Planning a Continuous Ink Jet Coding System for Shell Eggs
Videojet Application Note

The Challenge

Consumers want reassurance that the food they purchase is safe. Government regulators and retailers want to improve product traceability. Retailers and egg producers are seeking solutions to help differentiate their eggs. Coding (or printing) on eggs is an efficient way to satisfy these needs. What are the key considerations when planning an egg coding solution?

The Videojet Advantage

Videojet is a preferred partner of leading egg grader manufacturers and works very closely with these manufactures to ensure optimal integration and printing results. Videojet is the leading manufacturer of continuous ink jet (CIJ) printing equipment in the world and develops and manufactures its own ink in Videojet facilities around the world.

Why code shell eggs with ink?

Eggs are printed for various reasons. Printing improves traceability because the codes stay with the eggs no matter how the eggs are handled. Producers enhance their brand by placing logos and names directly on the egg. Specialty eggs are coded to ensure consumers of the integrity of their purchase.

The vast majority of eggs being coded today are coded with red, ink-based systems, because inks do not alter the integrity of the egg. The food safe inks are formulated to adhere to the shell. The inks typically dry in a couple of seconds, and once dry, are resistant to water.

Consider these factors as you plan your coding system

Customer requirements. Begin by assessing customer needs. Many producers supply multiple egg brands and these brands may have differing requirements. Review each customer's brands to identify their common and unique requirements. In particular, determine how much information is to be printed and whether a logo is required. Analyze this information to determine how many different codes need to be created and stored in the printers. Also, take time to determine how best to handle product changeovers to ensure that all the eggs are accurately coded.

Grader integration. The level of grader integration determines how well the grader and printers interact. The ideal level of integration for your company will depend on your operation's complexity and the age and status of your grader.

Printers installed near the grader

In a simple operation where only a few different messages are printed and where eggs are run in waves, such that all the eggs will have the same information, a very efficient system can be installed where it doesn't get any information from the grader.

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For more complex operations where different messages are printed at the same time, it may be ideal to adopt an integrated solution where printing is fully controlled by the grader. This will eliminate human error and be very flexible to on-the-fly changes.

Older graders typically support lower levels of integration, or require upgrades to support greater integration. This is because the graders weren't sold with egg printing solutions. Newer graders can typically fully control printers.

Eggs in grippers on line

Printing location. The best and most common location to install the printheads is in the tracks, immediately downstream from the transfer system and before the first packing lanes. Printing in the tracks enables printing on any egg passing through the grader which is the most efficient way to implementing an egg coding solution. Placing the printheads close to the transfer area also allows the longest drying time prior to the eggs entering the packing lanes.

Egg drying. The egg shell must be as dry as possible to maximize ink adherence. Even eggs that are not washed can be affected by condensation in humid, cold environments.

Washed eggs typically pass through a dryer prior to being graded. Unfortunately, the dryer might not be sufficient to remove a significant amount of moisture from the egg. Installing an "air knife" just before the print station will help remove residual moisture from the shell. Be careful to set air knife airflow volume to produce optimum drying, while ensuring that excessive air pressure does not damage the egg. Confirm that your facility's air system maintains a constant flow during production, with a low-pressure warning indicator to quickly alert staff of a problem.

Ink selection. Globally, most egg coding regulations require that only food-grade inks produced using food-grade production standards be used in egg coding. This is because an undetected flaw in the egg shell can allow ink to enter the egg itself, and because the egg shell can come in contact with other items during food preparation. During egg boiling, for example, the ink should remain adhered to the shell and not leach into the water.

Maintenance. Once your coding system is installed, implement a program of regular maintenance procedures to ensure optimum print quality. These procedures should complement existing grader maintenance procedures and integrate with HACCP procedures. Remove printheads from the grader during cleanup; check and clean the printhead as necessary to ensure best print quality. There may be a need to cover the printers to protect them from high pressure washdowns.

➤ The Bottom Line.

Your ability to print codes and brand identity directly on individual eggs will yield two very valuable benefits: enhancing your customer's brand visibility and supporting traceability and food safety by placing critical production information directly on the egg. Integrating this solution into your operation will require research and planning on your part, but will ensure a highly reliable outcome.

Videojet offers several egg code printing solutions and can integrate them with the leading egg graders. Consult your local Videojet representative for assistance as you plan and select the optimum egg coding system for your operation.

CIJ printers installed on grader

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