

Tjitze Meter and Dr Jan Wijnen

'Constantly challenging industry standards'

Rumour has it that the incubation specialists at HatchTech have come up with something new to be launched at VIV Europe in June. The team behind the introduction of feed and water in the hatcher (HatchCare) and the concept of 24-day incubation instead of 21 days (SetCare) are now redefining the incubation process with the introduction of three-phase incubation. Time for Poultry World to look behind the scenes and ask CEO Tjitze Meter and his senior scientist, Dr Jan Wijnen, what they are up to.

BY FABIAN BROCKÖTTER

Well, what are you up to?

"Getting as close as possible to the biological process, learning from the past and introducing the latest technology. That philosophy has led us to many innovations, including the new three-phase incubation concept. This innovative approach challenges the long-standing two-phase standard used across the industry, resulting in higher output and greater efficiency", says Tjitze Meter. Researcher Dr Jan Wijnen continues: "Three-phase incubation can be implemented in existing hatcheries with standard machines. The ideal setup to improve hatchery results requires dedicated equipment."

Can you explain the process?

"Phase one starts with a nine-day incubation period. After nine days, eggs are assessed using SetGate, an in-house-developed candling system. This AI-driven technology enables early, highly accurate distinction between fertile eggs and infertile or non-viable ones. This greatly reduces potential bacterial loads," according to Wijnen. Meter continues: "Candling at day 9 makes candling at day 18 redundant. After early candling, the incubation process continues in phase 2 at traditional, high-capacity setters, with up to a 15 per cent increase in capacity, depending on the setters' cooling capacity. In phase 3, at day 18, the eggs are transferred directly to hatcher without candling."

"Phase 1 can be further optimised using SetCare instead of a standard setter. In SetCare, the eggs are gradually warmed after storage at a controlled rate of 0.1F per hour. This slow warming at the beginning of cell replication of an embryo (from 85F to 100F) results in significantly lower mortality and stronger, more uniform chicks." Dr Wijnen continues: "In phase 3, research shows that poultry performance can be improved by using HatchCare, providing chicks with feed, water and light directly after hatching."

I see a combination of three quite innovative systems and a concept that challenges traditional hatchery practices. Have you lost your mind?

"In the first 10 to 15 years of our company's existence, many in the industry did indeed think that. Three decades later, I believe that perspective has evolved, and I am confident our latest concept will contribute to that," Meter laughs. "Our industry is quite conservative, and many developments in technology have been instigated by cost saving. Many integrators see the hatchery as a cost centre rather than the foundation of current and future performance and returns for the entire production chain. In our philosophy, we want to get the most out of the hatchery, start with the best chicks, hatched under the most optimal circumstances." Wijnen continues: "At HatchTech, everything starts with research, often with at least four to five years of getting to the bottom of embryo biology, and how they actually react to adaptations in incubation



Profile

HatchTech CEO Tjitze Meter (l) founded the company in 1996 after a career as hatchery advisor. What started in a shed with improving incubator, grew into a world wide business with facilities in multiple countries. His senior scientist dr. Jan Wijnen completed a bachelor's programme in Animal Husbandry and holds a Master's Degree in Animal Sciences at Wageningen University. He joined HatchTech in 2016.

Photo: Herbert Wiggerman.

conditions. In the early days of Hatchtech, embryo temperature in relation to chick length and quality received a lot of focus, as did the discrepancy between the temperature in the hatcher and that on the hatcher's display. Since 2004, we have had multiple PhD projects, all focused on building a sound foundation and deeper knowledge, taking that as a starting point for further optimising machines and processes. Knowledge we openly share by the way, potentially profiting the whole industry."

Let's zoom in. How did you get to three-phase incubation?

"The biggest shift our concept brings is the timing of candling from day 18 to day 9." That seems odd by current standards, but the more veteran people in our industry will surely remember early candling," Meter adds. He continues: "In the old days, we were pulling trays from the setter to manually candle them at around day seven. Clear eggs would then be sold to bakeries. A change in regulations prohibited this practice, and together with the onset of further automation, we all moved to candling at day 18. Since we moved from manual nest boxes to automated nests on parent stock farms, bacterial load on hatching eggs increased. It is well known that one of a setter's core strengths is cell reproduction. Obviously, in the egg and embryo, but also all unwanted bacteria will replicate." "In essence, you want to get rid of bad bacteria in bad eggs as early as possible to prevent risk-filled bacterial load in your incubators."

What was needed to make three-phase incubation possible?

"Even though we already knew the benefits of early candling, we lacked the machine to do this. That changed when our

sister company Seleggt developed and optimised its *in-ovo* sexing technology for layers. For that process, sexing needs to be done before day 13 of incubation, as before that day, there is no pain sensation in the embryo, so male layers can be removed without animal welfare implications. You don't want to waste sexing costs by evaluating an infertile or bad egg. This demanded a machine that could select these eggs early in the incubation process. That's where our SetGate machine came in," Meter explains.

Wijnen continues: "The candling machine was developed, built and extensively tested in-house for Seleggt, but with other applications in the back of our mind. We must take into account that the embryo in the egg at day 9 is very different from the embryo at day 18. We learned, for instance, that the maximum impact (acceleration/deceleration) must remain below 1G in young embryos to prevent damage. And we tested different light spectra, cameras and artificial intelligence settings to get the desired outcome. We are now extremely close to 100 per cent accuracy in detecting clear and bad eggs. With the help of AI, we can even detect mid-term mortality before the embryo actually dies. A nice example was when we, as humans, were outperformed by artificial intelligence."

How do you expect the industry to respond to three-phase incubation?

Meter: "We have been talking about this for years internally, and we do think this is the moment for getting the word out there. We are in a market of both early adopters and conservative minds, but everyone wants to move ahead. Developments and investments in hatcheries are made for the long run, for the next generation, so to speak. For us as a company, we need to think about this future, which means we can never be too far ahead."