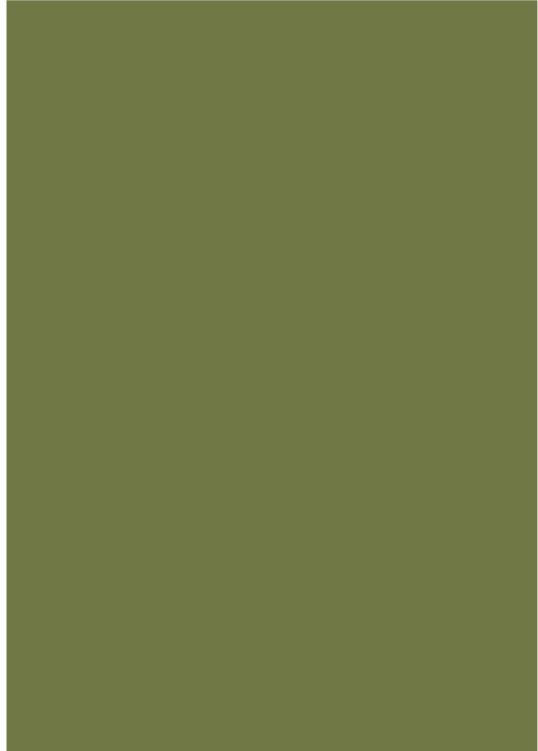


PETERSIME

Single Stage Incubation with X-Streamer™



Rui Barros

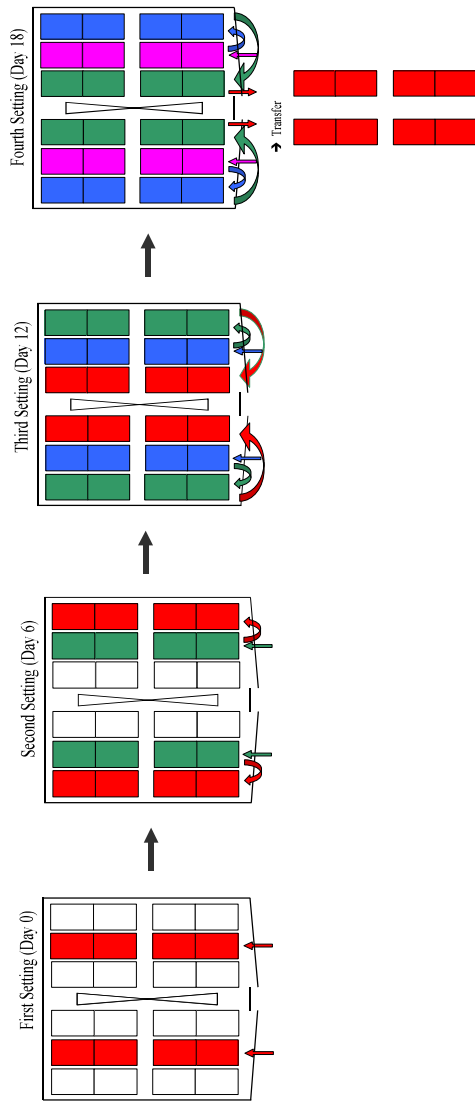


March 2026

Multi Stage vs Single Stage



- **Advantages**
 - Good thermal balance
 - Low initial investment
- **Inconvenients**
 - Higher labour needed
 - Traceability is reduced
 - Not adapted to embryonic development
 - Severe biosecurity risk



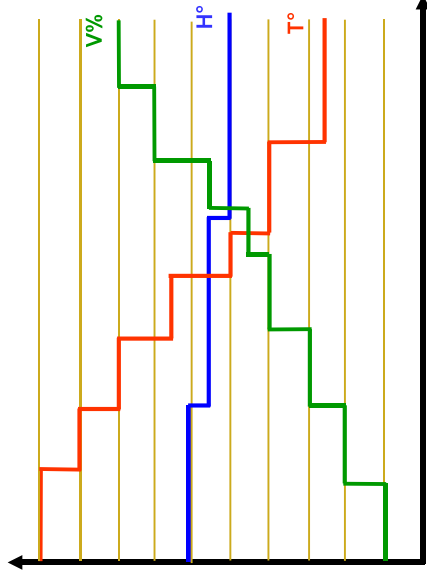
Multi Stage vs Single Stage

► Advantages

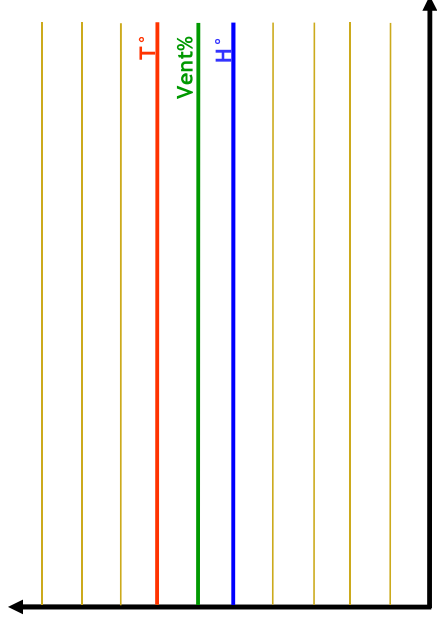
- All embryos pass different development stages:
- Development is the same in all embryos.
- Embryos remain in the same position during the all cycle.
 - It can be optimized to the embryos depending on flock type (flock age, egg age, breed and specific embryonic requirements).
 - Biosecurity is improved.
 - Reduced needs in labor.

► Inconvenients

- Higher demand from the machine and the hatchery environment.



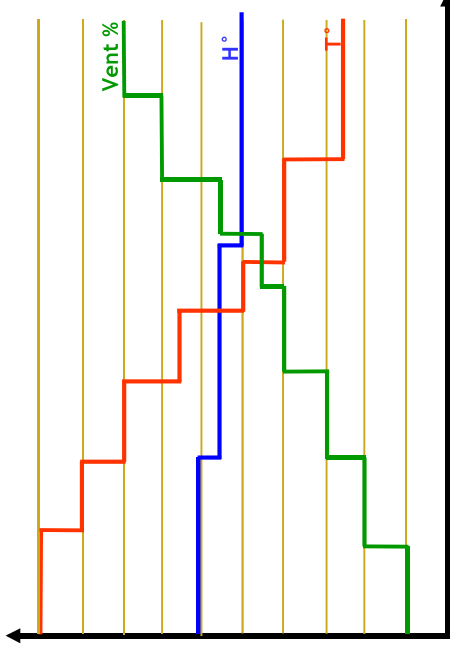
Multi Stage vs Single Stage



T, H, CO_2 = constants

Multi Stage

- Simple equipment
- Flexible
- Low investment

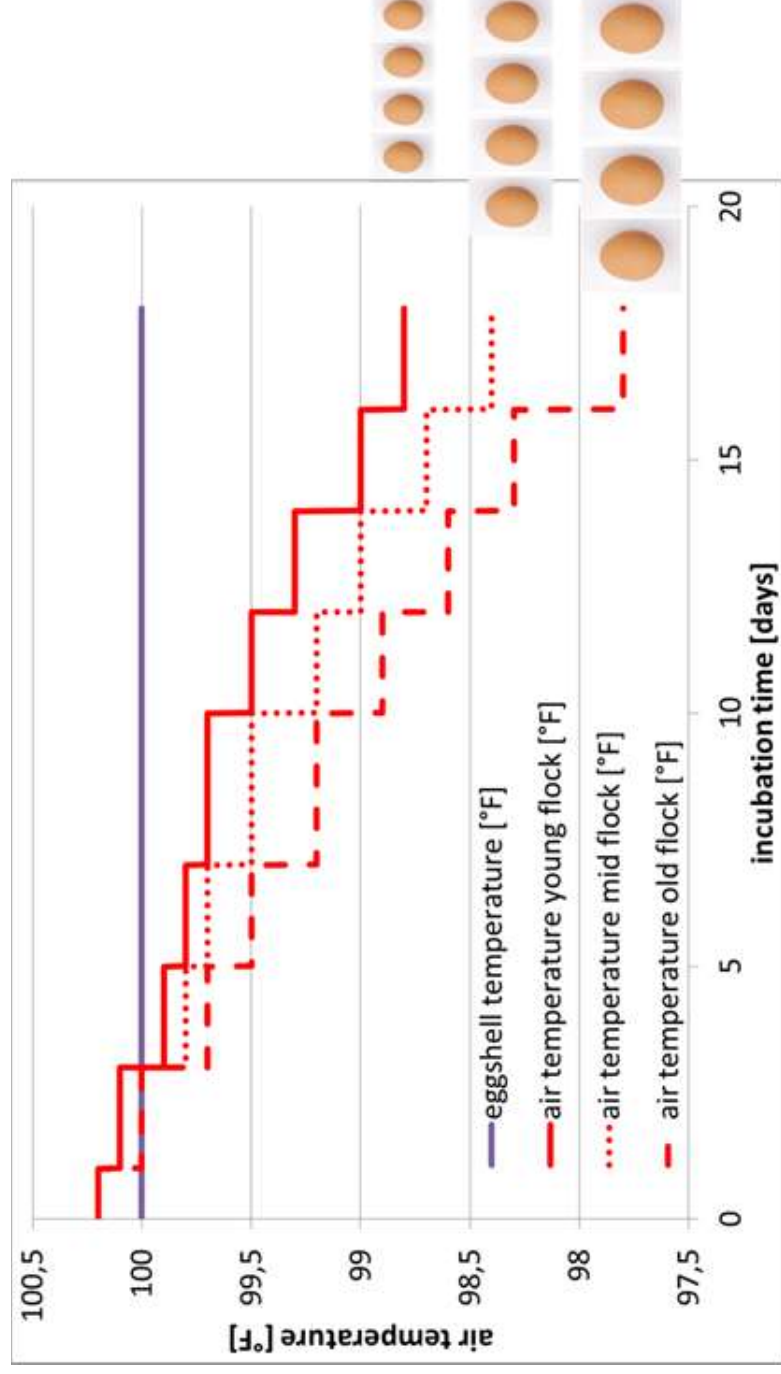


T, H, CO_2 = variables

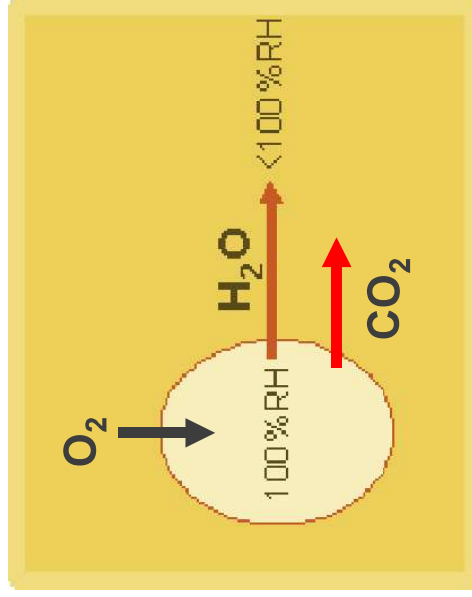
Single Stage

- Good hygiene and maintenance
- Low labor requirements
- Optimal results according to the genetic capability.

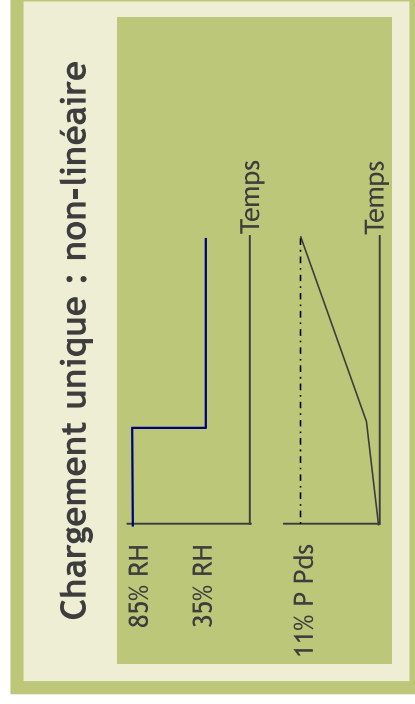
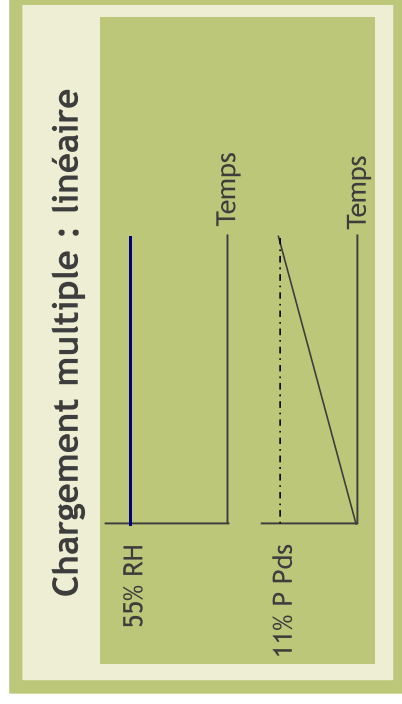
Parameters influencing production results and costs: Temperature



Parameters influencing production results and costs: Humidity

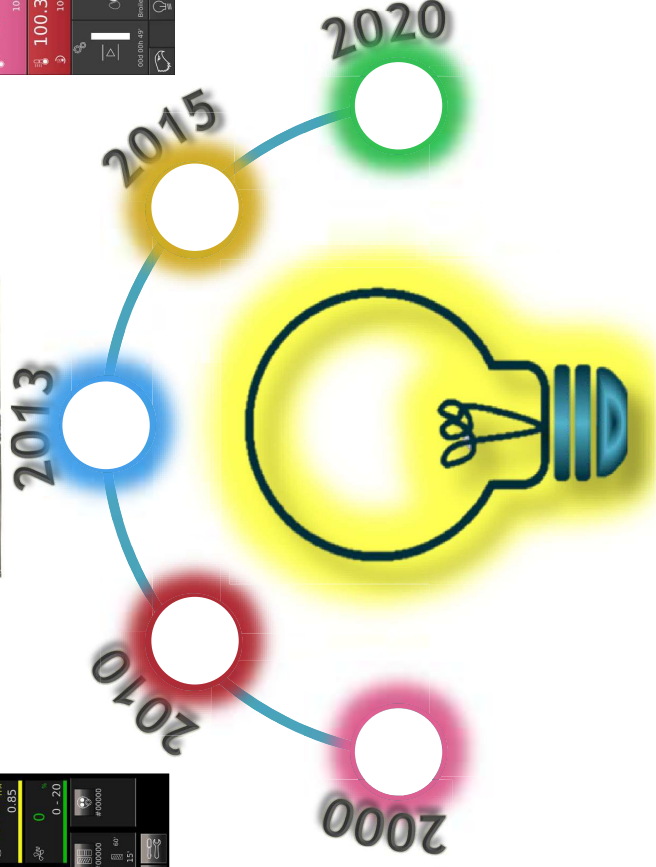
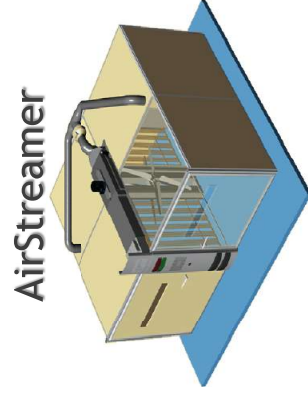
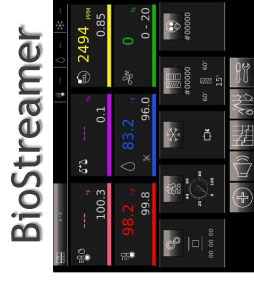


The higher the humidity in the environment, the less weight the egg will lose.



Incubation with X-Streamer™

Continuous innovation



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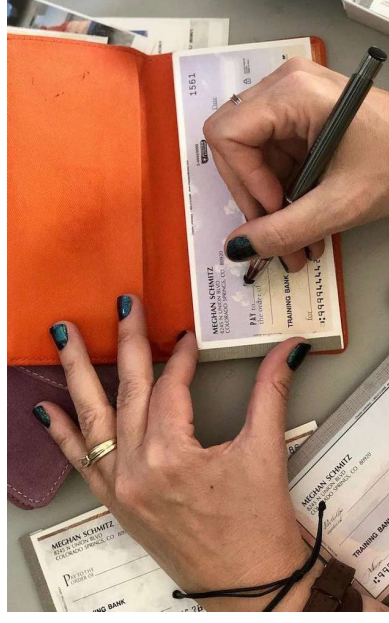
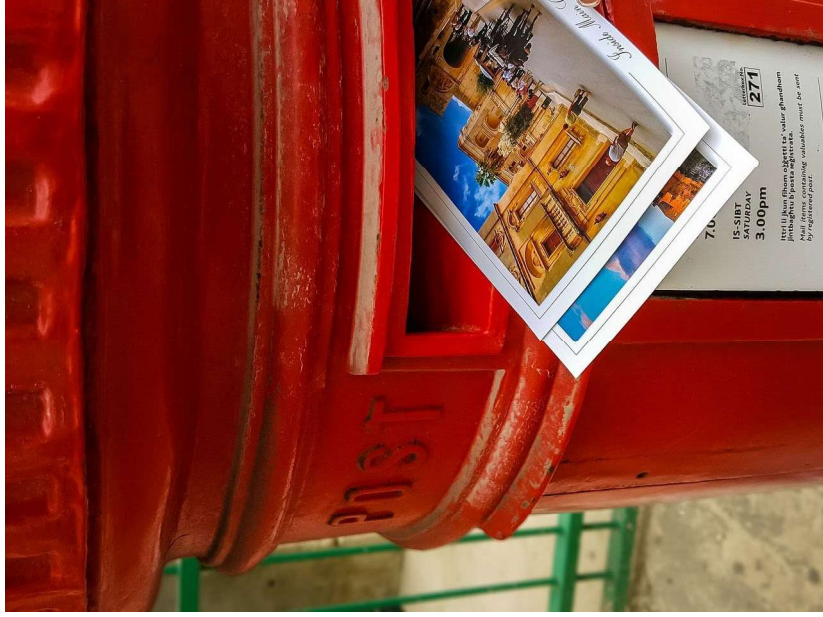


25 years ago ...



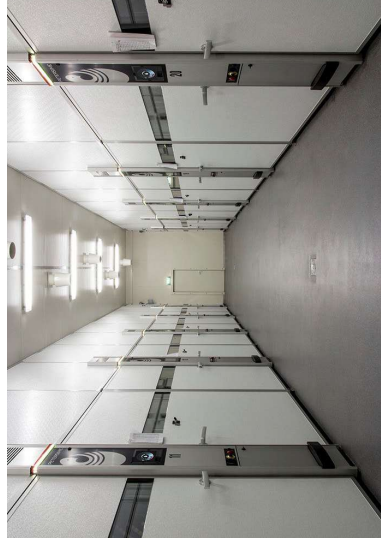
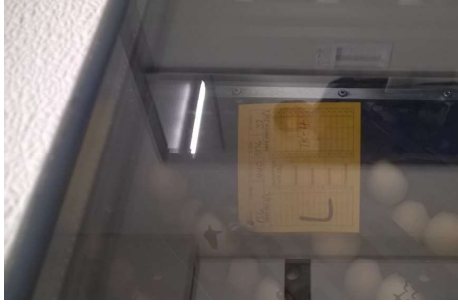
PETERSIME

The era of paper!!!

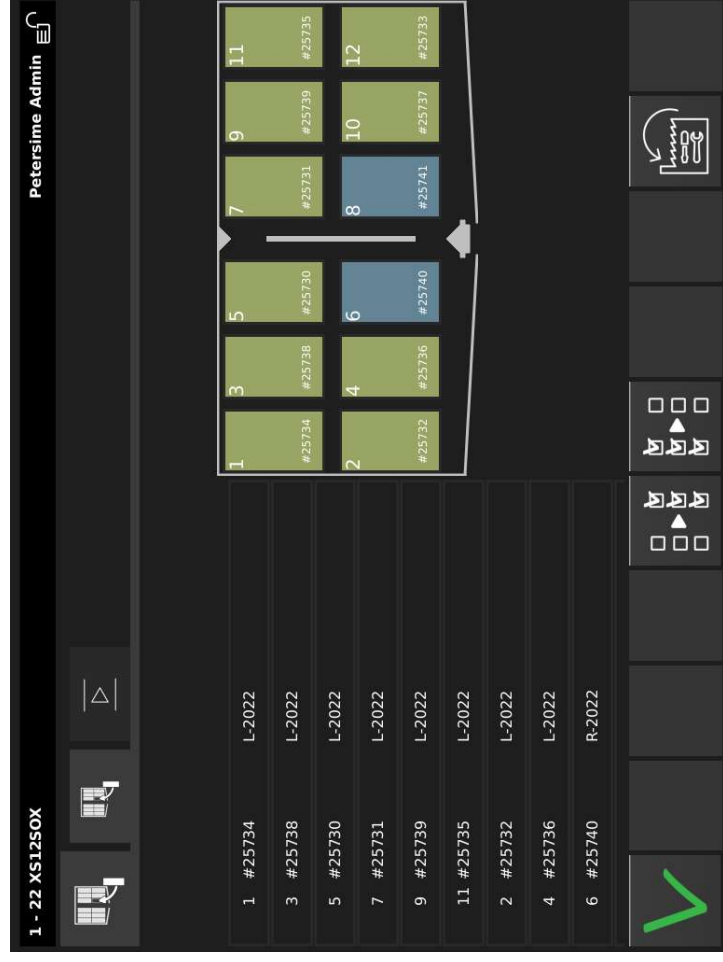


| 8

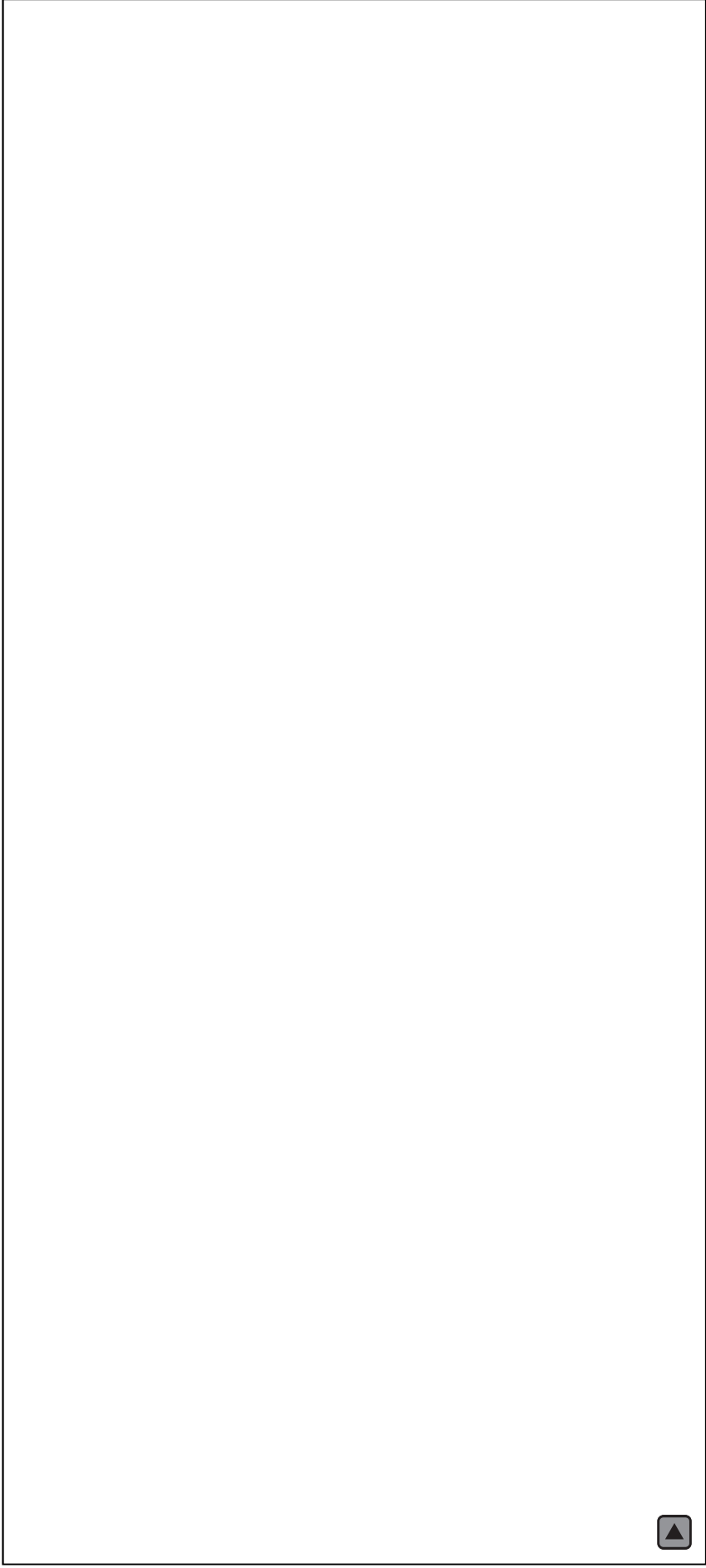
Today



PETERSIME



The Future is NOW!



PETERSIME

| 11

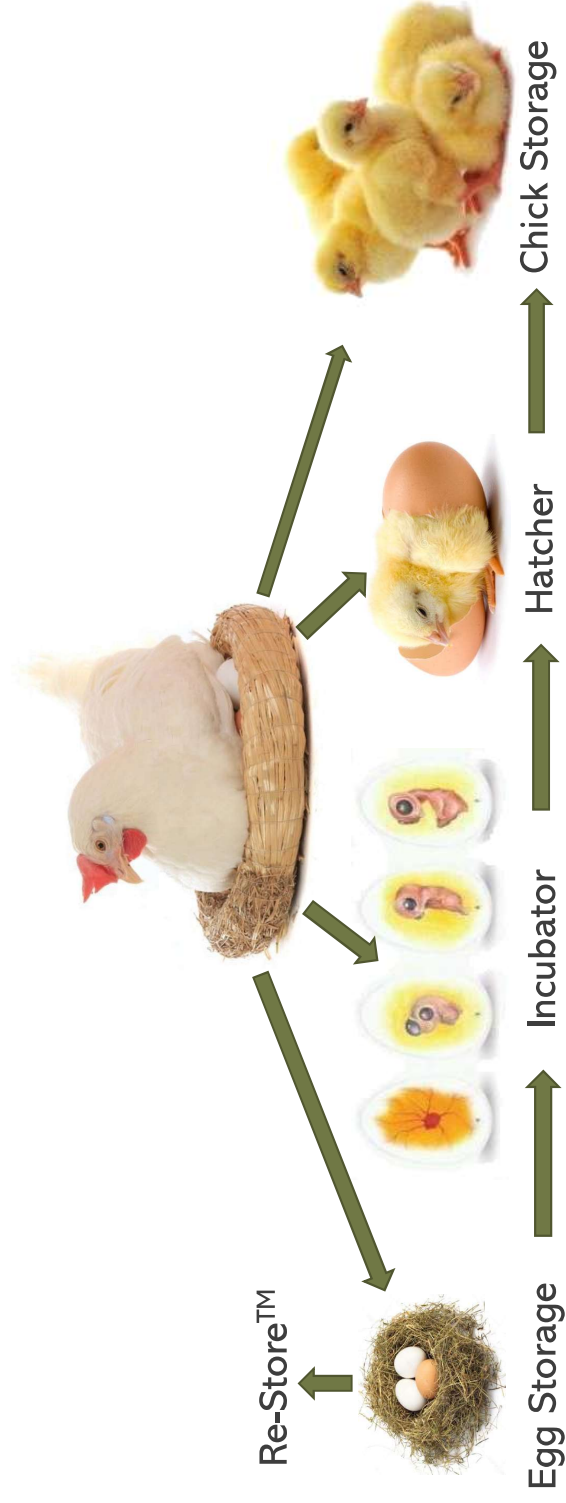
Incubation with X-Streamer™



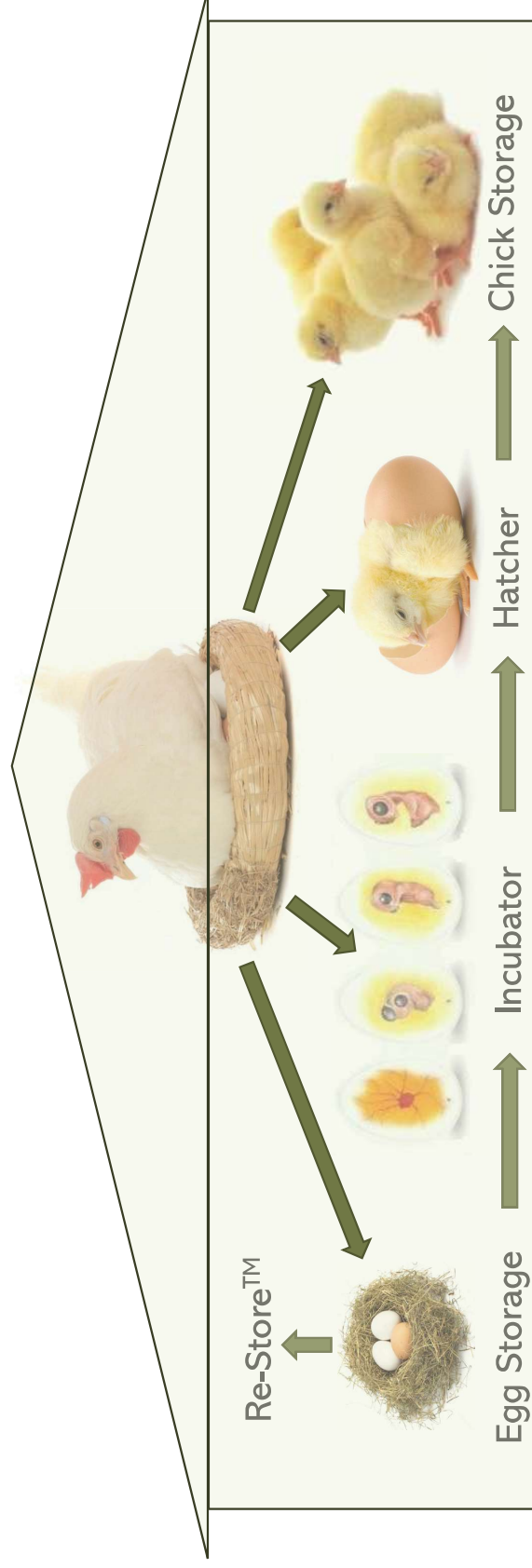
- Referring to nature let us look at what is happening to the nest.



Incubation with X-StreamTM



Incubation with X-StreamTM



Incubation with X-Stream[™]



- It is every hatchery's goal to hatch as much quality day old chicks as possible for every batch of eggs processed.



Incubation with X-StreamTM



- ▶ To achieve our goal
 - ▶ Good quality hatching eggs



Eggs that will stay
healthy transfer to
battery days



Incubation with X-Streamer™



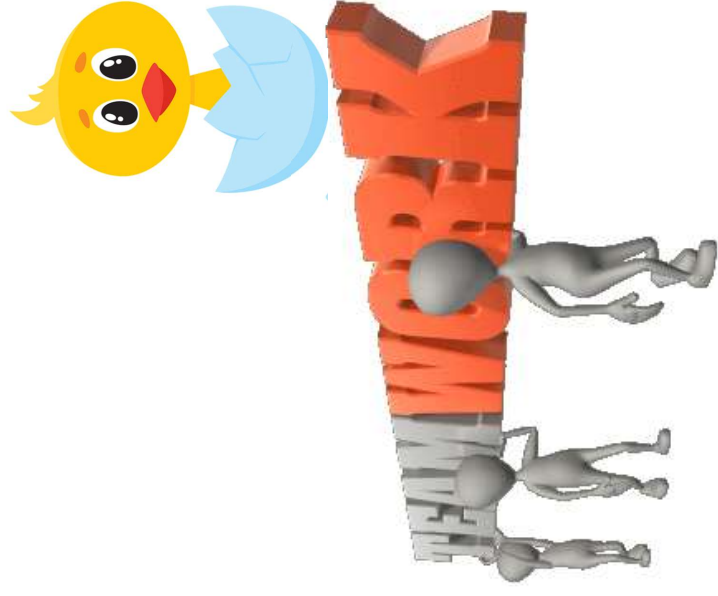
- ▶ To achieve our goal
 - ▶ Good quality hatching eggs



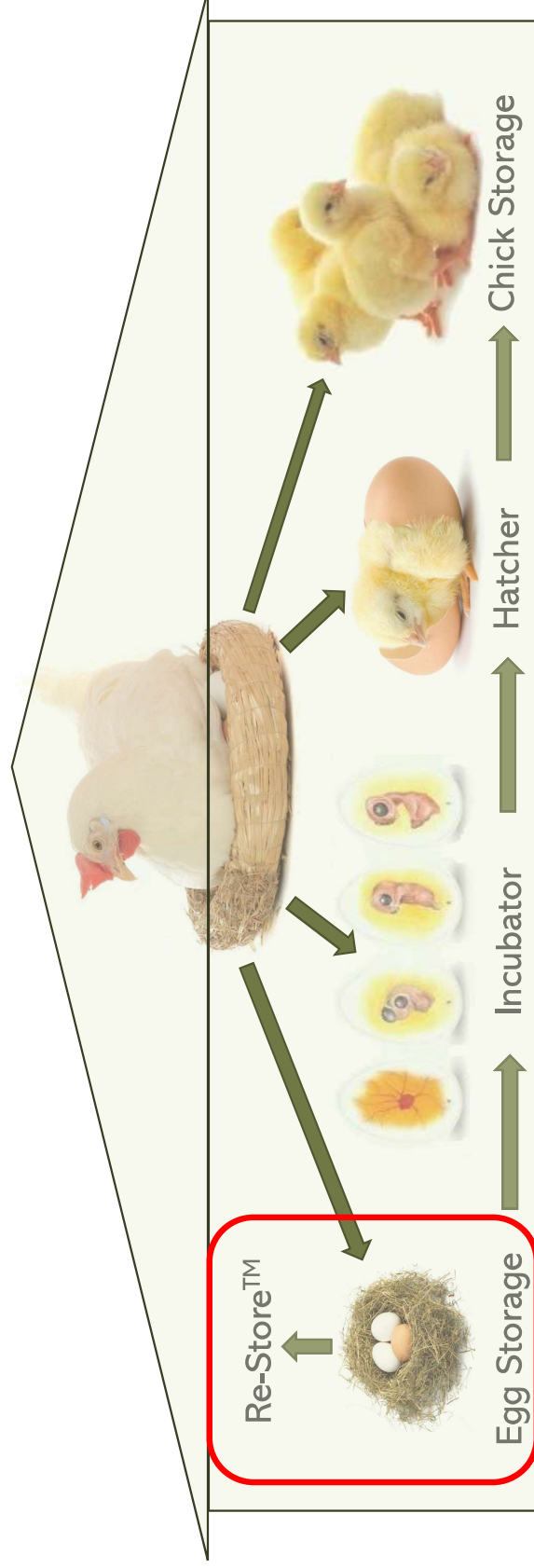
PETERSIME

Incubation with X-Streamer™

- ▶ To achieve our target:
 - ▶ Good quality hatching eggs
 - ▶ Responsible and committed partners

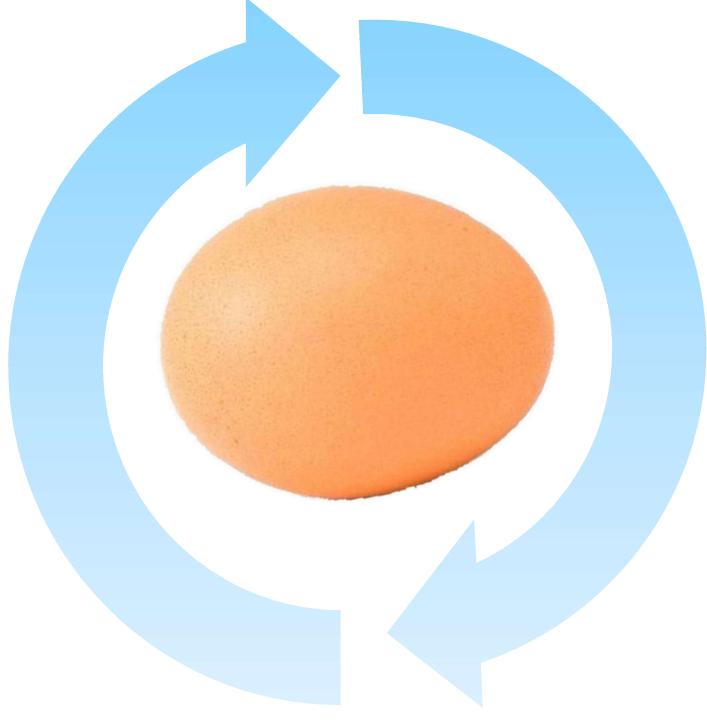


Incubation with X-StreamTM

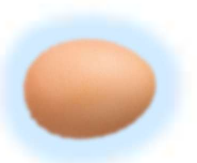
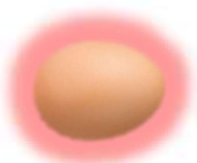
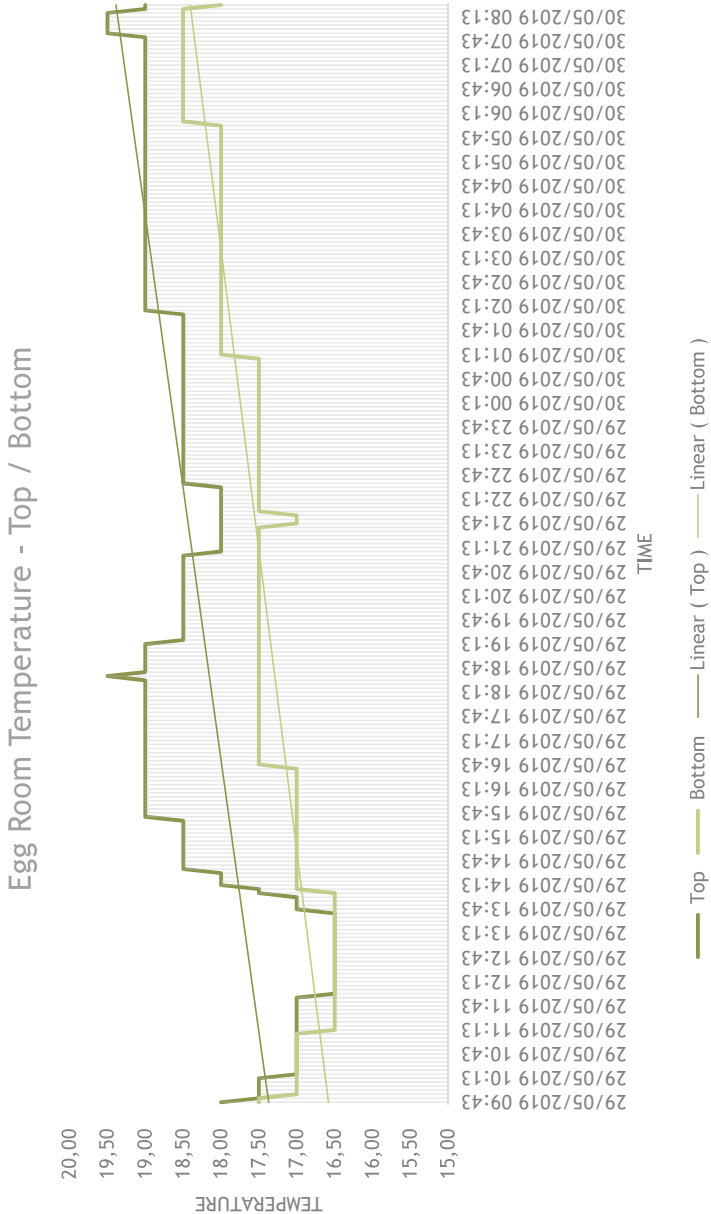


Egg Storage

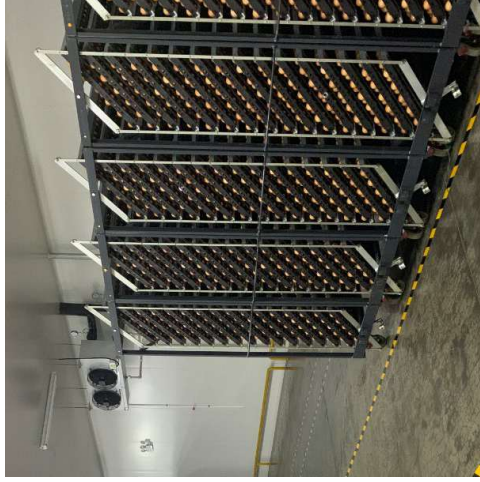
- ▶ Good air circulation across all the eggs.
- ▶ Avoid storing in pulp trays
- ▶ Provide ample space in between trolleys



Egg Storage



Egg Storage



*Eggs stored in trolleys
with turning*



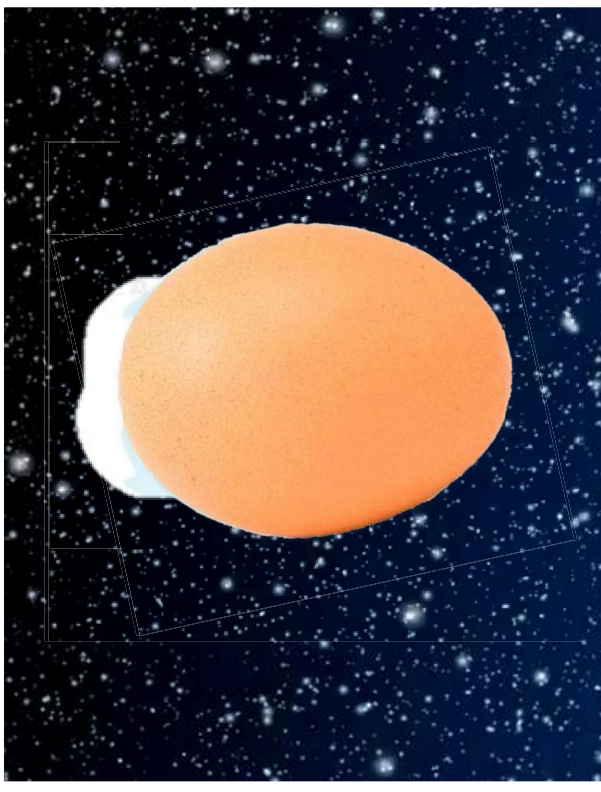
*Eggs stored in pulp trays (big
risk of cracks)*



*Cold air is directed towards
the eggs*

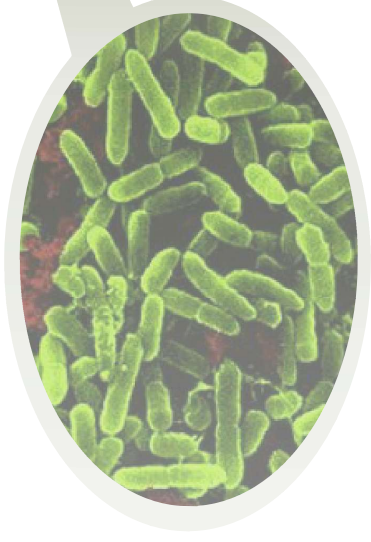
Egg Storage

- ▶ Store at temperatures between 15 to 18°C.
 - ▶ Temperature must be lower for longer stored eggs.



Egg Storage

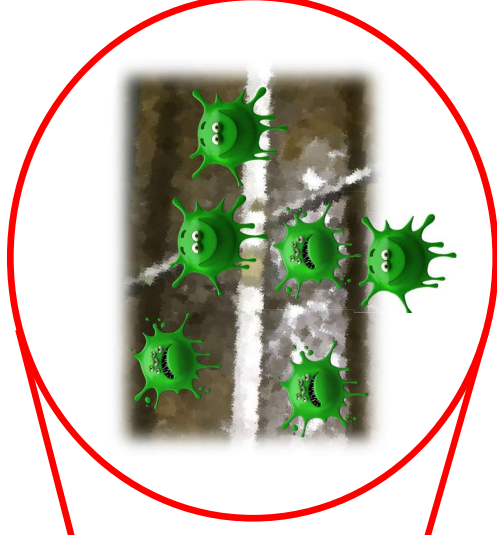
- ▶ Relative humidity between 70 - 80%
- ▶ Higher humidity will increase risk of bacterial contamination (i.e. pseudomonas)



Egg Storage Conditions



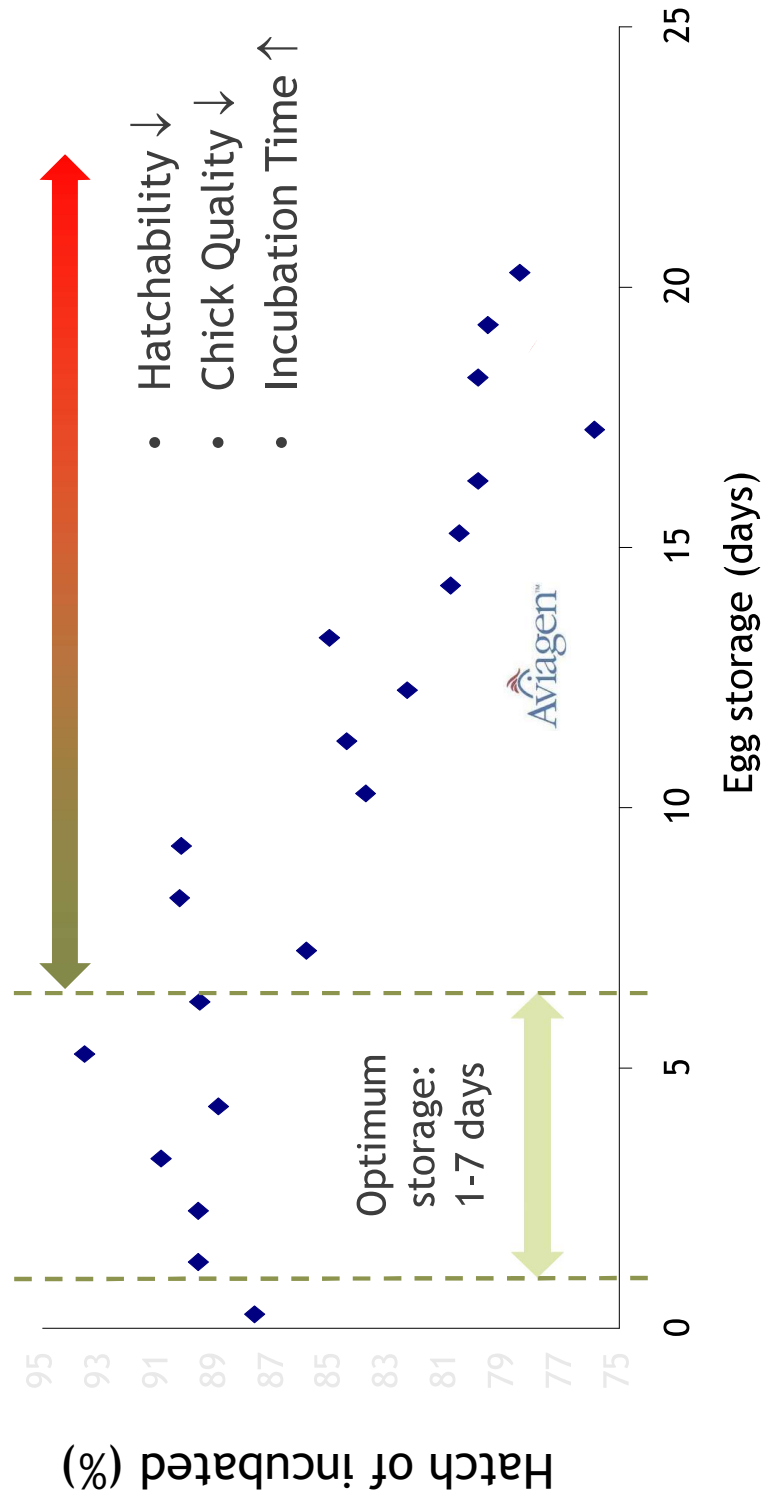
► Make sure that the humidifiers are clean and working properly.



Re-Store™

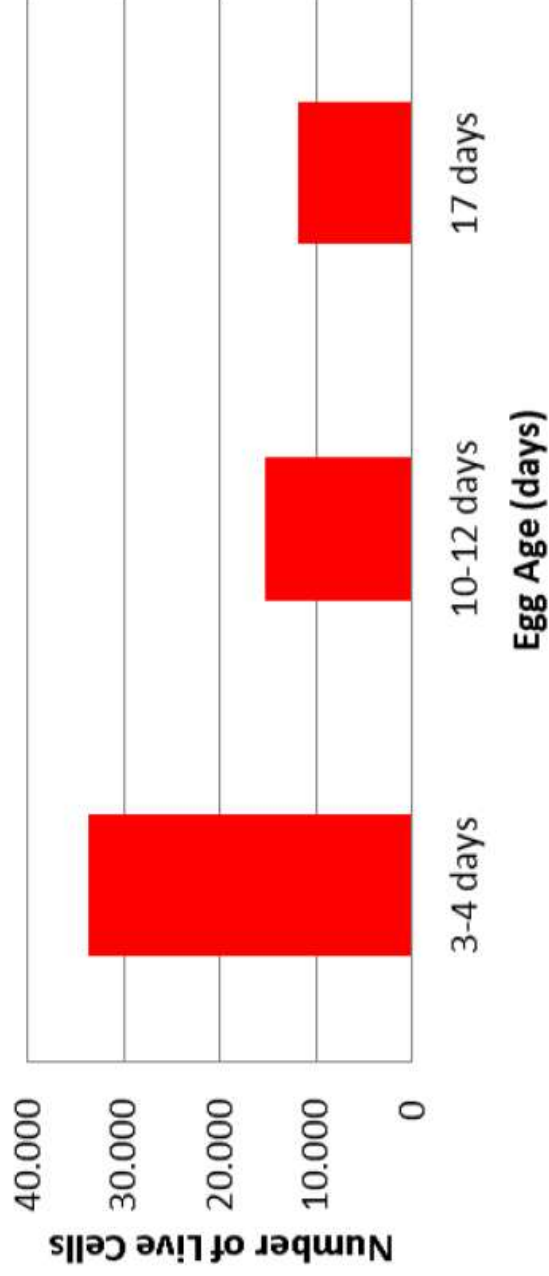


Re-Store™

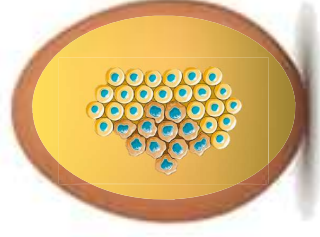
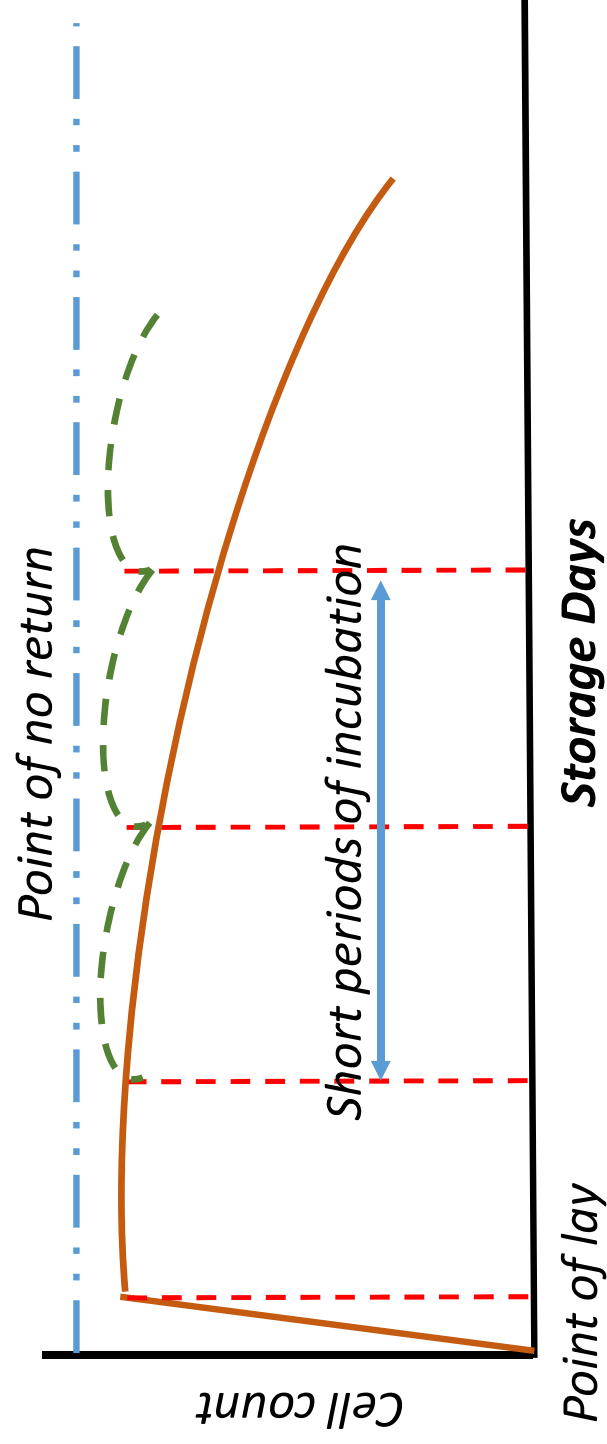




Embryo Cell Number after Egg Storage

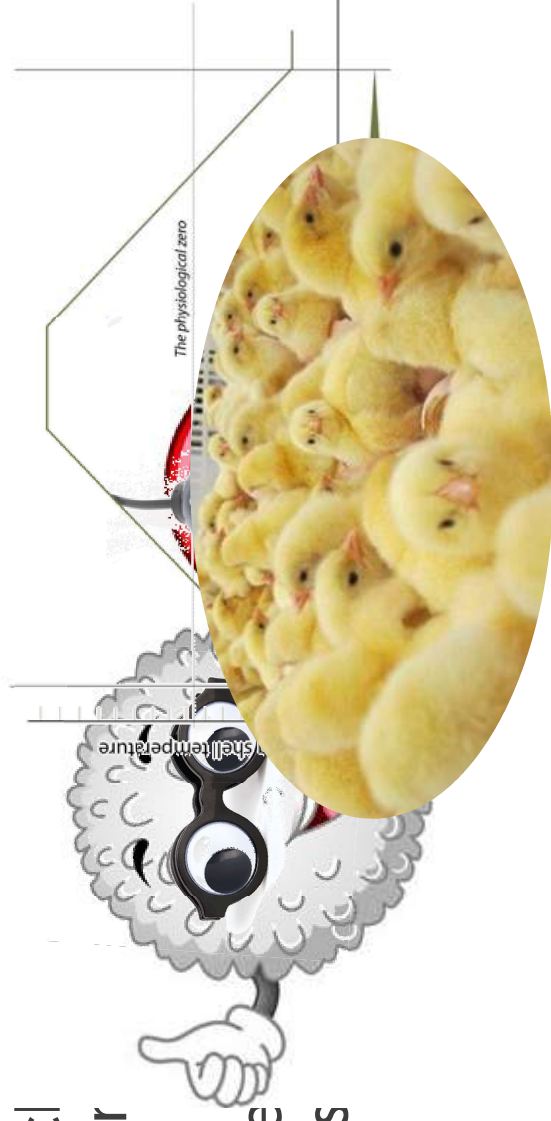


Re-Store™

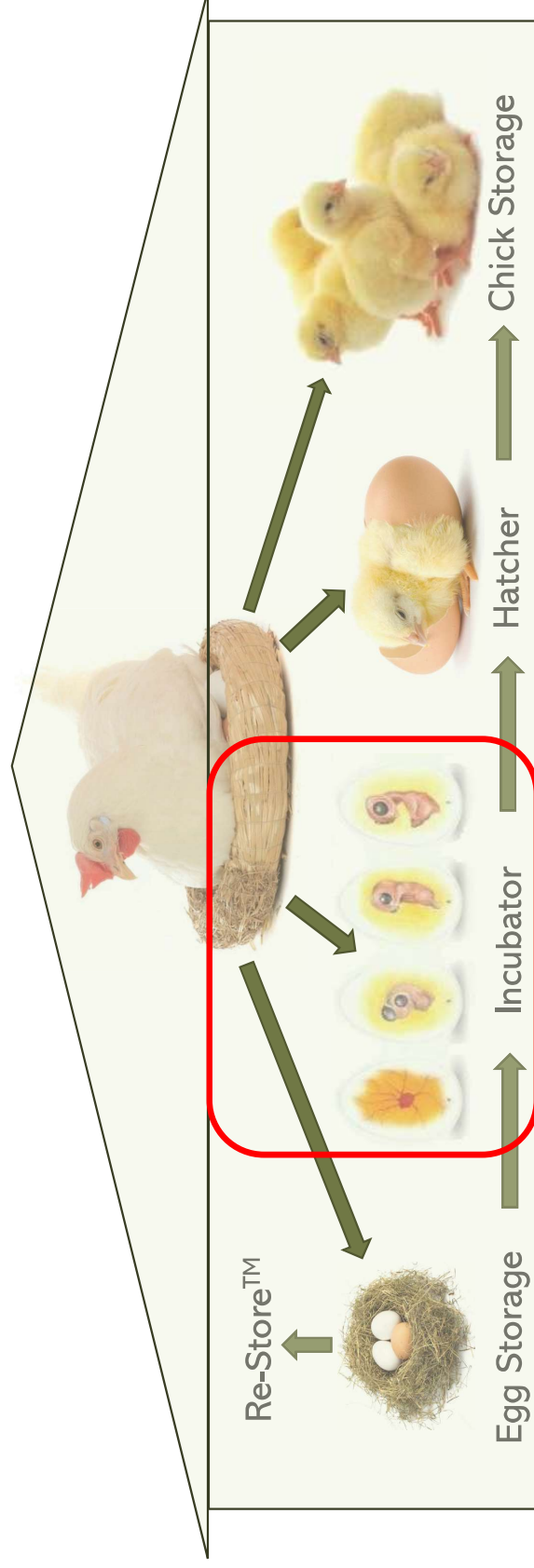


Re-Store™

- ▶ Re-Store™ viable cell count after prolonged egg storage.
- ▶ Using OvoScan™, the machine designed to perform accurate treatment.
- ▶ Improves performance, better uniformity, easier logistics



Incubation with X-StreamTM



X-Stream™ - Setter



Integrated
intelligence



Technology
Embryo-Response
Incubation



Designed to
minimize
operating costs

X-Stream™ - Setter

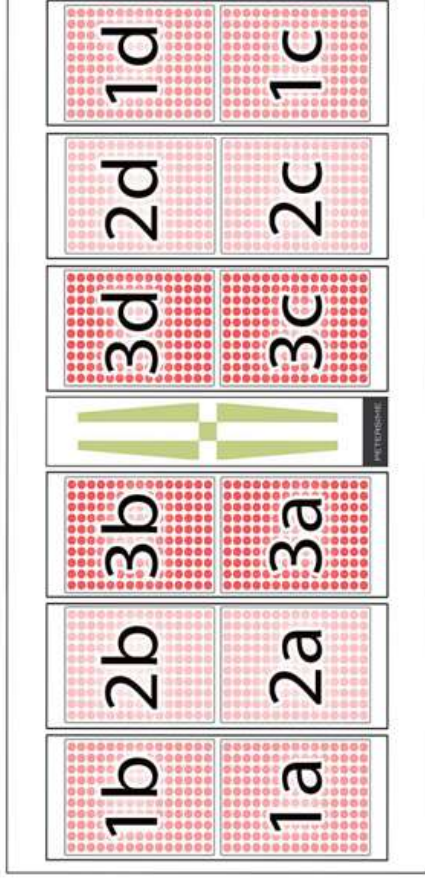
- ▶ It has extended incubation library that includes profiles for different breeds and flock ages.
- ▶ The software can suggest the optimal incubation profile.
- ▶ Perfect condition for every flock of eggs.



X-Streamer™ - Setter



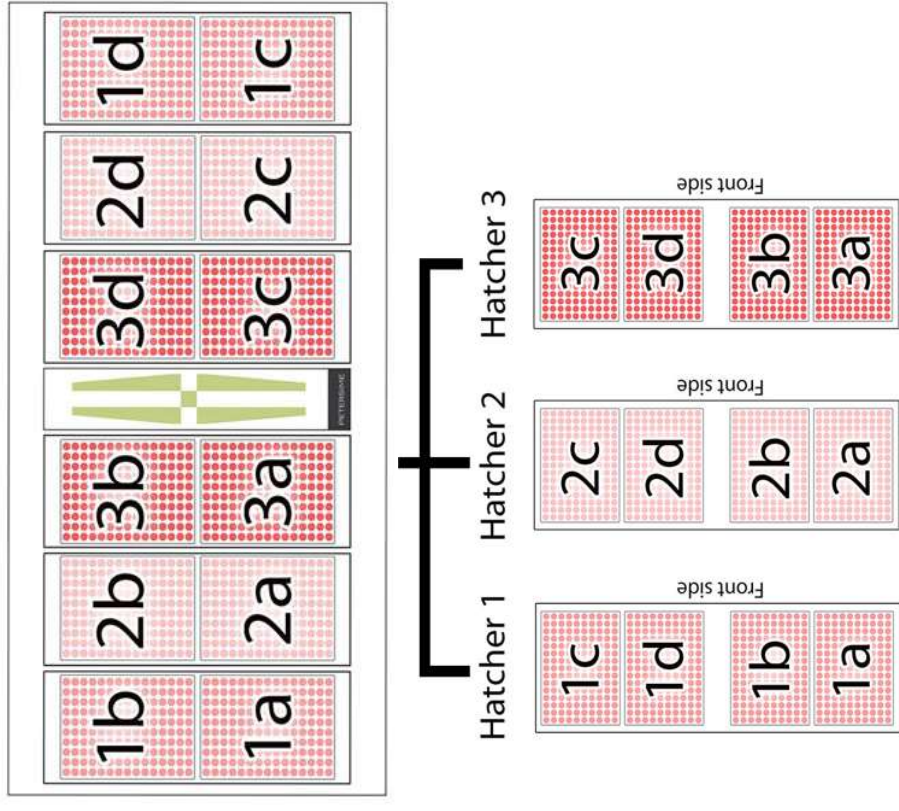
- ▶ Loading and transfer pattern assistant
 - ▶ Pre-define the exact position of each trolley inside the machine



X-StreamTM - Setter



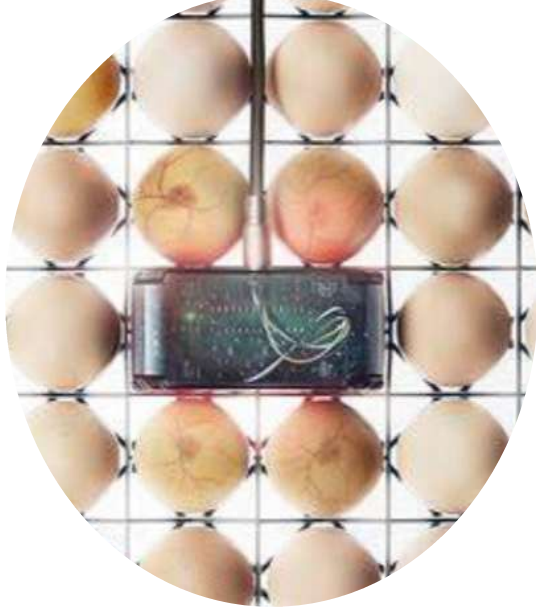
- ▶ Loading and transfer pattern assistant
 - ▶ Pre-define the exact position of each trolley inside the machine
 - ▶ Define to which hatcher the eggs are transferred.
- ▶ Communication between setter and hatcher.
 - ▶ Trolley traceability
 - ▶ Hatcher start time





Basic Embryonic Requirement

- ▶ In line with our objective to hatch good quality chicks.
 - ▶ Correct eggshell temperature



Basic Embryonic Requirement

- ▶ In line with our objective to hatch good quality chicks.
- ▶ Correct eggshell temperature
- ▶ Good ventilation



Basic Embryonic Requirement

- ▶ In line with our objective to hatch good quality chicks.
- ▶ Correct eggshell temperature
- ▶ Good ventilation
- ▶ Correct level of humidity





Basic Embryonic Requirement

- ▶ In line with our objective to hatch good quality chicks.
- ▶ Correct eggshell temperature
- ▶ Good ventilation
- ▶ Correct level of humidity
- ▶ Correct turning angles

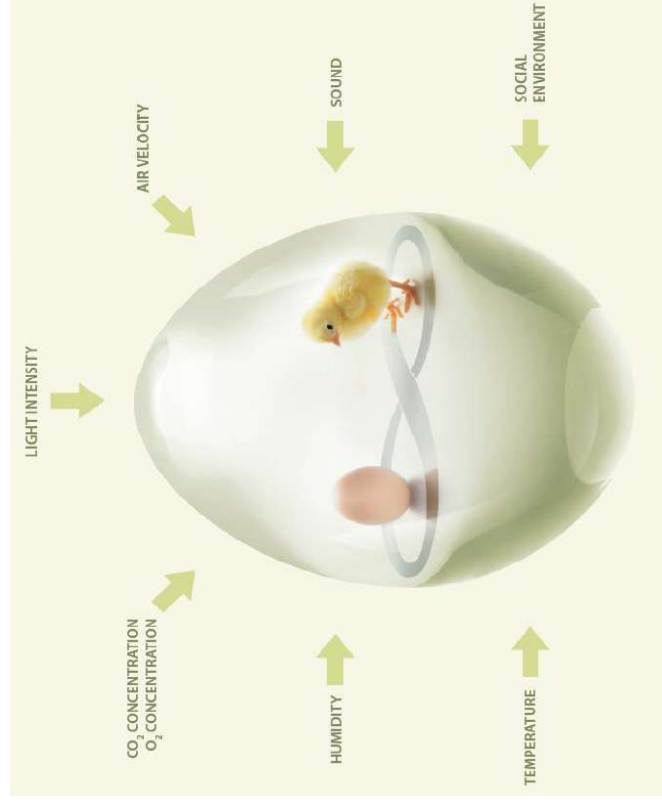


Incubation Period

Complex Process

Variables

BioResponse™

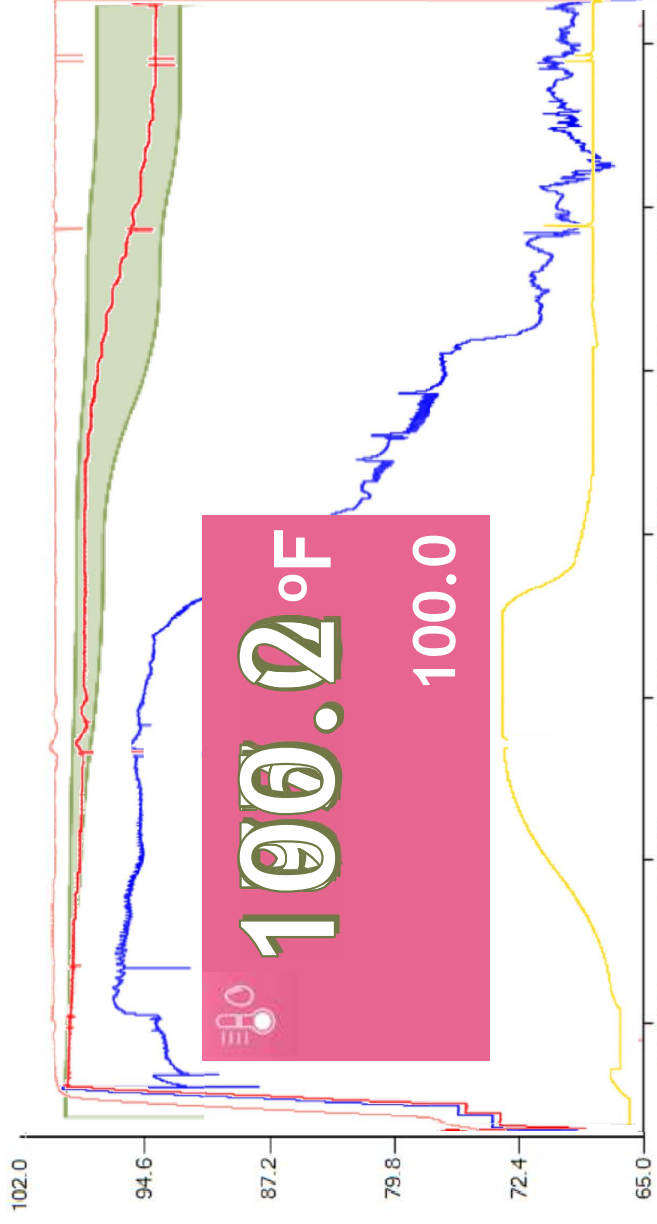
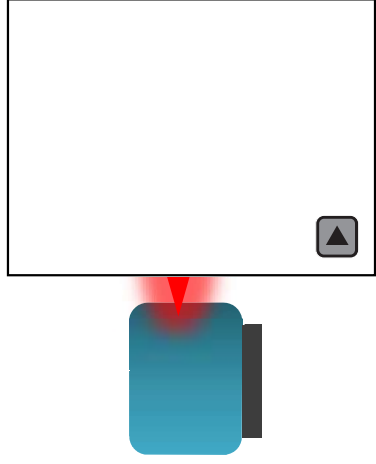


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Basic Embryonic Requirements

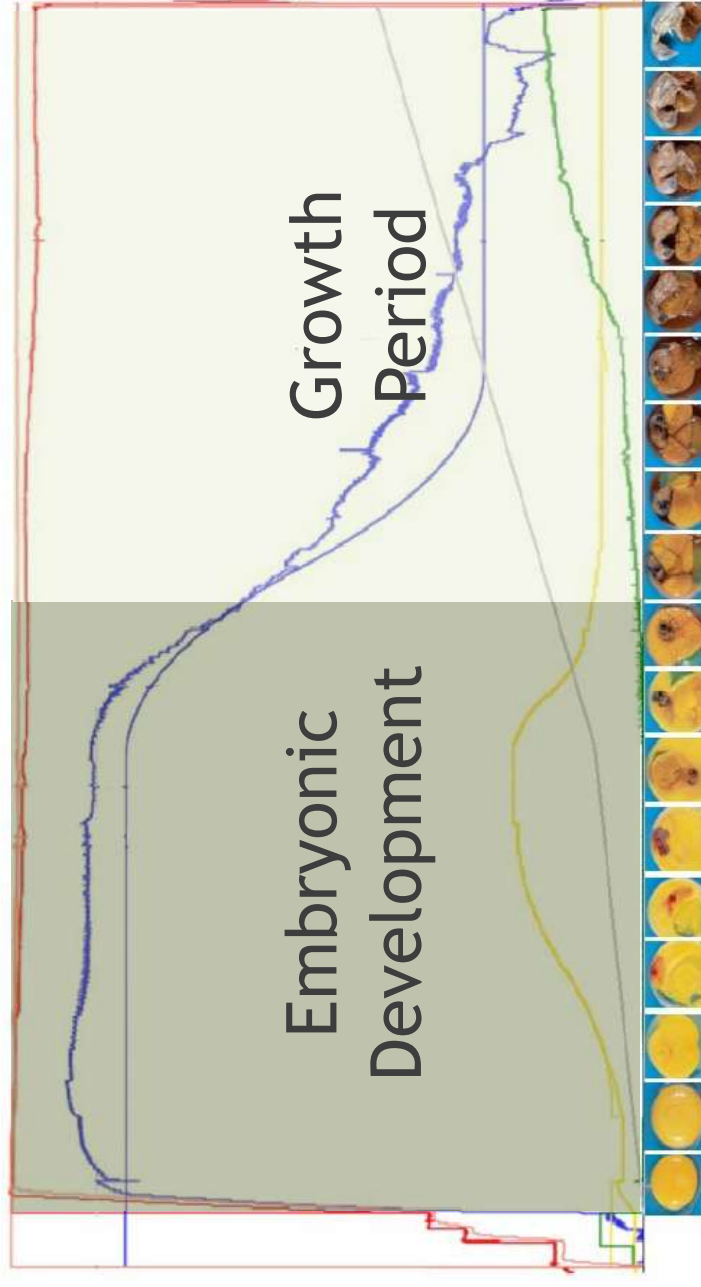
- Correct eggshell temperature



X-StreamTM - Setter



- Incubation period can be divided in two phases.



X-StreamTM - Setter



- ▶ Incorrect incubation conditions on the first phase;
- ▶ Underdeveloped / retarded growth
- ▶ Malformations
- ▶ Hatch Timing (Shorter/Longer)
- ▶ Increased early/late embryonic

Development



X-StreamTM - Setter



- ▶ Incorrect incubation conditions on the second phase;
- ▶ Malpositions
- ▶ Chick quality issues
- ▶ Late mortality
- ▶ Impaired post hatch performance

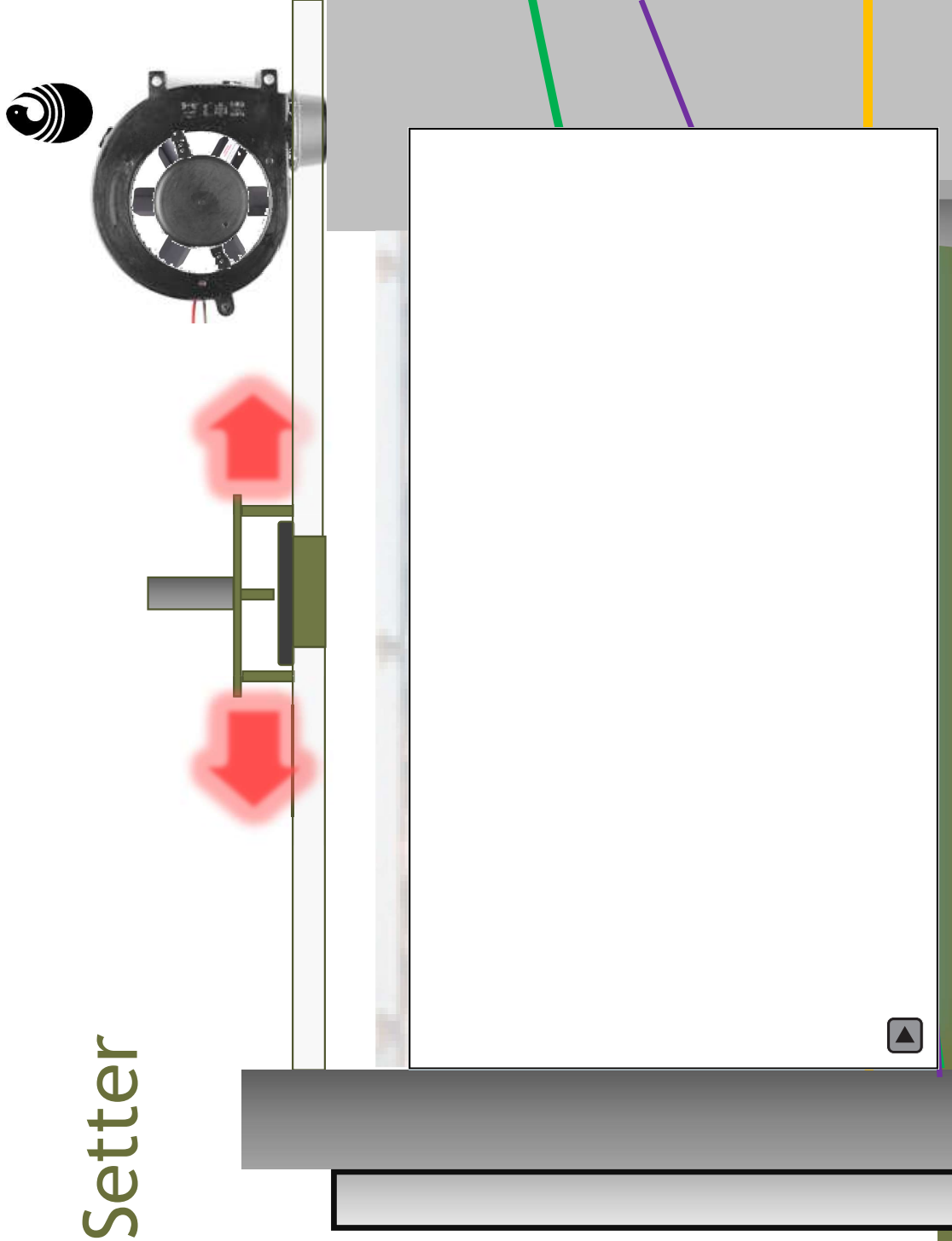


X-Streamer™ - Setter

► Correct level of humidity with enough ventilation.

*Recommended
absolute humidity of
fresh air = 7 - 10g/kg
35 - 50%RH @ 25°C*

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X-StreamTM - Setter



- Eggs needs to lose weight between 9.5 - 12% depending on flock age.



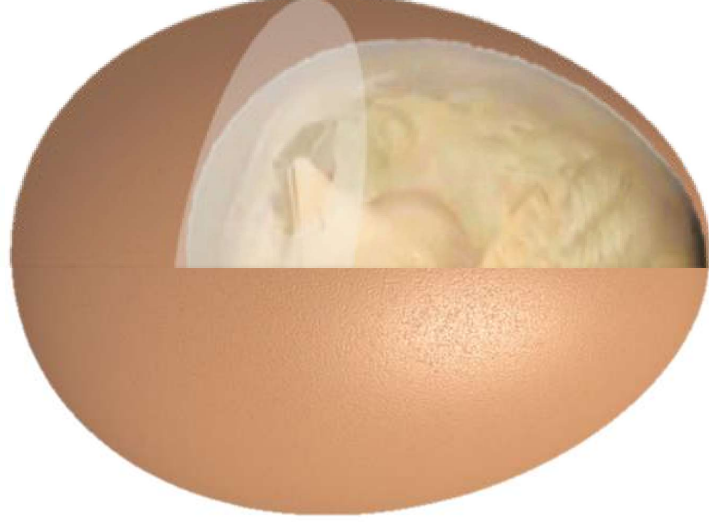
$$\frac{\text{Illustration of a yellow chick}}{\text{Illustration of a brown egg}} = 66-68 \%$$

X-StreamTM - Setter

- Small weight loss;
- Increased late dead
- Red hocks
- Bloated chicks
- Unhealed Navel



X-StreamTM - Setter

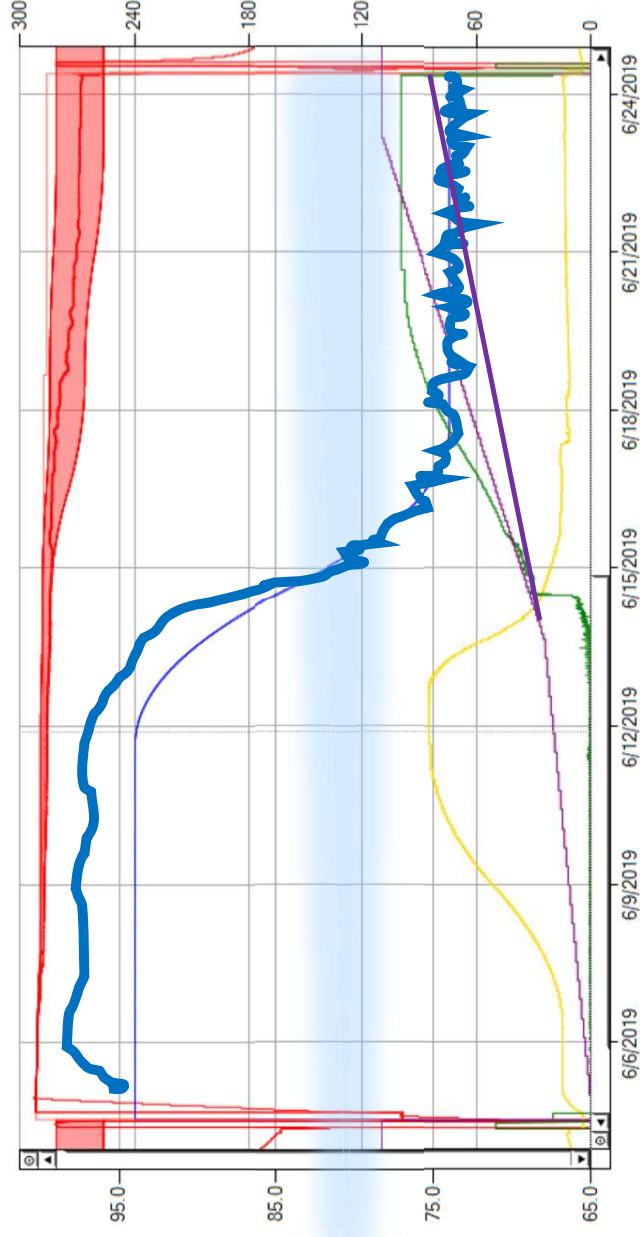


- Too much weight loss;
- Chick stays inside the shell.
- Dried out eggs
- Small dehydrated chicks

X-Stream™ - Setter



- Do not switch on humidity spray in the setter



X-Streamer™ - Setter



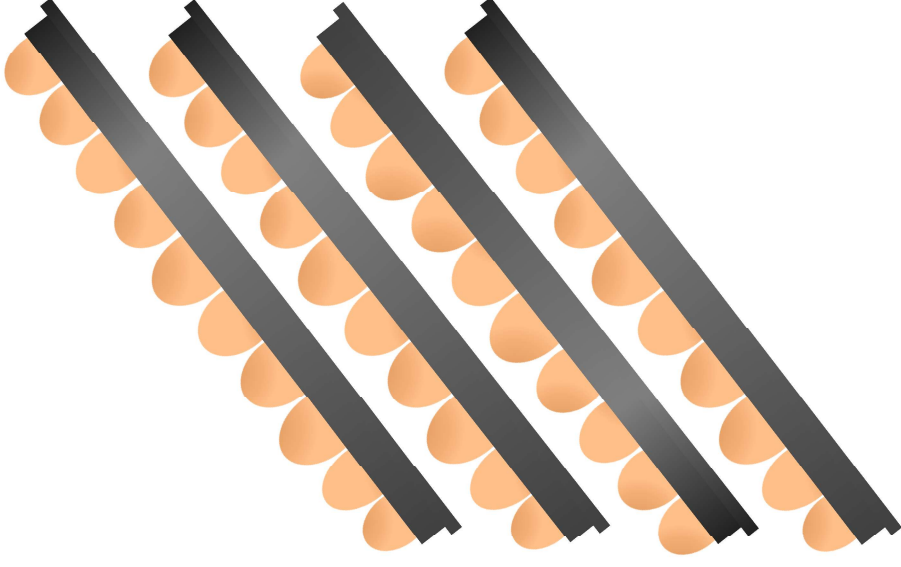
- Other disadvantages of activating spray humidity in the incubator.



X-Streamer™ - Setter



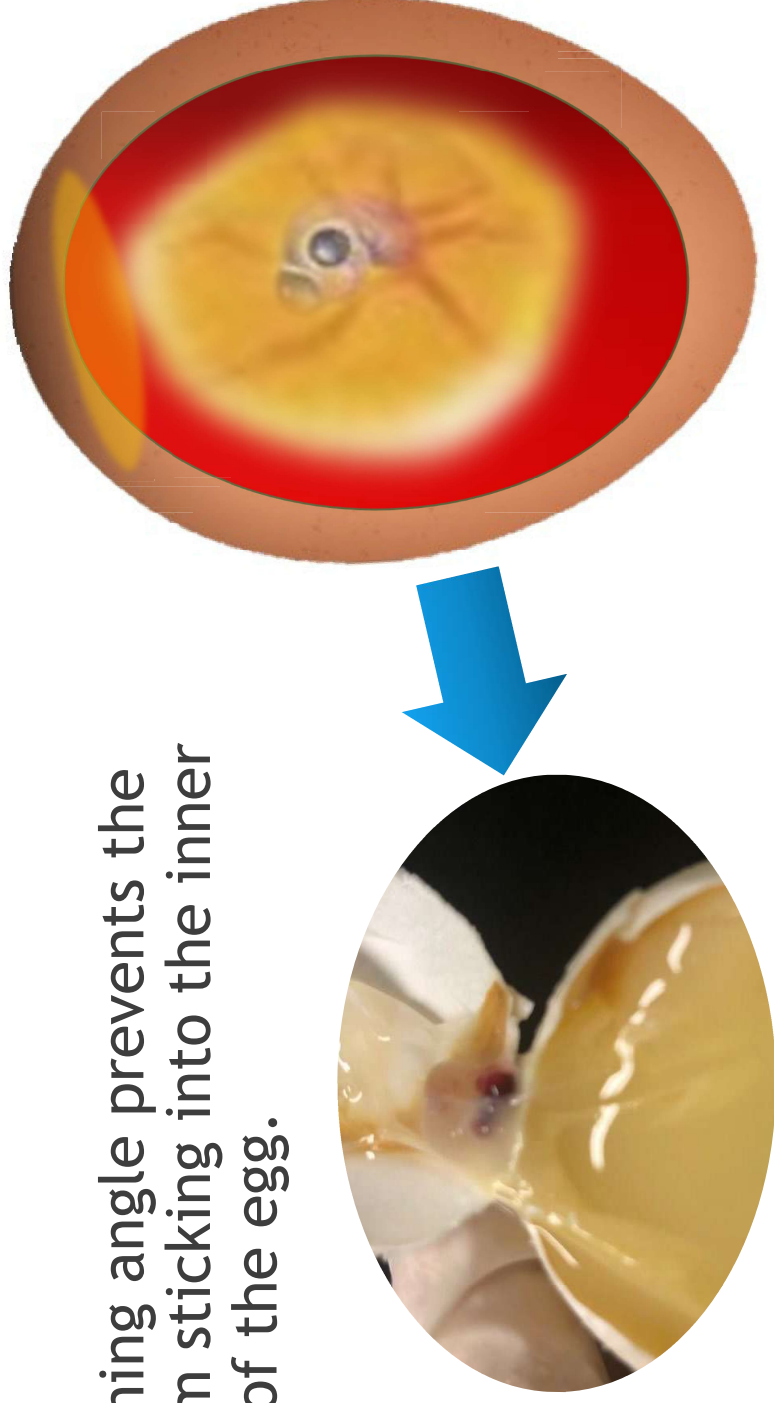
- Turning angles from 38° to 45° from vertical on both sides



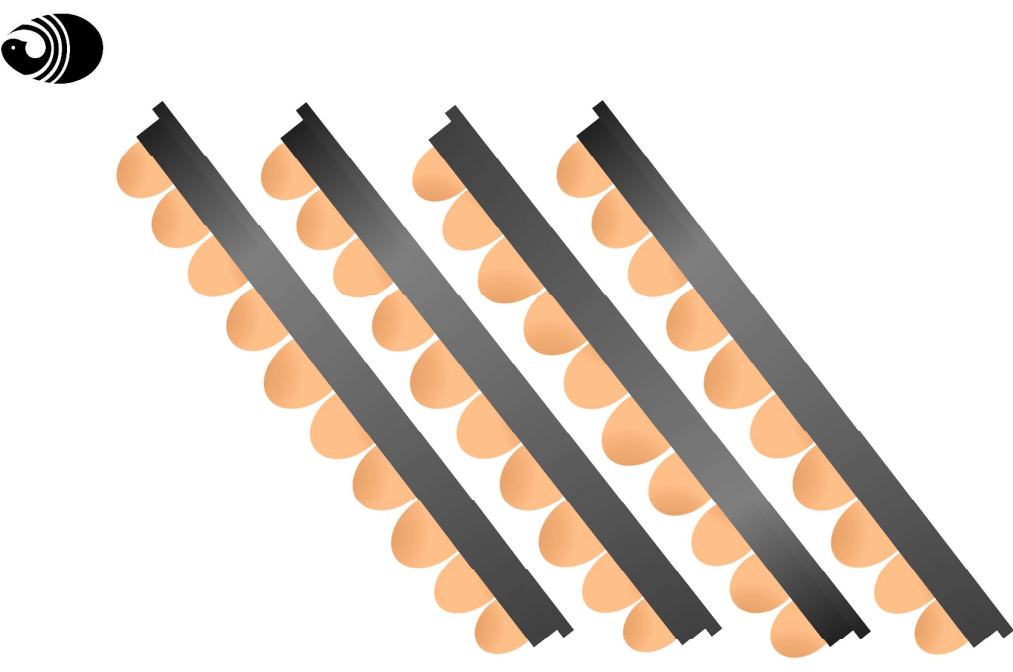
X-StreamTM - Setter



- ▶ Correct turning angle prevents the embryo from sticking into the inner membrane of the egg.

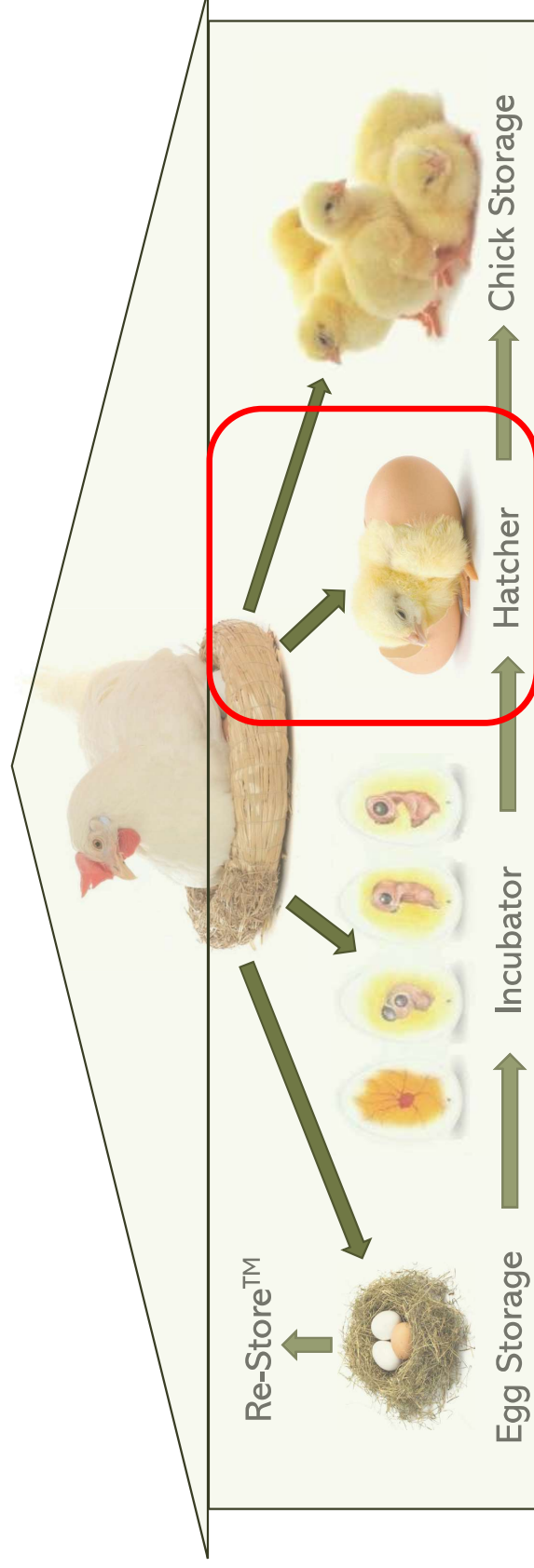


X-StreamTM - Setter

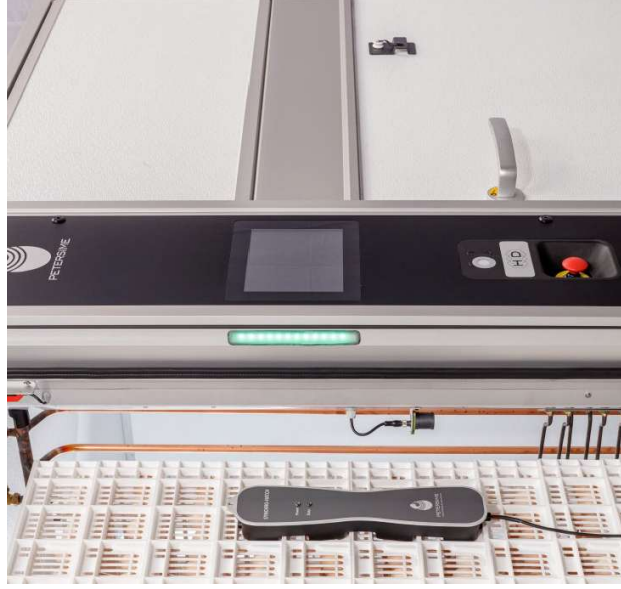


- ▶ Other benefits of attaining correct turning angle;
 - ▶ Makes the air pass through instead of just on top of the eggs.
 - ▶ Allows embryo to encounter fresh nutrients inside the eggs.
 - ▶ Moves metabolic waste like CO₂, away from the embryo

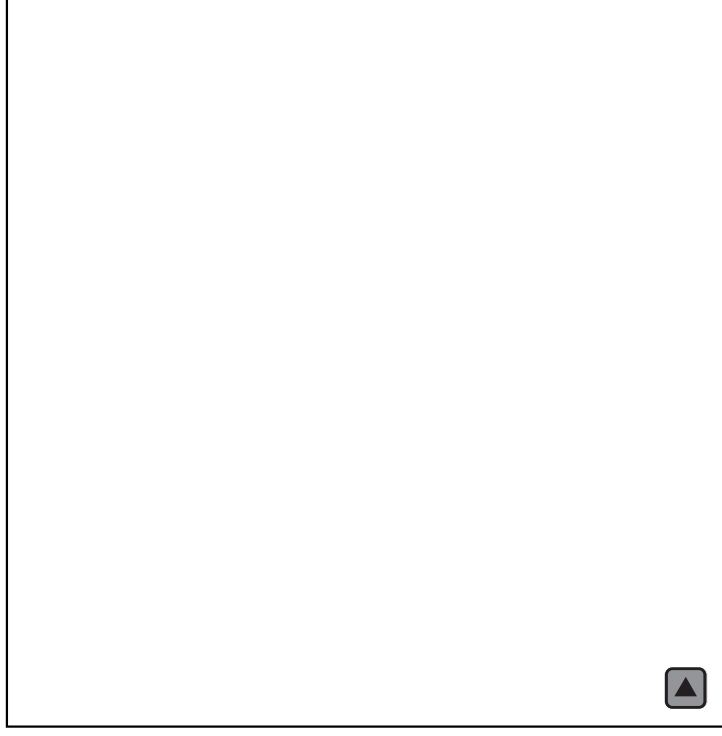
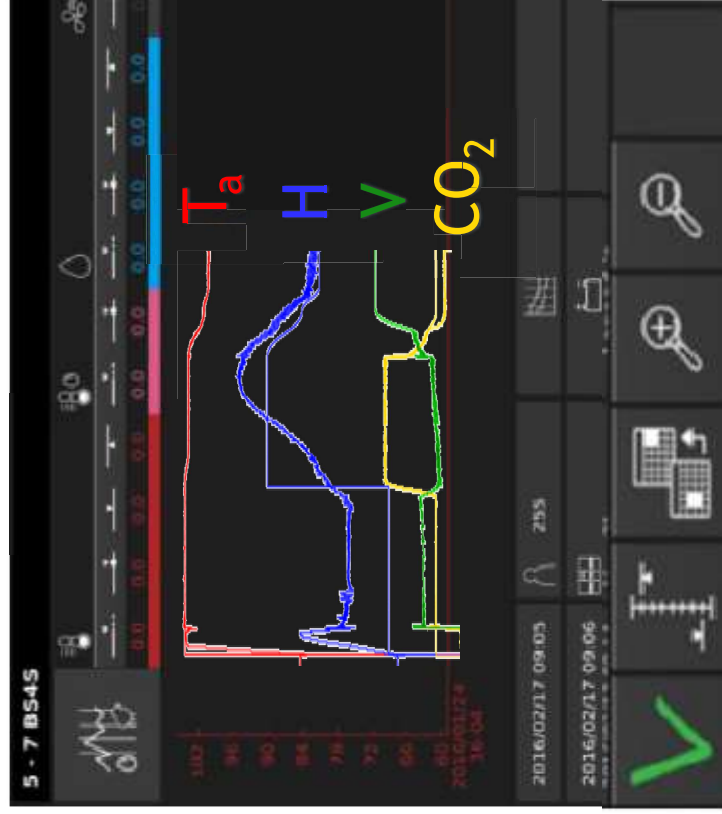
Incubation with X-StreamTM



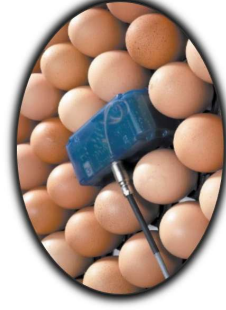
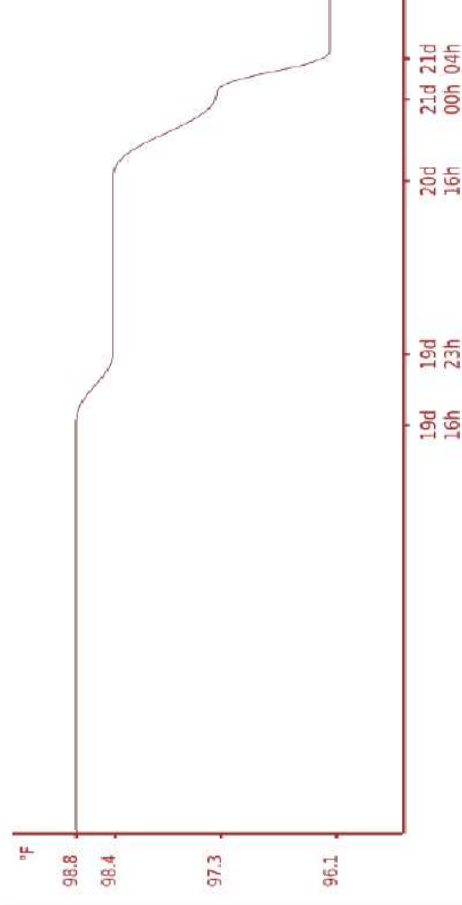
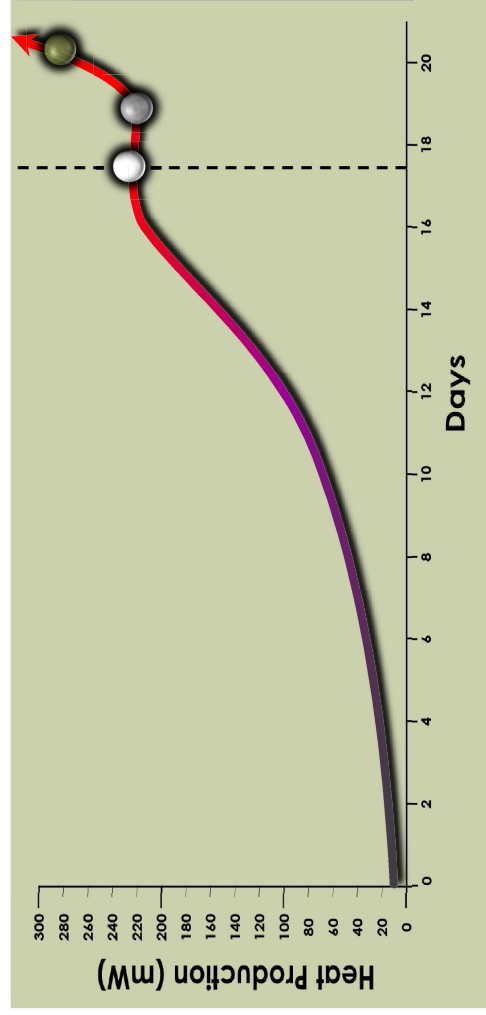
X-Streamer™ - Hatcher



X-Streamer™ - Hatcher



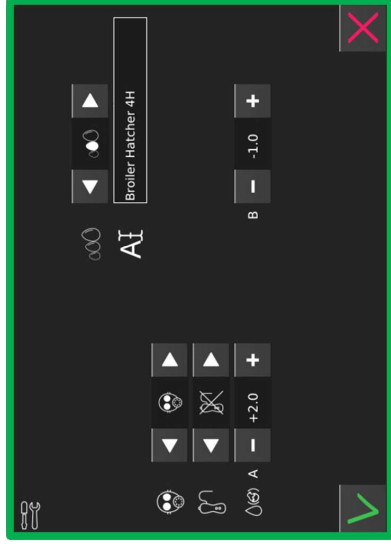
X-Stream™ - Hatcher



X-Streamer™ - Hatcher



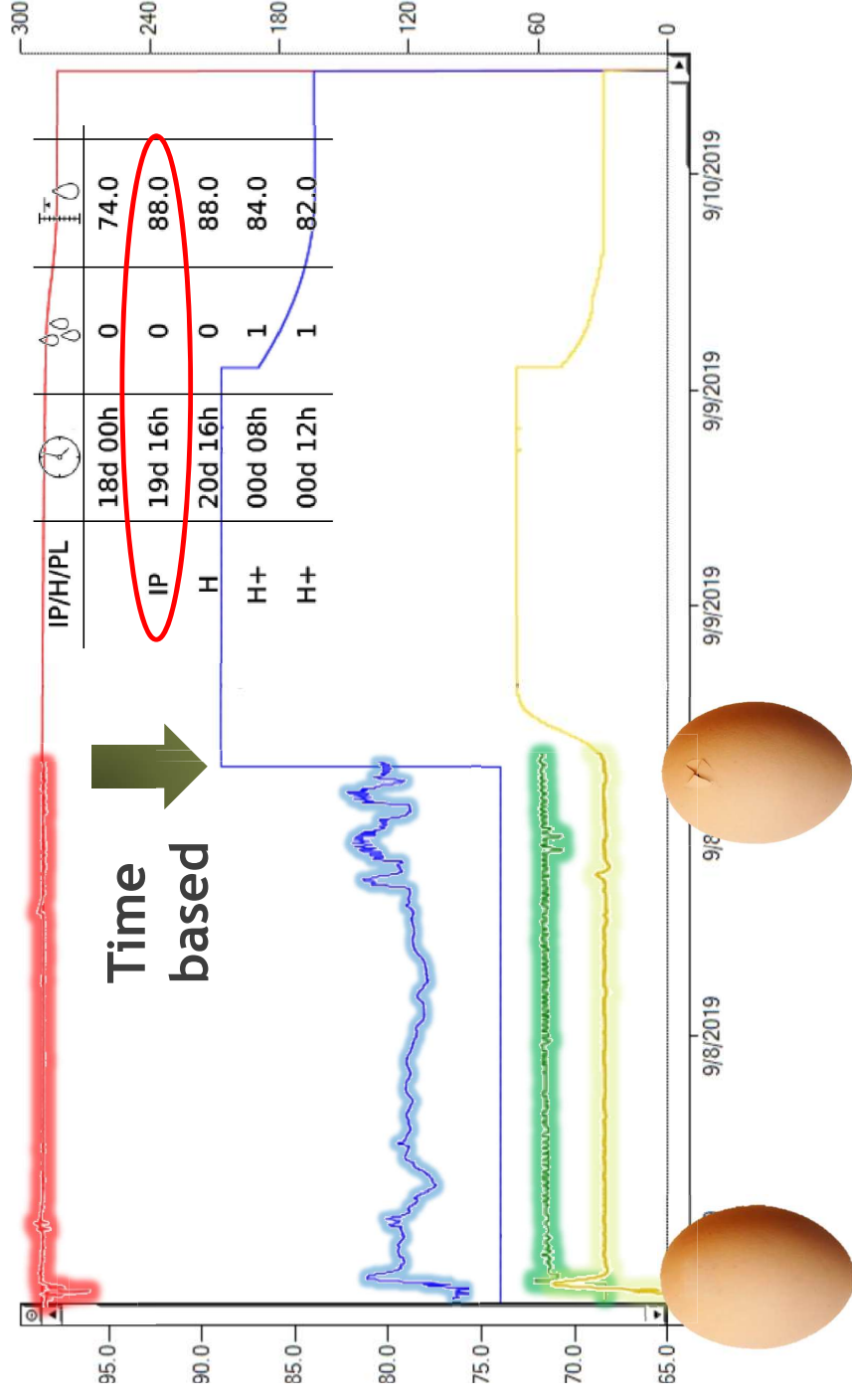
- ▶ There are two systems of controlling hatcher program;
 - ▶ CO₂NTROL - Humidity and CO₂
 - ▶ Synchro-Hatch



X-StreamTM - Hatcher

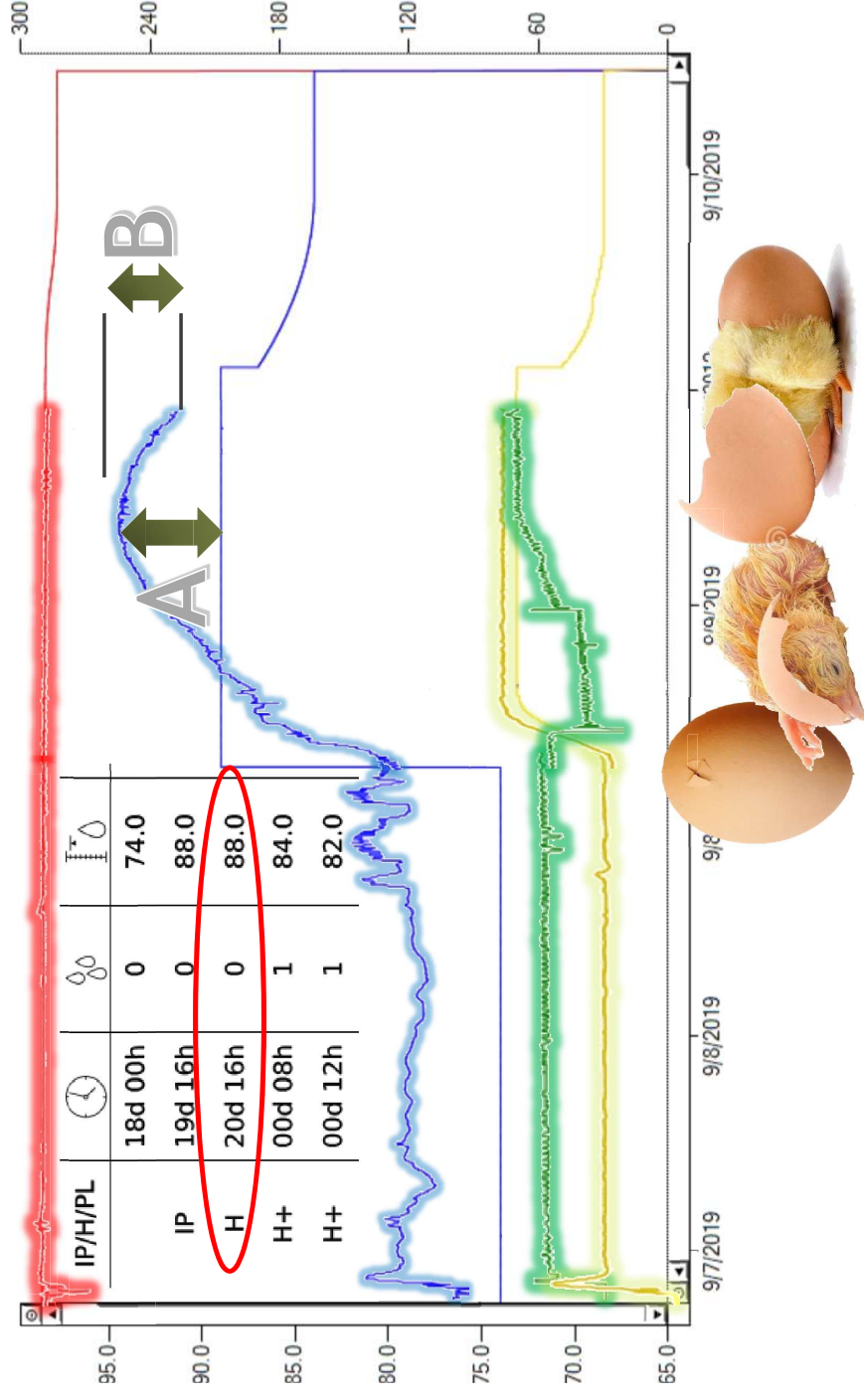


- CO₂NTROL
- Natural humidity starts to rise.



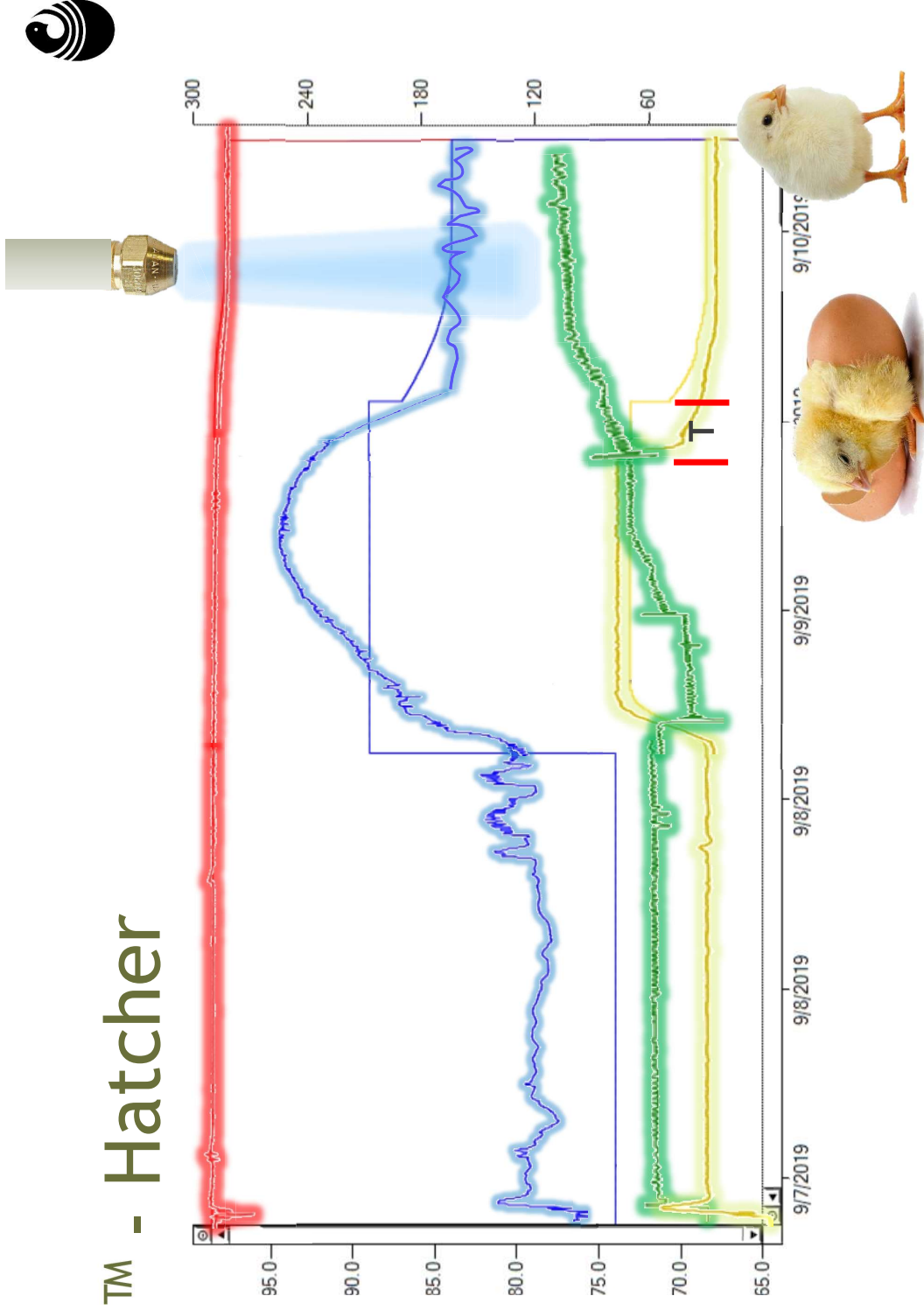
X-StreamTM - Hatcher

- CO₂NTROL
- Hatcher detects hatch after humidity peak.



X-Stream™ - Hatcher

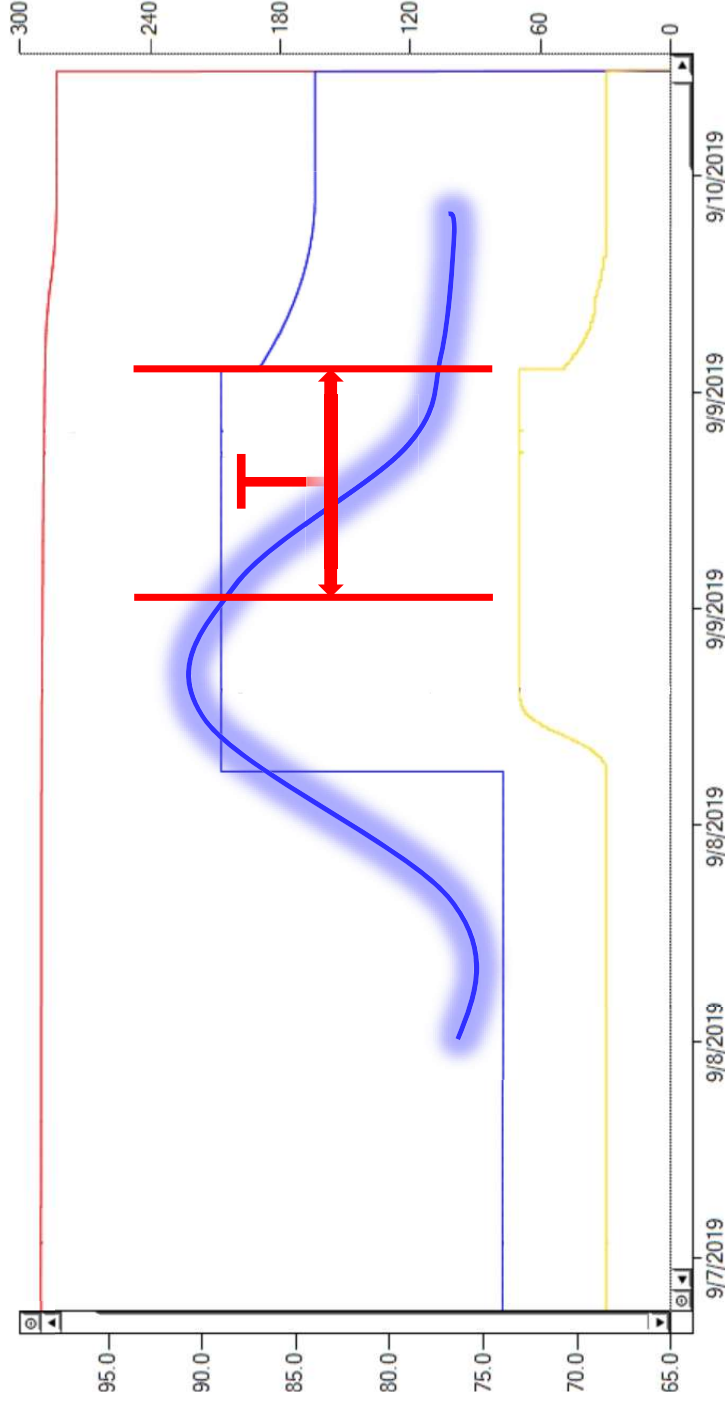
- CO₂NTROL
- Hatcher enters finishing step in the program



X-Streamer™ - Hatcher



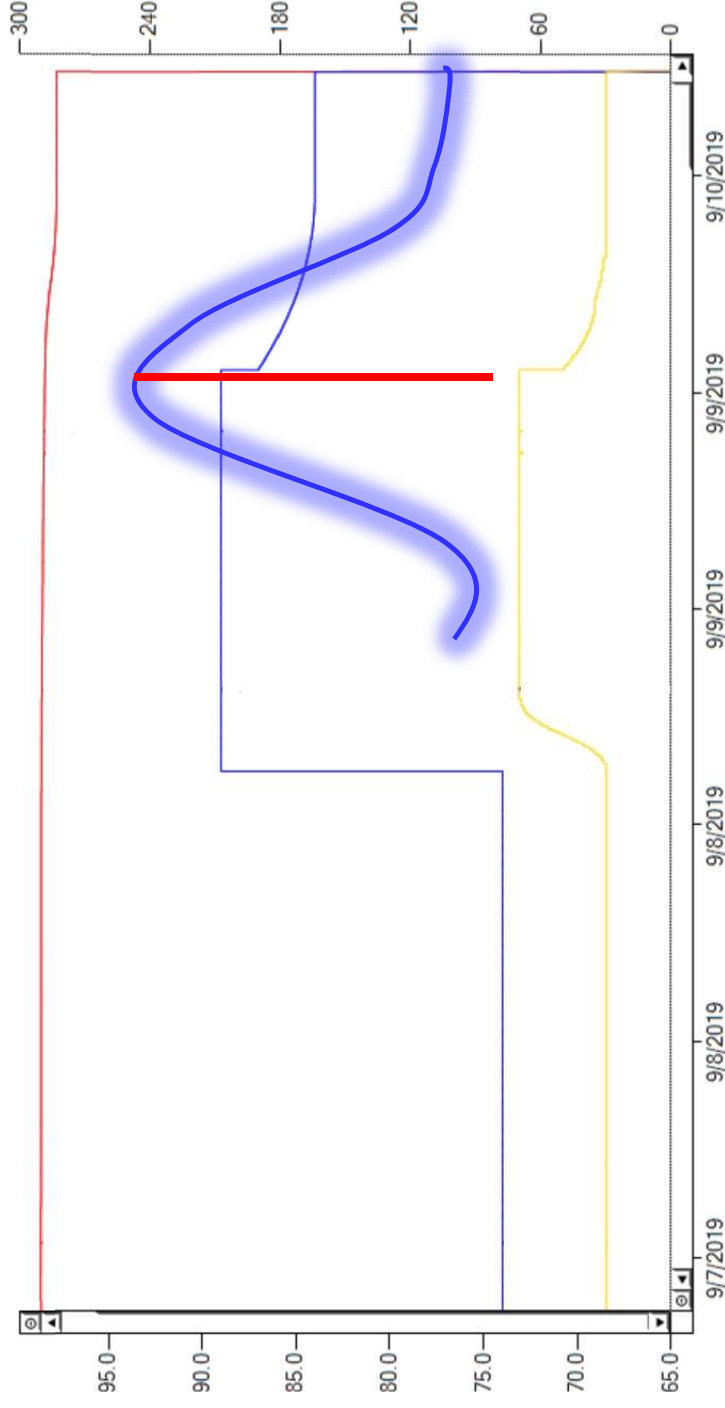
- Hatcher program must be aligned to the actual hatch.



X-Streamer™ - Hatcher



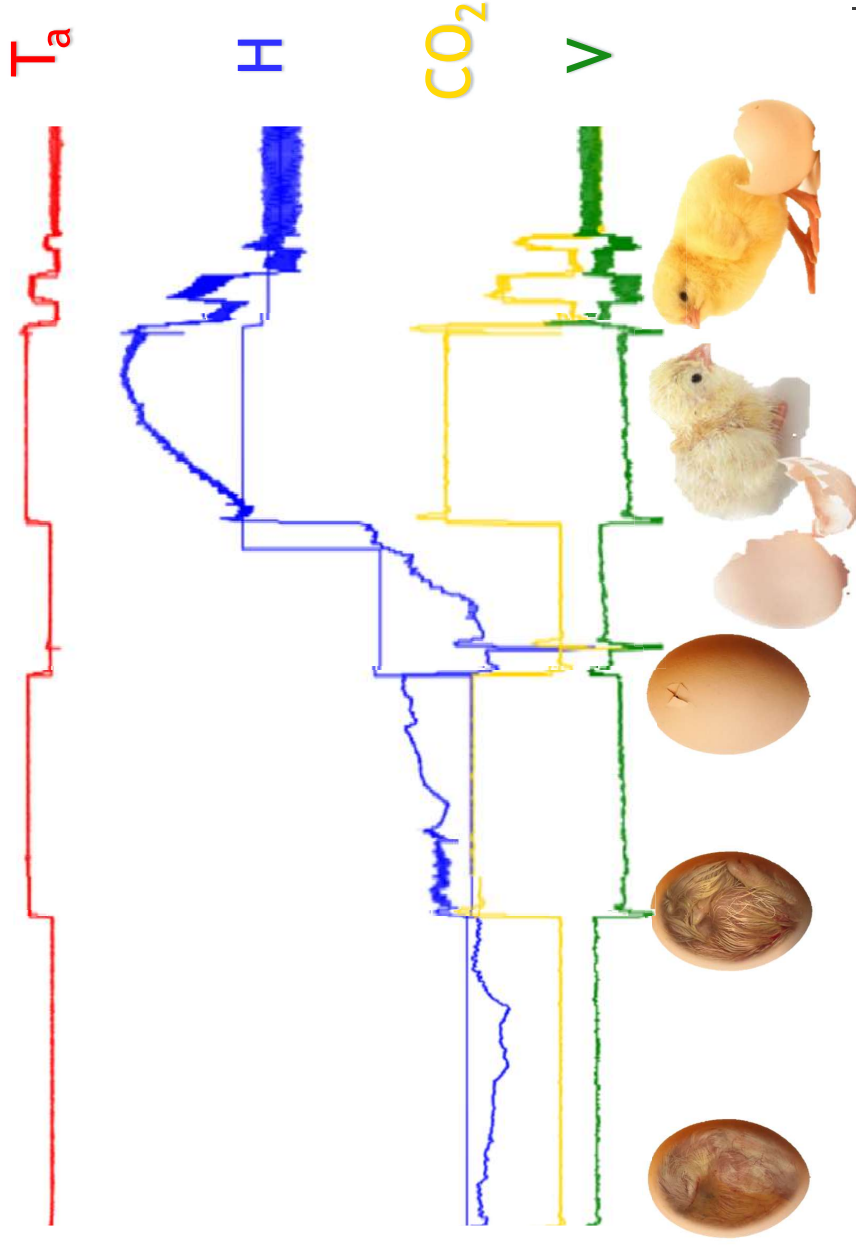
- Hatcher program must be aligned to the actual hatch.



X-Streamer™ - Hatcher



- ▶ Synchro-Hatch™
 - ▶ Utilizes optimal set point for every particular stage of hatching.

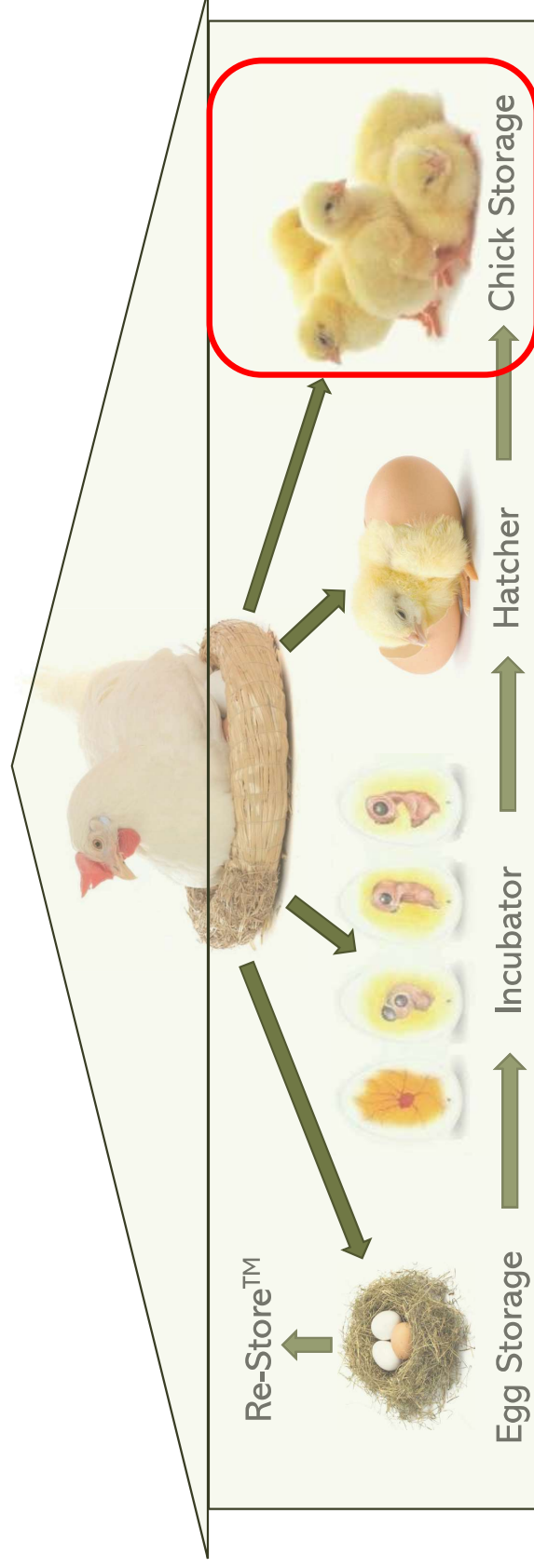


X-StreamTM - Hatcher

- ▶ Do not use Syncho-HatchTM when -
 - ▶ The hatcher is not full.
 - ▶ The hatcher have mixed flock.
 - ▶ Contamination is more than 2%.

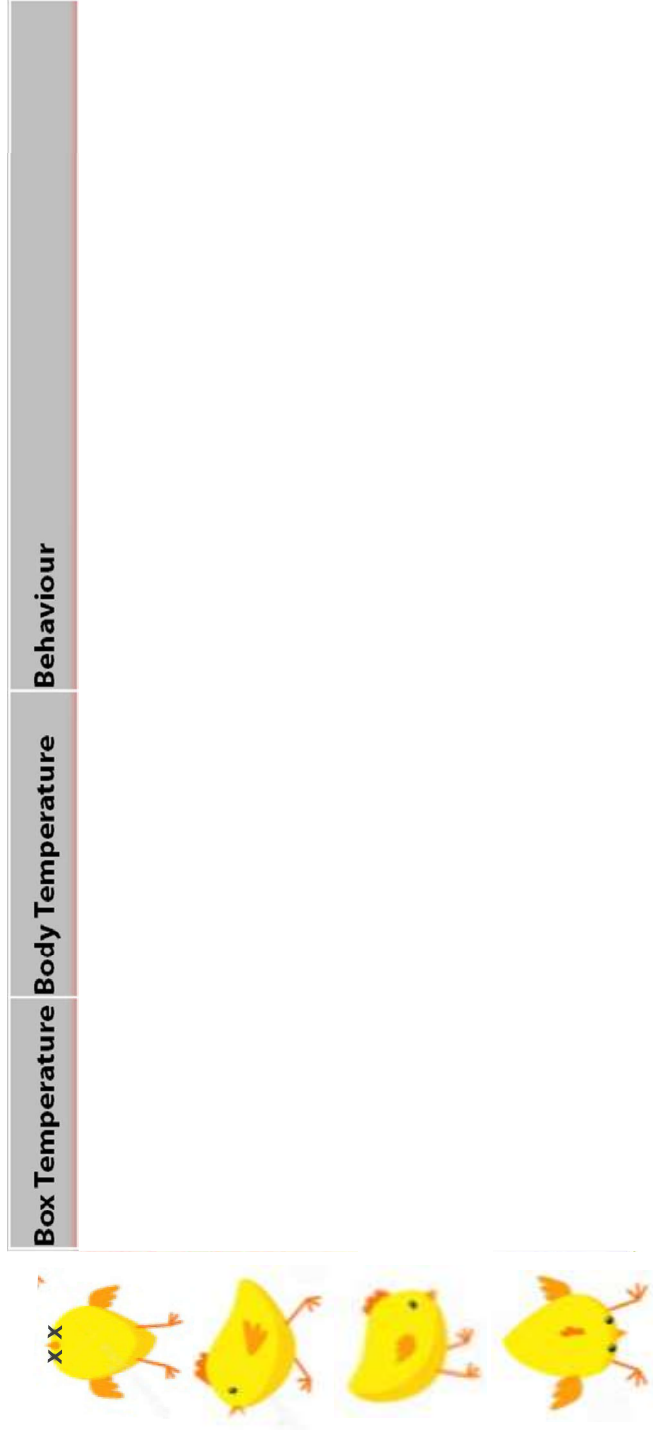


Incubation with X-StreamTM



Chick Storage

►Optimal temperature at 60%RH





Chick Storage

► Observe the chick behaviour.



Comfortable



Hot



Cold

Chick Storage



- Provide enough space in between stack of chick boxes to allow good air movement.



Chick Storage



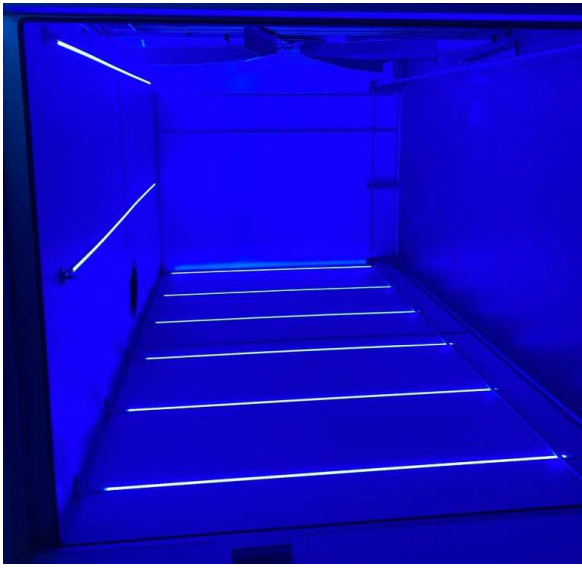
► To ensure chick comfort - **CHICK-ST**  **RE**



Chick Storage



- ▶ To be installed in the chick holding area
 - ▶ It comes in three sizes
 - ▶ 24 trolley - up to 120,000 DOC
 - ▶ 12 trolley - up to 60,000 DOC
 - ▶ 8 trolley - up to 40,000 DOC



Chick Storage

- ▶ To be installed in the chick holding area;
 - ▶ Completely controlled environment (temperature, airflow, ventilation)
 - ▶ Reduced stress (no interferences, no exposure to outside risks)
- ▶ Optimal lighting conditions
 - ▶ Soft illumination (calming effect)
 - ▶ Gradual change in lighting intensity in preparation for dispatch





Questions?

Rui Barros - rui.barros@petersime.com