



Application note



Continuous Inkjet

Implementing a Continuous Inkjet coding system for shell eggs

The challenge:

After examining your customer's needs, reviewing how to integrate the printing with your grader, and understanding how egg printing will impact your daily cleanup and maintenance procedures, you're ready to implement an egg coding solution. What are the best ways to eliminate the key implementation challenges?

The Videojet advantage

Videojet is a leading manufacturer of Continuous Inkjet (CIJ) printing equipment and develops and manufactures its own ink in Videojet facilities around the world. In Europe, egg coding with ink has been required for many years and Videojet CIJ printers code billions of eggs every year.



Best physical print location

The ideal location to install egg coding equipment is just after the transfer area as the eggs are in the tracks moving toward the packing lanes. This ensures printing on every egg and gives the ink the longest dry time

Since the eggs are cradled by the baskets, there's not a lot of room to print, so print head location and adjustment is critically important. Most printheads are installed to print on the side of the egg, producing very reliable printing and the printheads stay clean.

Some graders allow top down printing which is best for clean printheads, but printing space is reduced because the top of the eggs is printed. Some graders will only allow printheads installed under the eggs. These installations will require greater attention to the printheads, because they are susceptible to eggs falling directly on the head.



Ensure clean, dry eggs

For good ink adhesion, the shell should be clean and dry. Eggs that are wet from washing or condensation from humidity and temperature changes will slow the ink drying, which can reduce print quality.

There are several approaches to reduce the impact of wetness on print quality. First, enhance the egg dryer to remove more water. The dryer is the most efficient mechanism for removing water. Increasing air volume or increasing the distance the eggs remain under the dryer can improve dryness. The challenge, however, is that the egg conveyor gets wet and that moisture eventually gets back on the eggs as they move through the grader.

If the eggs are still damp when they arrive at the printheads, there are two options. First, use a faster-drying ink which can cut through the dampness. Work with the coding sales engineer to check egg wetness prior to printing equipment purchase to ensure the correct equipment is purchased. The second option is to install air knives ahead of the printheads to dry the eggs as much as possible. Make sure the air is clean and dry, and that the air pressure is adjusted to dry the eggs without damaging them. Implement procedures to check the air knife pressure and air flow prior to daily startup so that eggs will be coded properly.

Getting the right code on the right egg



In modern high capacity grading equipment, as many as 10 eggs will pass in front of a printhead every second. Since any egg can be destined for any packing lane, it can be printed with any code.

Most graders in operation today will support some amount of communication with the printer. Older graders will typically support a printing method where the grader will signal the printer, via a parallel style interface, what code to print as the egg appears in front of the printer.



This simple integration method requires all the printing codes be loaded in each printer prior to starting production. Any future changes will need to be manually entered in each printer. Also, the grader has to be taught the order of the codes in each printer, and the grader operator has to make sure the right code is assigned to the correct egg selection.

Newer graders can support an even more robust method to print on eggs. When integrating the printers with these graders, the entire printing operation is controlled by the grader. Here, the printing codes are created at the grader control panel, and the codes are downloaded to the printers via the grader. When a job changes, and the operator reprograms the grader, all the printers are automatically updated. Like before, the grader will tell each printer what to print and when to print.

In either method, the grader is programmed during setup with the location of the printheads with respect to the egg basket location.

Use the best ink

Select inks that adhere well to the eggs and meet the appropriate food-grade requirements.

Food-grade inks are designed to adhere to the egg shell without the harsher chemicals found in CIJ inks used for other applications. The fastest drying ink and a clean, dry egg will ensure that the code is permanent before the egg gets handled in the packing area.

Ask your ink supplier for ink processing information to ensure inks are produced in accordance with food-grade requirements. Lastly, select printers that prevent loading the wrong ink. Inadvertently putting non-food grade ink in a food-grade printer will render the eggs inedible and will lead to a lengthy and expensive service call to purge the incorrect ink from the printer.



The bottom line

Implementing a reliable shell egg coding system requires proper planning to eliminate disruptions and to achieve optimal performance. Videojet has an extensive team of sales, application and service personnel to help you implement the best egg coding solution.

Our solutions team works closely with leading egg grader manufacturers to ensure proper integration. If necessary, we can even enhance our solution offering to meet unique needs for your operation. Combine this capability with our extensive ink development and manufacturing capabilities, and feel confident we can meet your egg coding requirement.

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

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