers involved in the decision making process will help them understand the various options they have with respect to egg coding.

Videojet recommends CIJ for its speed, ease of integration, permanence and safety to the egg. It is a proven leader with a number of proven solutions for either technology. Let us help you gather the information needed to make the best solution for your application.

Ask your local Videojet representative for assistance on how to specify and design an egg coding system that will perform reliably for years to come.

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