

What happens during hatch? How technologies narrow the hatch window

Thanks to technologies currently available, the hatching process is steered by the biological developments of the embryo, with a narrow hatch window and better outcomes as a result. This article explains what happens during the hatching process and how Synchrono-Hatch guides chicks through the hatch.

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Traditionally, hatchery managers controlled the hatching process, basing themselves on time schedules. Experienced hatchery managers achieved good outcomes, although these were not always consistent. Thanks to modern sensors and software, the hatching process is no longer based on timing, but on the biological signals emitted by the hatching chicks. This leads to better and more consistent results.

The stages of hatch

A technology that can listen to the biological stages and adapt the environment to the needs of the embryos during hatch is Synchrono-Hatch, a patented technology by Petersime. The starting point is to have a hatcher loaded with eggs

with similar characteristics, which are incubated in very homogeneous single-stage machines. This results in a batch of embryos that are uniform and in the same biological stage.

Synchro-Hatch

The results of working with new technologies are significant. Synchrono-Hatch reduces the hatch window with 4-6 hours. The narrower the hatch window, the more uniform chicks are, enhancing both productivity and welfare.

Extensive in-house trials and research in commercial hatcheries show that day-old chicks:

- Are significantly more uniform.
- Are generally calm, but active and responsive when stimulated.
- Have a stronger and more robust appearance.
- Higher body weight.
- Better feed conversion ratios.
- Lower postnatal mortality rates.
- Better efficiency in slaughterhouses.
- Total higher meat output in the end.

The stages of hatch.



Synchro-Hatch.

How does Synchrono-Hatch work?

Synchrono-Hatch gives the embryos the same signals and stimuli as it would experience from the attentive mother bird in nature and offers optimal hatching conditions. In nature, the parent bird does not sit back and watch the hatch hap-

pen. She intervenes and interacts during the entire process.

During the hatching phase, she returns to the nest and sits on the eggs for the majority of the time to guide the chicks to hatch.

This affects the rate of gas diffusion, the moisture exchange and the heat dissipation during the four

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Fig. 1. Synchrono-Hatch narrows the hatch window and leads to uniform chicks.

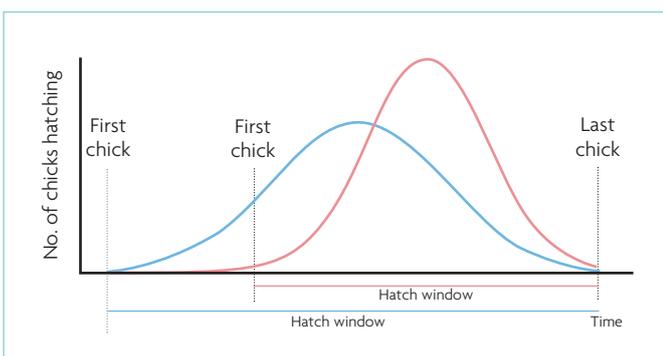
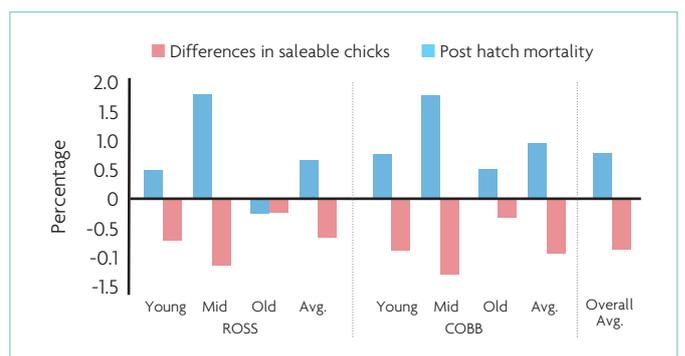


Fig. 2. Synchrono-Hatch lowers overall post-hatch mortality of chicks in farms.



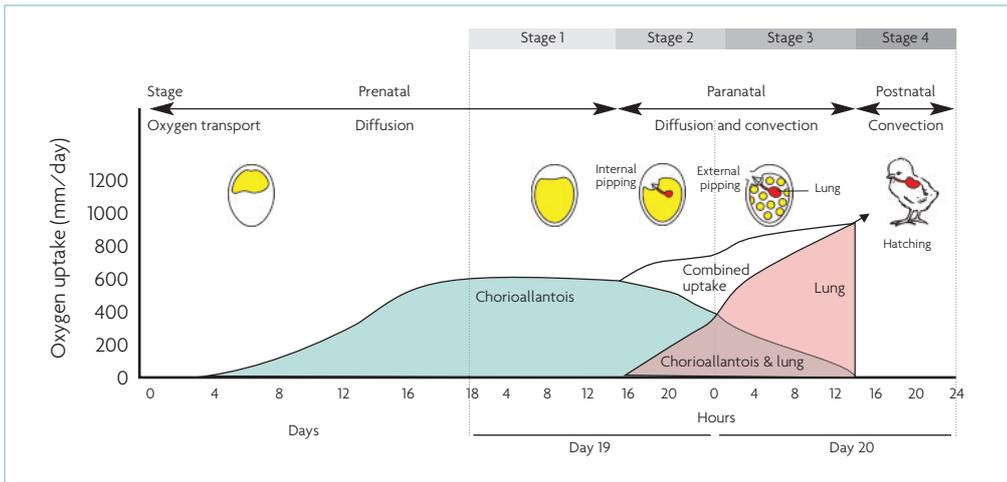


Fig. 3. The four stages of hatch.

Continued from page 9 stages of hatch. It is wrong to say that Synchro-Hatch delays and/or forces the hatch to occur.

It is correct to say that Synchro-Hatch gives the encapsulated chick the same signals and stimuli and guides the chicks in the same way as it would naturally expect in the nest from the parent bird. It thus offers the optimal and most natural hatching conditions. The technology uses two detection principles to detect the evolution of the hatch and how far the hatching has progressed:

- The moment of internal pipping.
- The detection of the humidity peak.

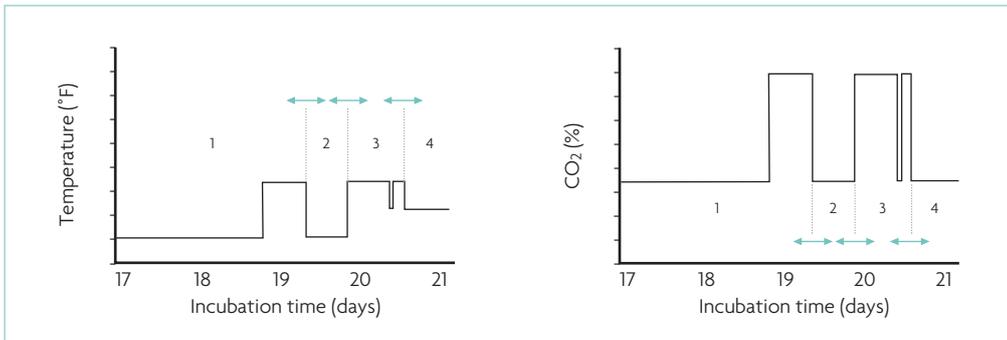
What happens during hatch?

- **Stage 1: Embryos get in position**
 - Temperature and CO₂ increase to synchronise internal pipping.
- **Stage 2: Internal pipping**
 - Synchro-Hatch detects moment of internal pipping.
 - Now all changes are controlled by
- **Stage 3: External pipping and chicks emerge from shell**
 - Synchro-Hatch detects a humidity peak, which indicates the amount of chicks hatched.
 - Temperature and CO₂ are higher.
- **Stage 4: Recovery**
 - Newly-hatched chicks recover/dry.

the embryos.

- First biological signal for Synchro-Hatch to automatically modify the program.
- Temperature and CO₂ lowered.

Fig. 4. Synchro-Hatch automatically adapts the temperature and CO₂ levels to guide the chicks through hatch. Time schedules can vary and are controlled by the hatching chicks.



- Temperature and CO₂ are lowered, ventilation increases.

Natural treatments during sensitive stages

By having a better understanding of the hatching process and the interaction between mother hen and the embryos, we are able to provide natural treatments to the embryos during sensitive stages which have a long lasting effect.

Letting the chicks decide when they are ready to move forward to another stage of hatch with modern sensors and technology has proved to be the most consistent and certain way to achieve a narrow hatch window and uniform chicks of optimal quality.

We are now able to provide the optimal conditions for guiding chicks during hatch that are not controlled on time base, but on the real biological signals emitted by the batch of chicks.

Checklist for optimal use of Synchro-Hatch

- Keep batches of eggs as uniform as possible, with limited difference in breed, flock age, storage times and fertility.
- Assure good homogeneous storage conditions.
- In case of prolonged storage, restore the fertility of the eggs with BioStreamer Re-Store, which will also increase uniformity.
- Check if eggs come from a farm with good management, such as having appropriate collection times and good storage conditions.
- Use single breed for optimal performance.
- Use a setter with highly uniform conditions, for example Petersime BioStreamer.
- Follow the correct loading and transfer pattern to group batches of eggs.
- A fully loaded machine ensures an optimal airflow.