Hatchery automation: today's answer to the needs of tomorrow

Poultry production drastically changed during the past years to adapt to new production challenges. This is particularly true when talking about hatcheries. Worldwide, hatcheries adapt their processes to answer new market challenges.

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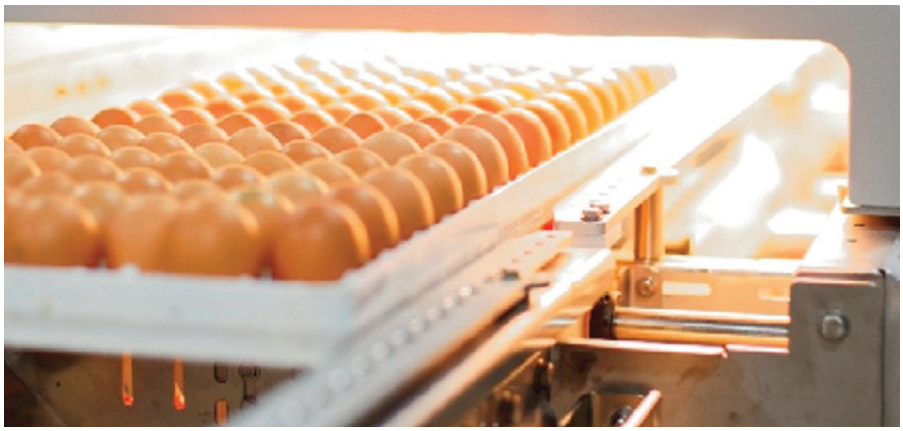

Built to overcome market challenges

During the past few years, there has been a consolidation of poultry production globally. To optimise cost and risk management, hatchery production is now concentrated in less hatcheries but with bigger production capacity.

In 2016, many hatcheries were producing between 200,000-500,000 eggs per week. Now, new hatchery projects are producing between 1.5-2.0 million eggs per week.

These production changes are highly driven by the new challenges that hatcheries need to face:

- **High performance and output rates:** With the consolidation of production, modern hatcheries need to increase their capacity and production volume. To maximise their volumes, hatcheries must adapt their current production process, by maximising the output rates.

- **Limited task force:** Traditionally, producing more is synonym of more people. Paradoxically, it is increasingly complex to find people. In general, agricultural productions like hatcheries are suffering from high turnover, complicating the day-to-day activities.

- **Need for hatching egg quality:** Maximising hatchery capacity is not enough; the quality of the egg is also critical. All single details count to optimise cost production. A good egg quality limits the contamination at hatch, improving chick quality and reducing first week mortality.

Over the last few years, these three majors challenges have driven hatchery automation modernisation to overcome them.

Innovation: an answer to these challenges

Indeed, hatchery automation benefits are multiple. It helps to:

- Increase production rate with high-speed solutions.
- Limit the impact from the operator in the process.
- Improve egg and chick quality.

High speed solutions

To face production volume increasing, the only cost-effective solution is the full automation of hatchery production. To absorb higher quantities of eggs and day-old-chicks processed during the same period, manual steps must be limited to ensure process efficiency and economical reliability.

For instance, the simple installation of a stacker or destacker into an existing transfer prevents tray or basket handling becoming the bottle neck in the process.

Line speed will reach more than 60,000 to 90,000 eggs per hour with an impact of 0.05% average egg breakage, versus 2-5% average with manual handling.

Decrease operator availability dependence

The availability of skilled operators is becoming a major challenge to operate hatcheries.

High operator turnover is observed, independently from the region in the world. Introducing automation at the hatchery can help to secure hatchery processes which are manually performed. A good example is the identification of upside-down eggs at the egg reception room.

This step used to be done manually in many places. More and more hatchery managers are automating this quality control process to ensure better results independently from the availability of skilled operators. It is worth knowing that 1% upside can represent €170,000 of upsides sales for a hatchery setting of 60 million eggs per year.

Technology, such as Ovosense, automates identification of upside-down eggs before incubation giving a chance to 100% of the fertile eggs to produce a good day-old-

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chick. At reception after arriving from the breeder farm, egg trays go through Ovosense, located inside the egg reception room, and each egg is scanned individually to identify the orientation.

In case one of the eggs is not set properly, Ovosense will colour mark it to allow a correct setting.

Better egg quality

Egg quality is the main factor influencing the incubation process, especially when in ovo vaccination is conducted. Low bacterial load and a good quality eggshell are paramount to success.

Even if many practices aim to maximise the sanitary status of production, the older the flock is, the more porous and thin the egg shells will be.

Therefore, eggs are more susceptible to contamination, and consequent generation of explosive eggs.

As a result, late embryo mortality will increase, and hatchability and chick quality will decrease.

In this context, automation solutions such as smart candling devices is essential to maintain quality standards during the incubation process.

During the past years new candling technology appeared on the market, not only to identify unfertile eggs but also to segment the different egg categories at transfer. Laser Life identifies and removes middle-dead embryos, latedead embryos and contaminated eggs at transfer.

The removal of dead embryos and contaminated eggs at transfer leads to less contamination in the hatchers.

This will positively impact at each hatchery, based on their processes and conditions, leading to hatchability improvement, better chick quality and lower first week mortality.

Hatcheries are in permanent evolution to face market pressure and challenges.

The permanent race to stay economically and technically competitive force modern hatcheries to embrace innovation among the production process.

Automation and hatchery technologies contributed during the past years to answer poultry production's main challenges as human resources availabilities, increasing of production sizes or the need to get and secure better meat quality.

Within many hatcheries across the world, there is still room for improvements among the criteria mentioned previously.

The next wave of innovation has already started in the poultry industry, including automation devices: data collection and data science. ■