Hatchery Talks

Managing the hatch window

Before we start …

- Polls
- Questions in chat
- Webinar-replay + hand-out

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- Hatch window: definition and importance
- Incubation time
- Narrowing the hatch window

Hatchery Talks

Introduction

Hatch window

Introduction

In an ideal hatchery world chicks hatch like popcorn

Hatchery Talks

Hatch window: definition and importance

Definition of hatch window

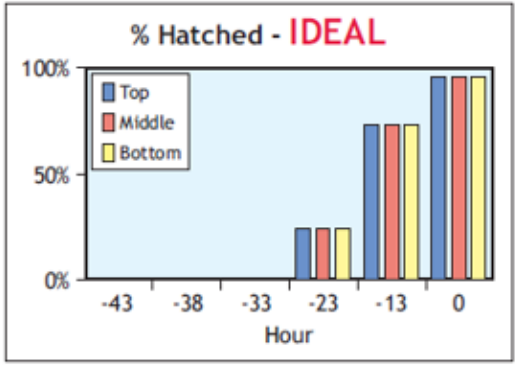
In theory: The time span between the hatching of the first and the last chick in one particular hatcher

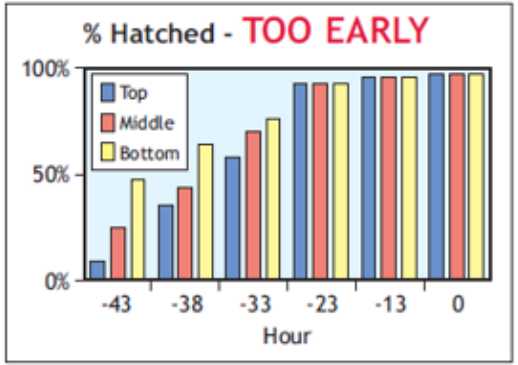
Estimating the hatch window

By counting:

For example at 36, 24 and 12 hours before intended pulling time

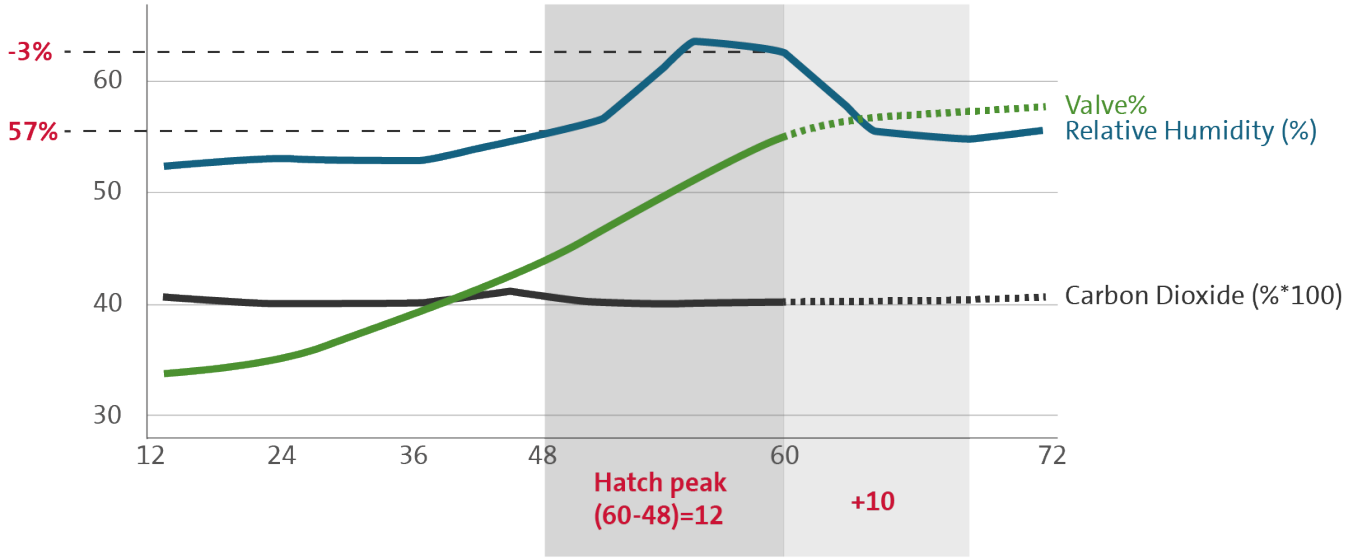
- Disturbs hatcher climate
- Counting 1 basket is not enough
- Takes time





Estimating the hatch window

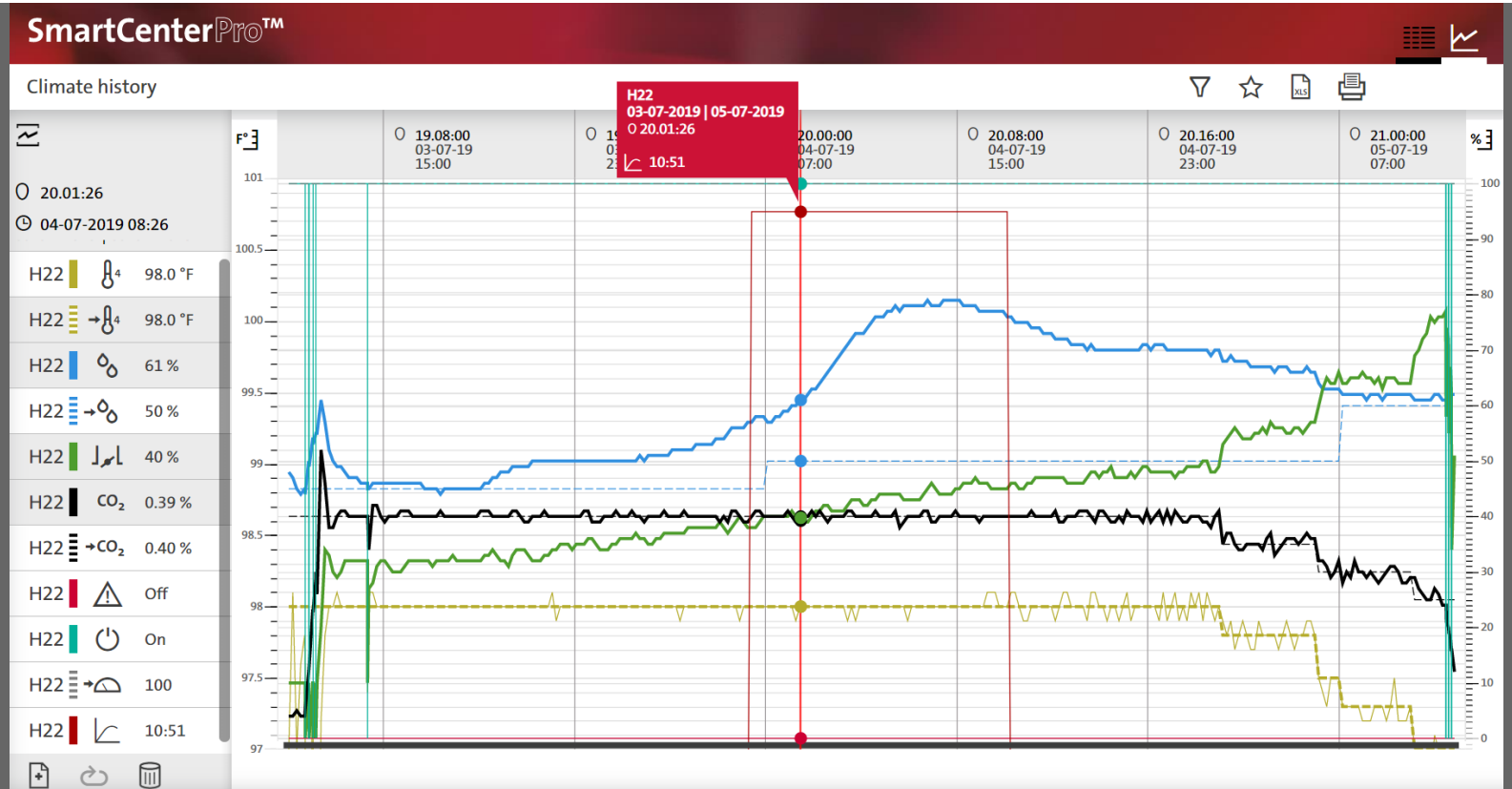
By using the RH%-curve:



Set point carbon dioxide 0.4%
Pattern of humidity and valve in one hatching cycle

Hatch window

Estimating the hatch window



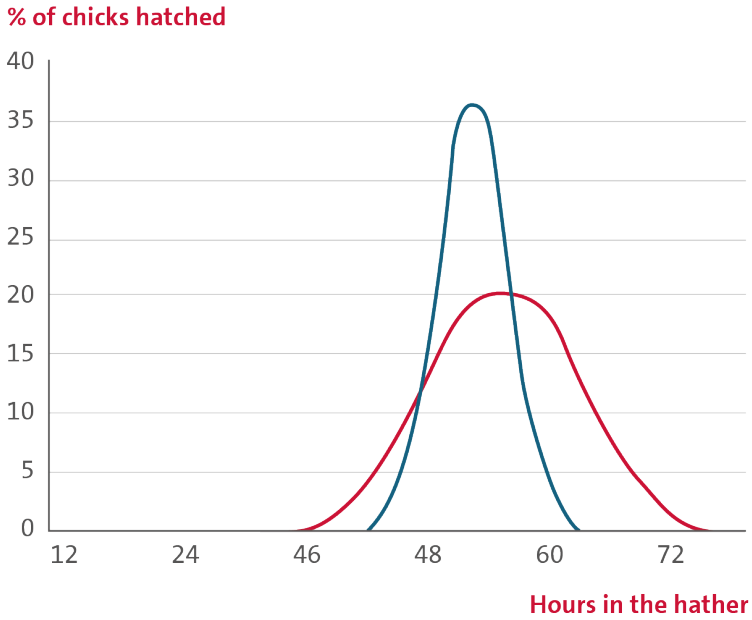
Estimating the hatch window

By observation of chicks and empty shells:

Not just for judging correct pulling time; variation says something about hatch window

Importance of hatch window

Correct pulling time only possible with short hatch window



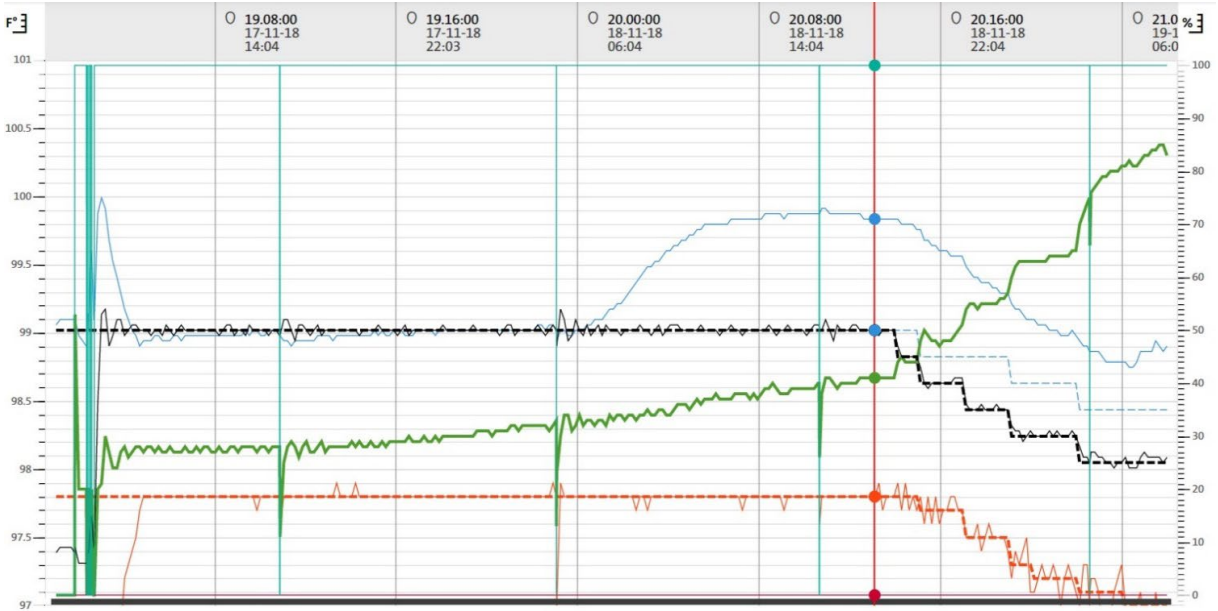
Importance of hatch window

If hatch window is too wide (> 24 hours):

- Late pulling of early chicks:
  - Dehydration → weight loss
  - Late access to feed and water → no uniform start at farm
- Early pulling of late chicks:
  - Still wet → chilling
  - Lazy and inactive
  - Live pips → lower hatchability

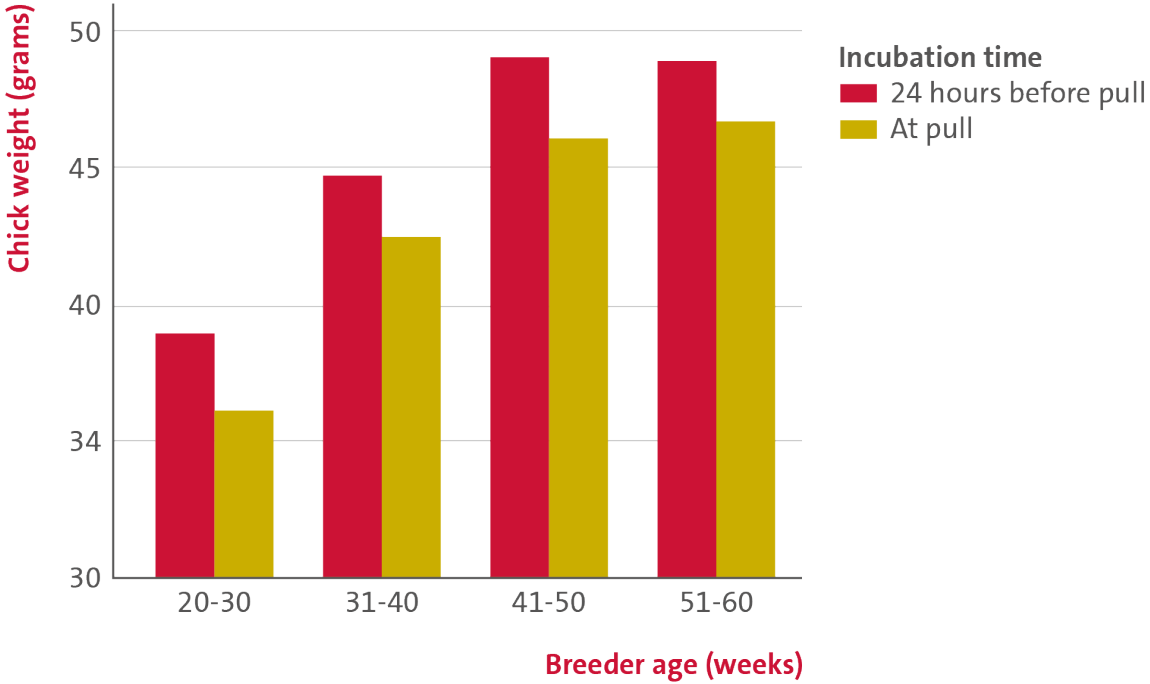
Importance of hatch window

Timing of set-point changes



Importance of hatch window

Weight loss in the hatcher:



Poll

True or false? The hatch window starts on the breeder farm

Hatchery Talks

Incubation time

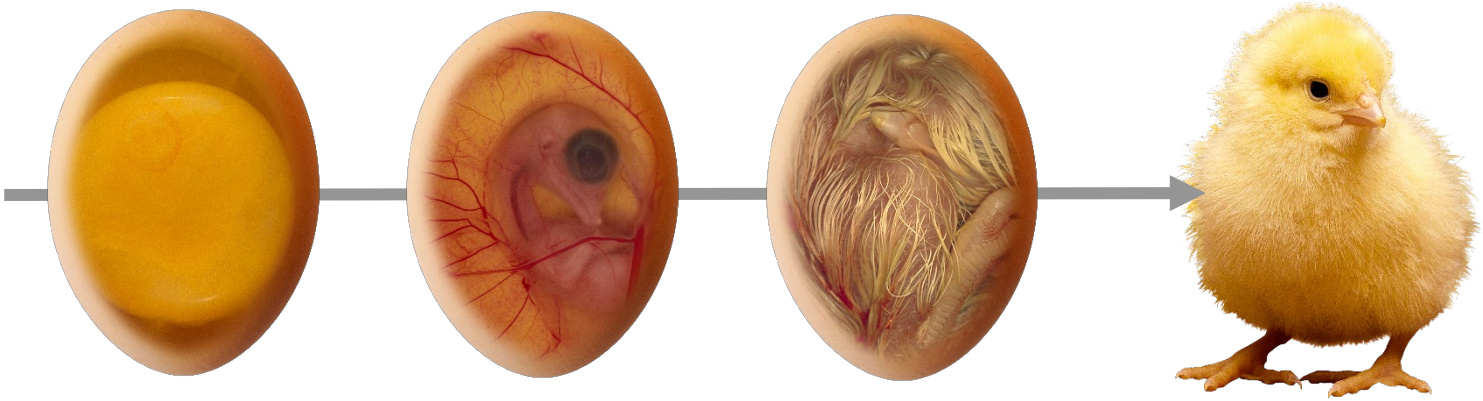
Incubation time

- **The hatch window is actually a consequence of variation in incubation time.**
- **For chicken eggs incubation time is said to be 21 days + … hours.**
- **But what determines incubation time?**

Incubation time

Incubation time is affected by:

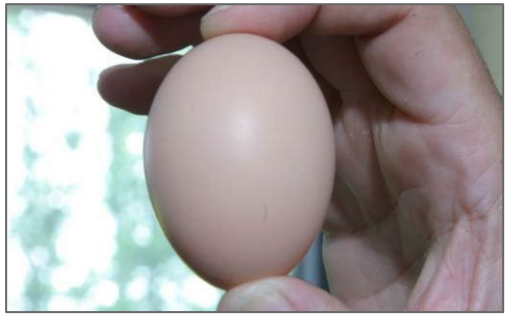
1. Egg characteristics
2. Egg handling
3. Incubation conditions (mainly temperature)

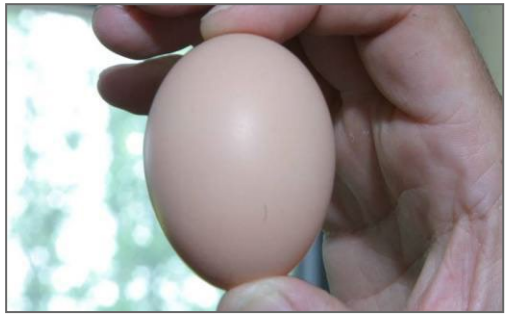


Egg characteristics and incubation time

Natural variation in egg factors

1. Embryo stage at oviposition
2. Egg size
3. Fertility





Egg handling and incubation time

Stage of embryo affected by:

1. Post-lay egg cooling
2. Temperature from farm to setter
3. Egg storage
   - 1 day storage = +1 hour of incubation
   - Long storage = low egg temperarture

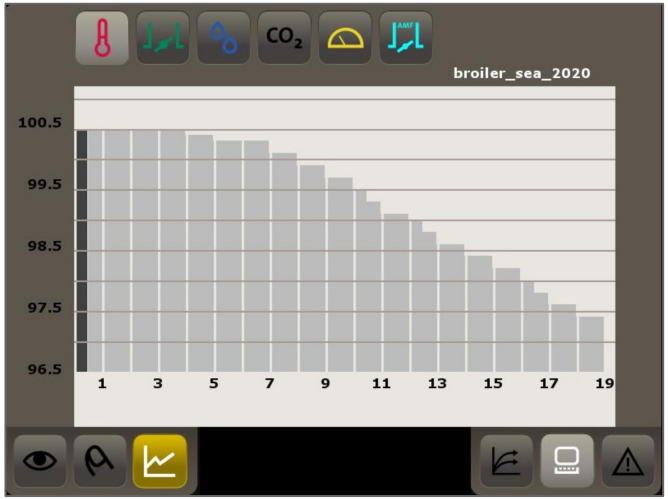
Post-lay egg cooling

Blastoderm continues to develop as long as internal egg temperature is > 25 °C / 77 °F

Incubation and incubation time

Incubation time affected by temperature:

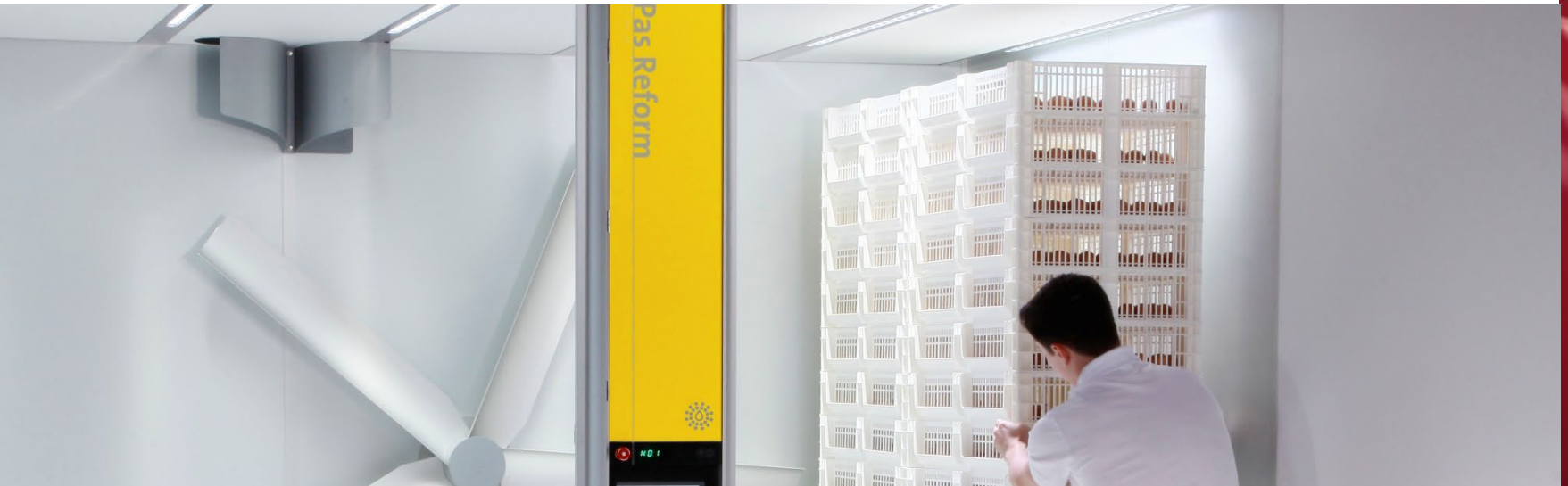
1. Time to reach incubation temperature
2. Embryo temperature



Hatch window

Poll

True or False? The hatch window is mainly determined by the hatcher climate and ventilation rate



Hatchery Talks

Narrowing the hatch window

Narrowing the hatch window

Incubation time is affected by:

1. Egg characteristics
2. Egg handling
3. Incubation conditions (mainly temperature)

For a narrow hatch window these factors should be as uniform as possible within a batch

Narrowing the hatch window

Before setting:

1. Create uniform and optimal post-lay cooling of eggs (nest & tray type, collection frequency, temperature)
2. Avoid temperature to raise during further egg handling and transport
3. Uniform storage conditions

Uniform storage conditions

- Not against wall
- Not close to cooler or heater
- Some airflow

Narrowing the hatch window

At setting and start of incubation:

1. Set uniform eggs (breed, flock age, size, storage)
2. Balanced loading of partially filled setters (air flow)
3. Pre-warm/pre-heat

Incorrect:

Correct:

Pre-warming/pre-heating

Aim: **To ensure uniform internal egg temperature of 25 - 27 °C = 77 - 81 °F prior to onset of incubation:**

- fast and uniform start of embryonic development
- avoid condensation**!**

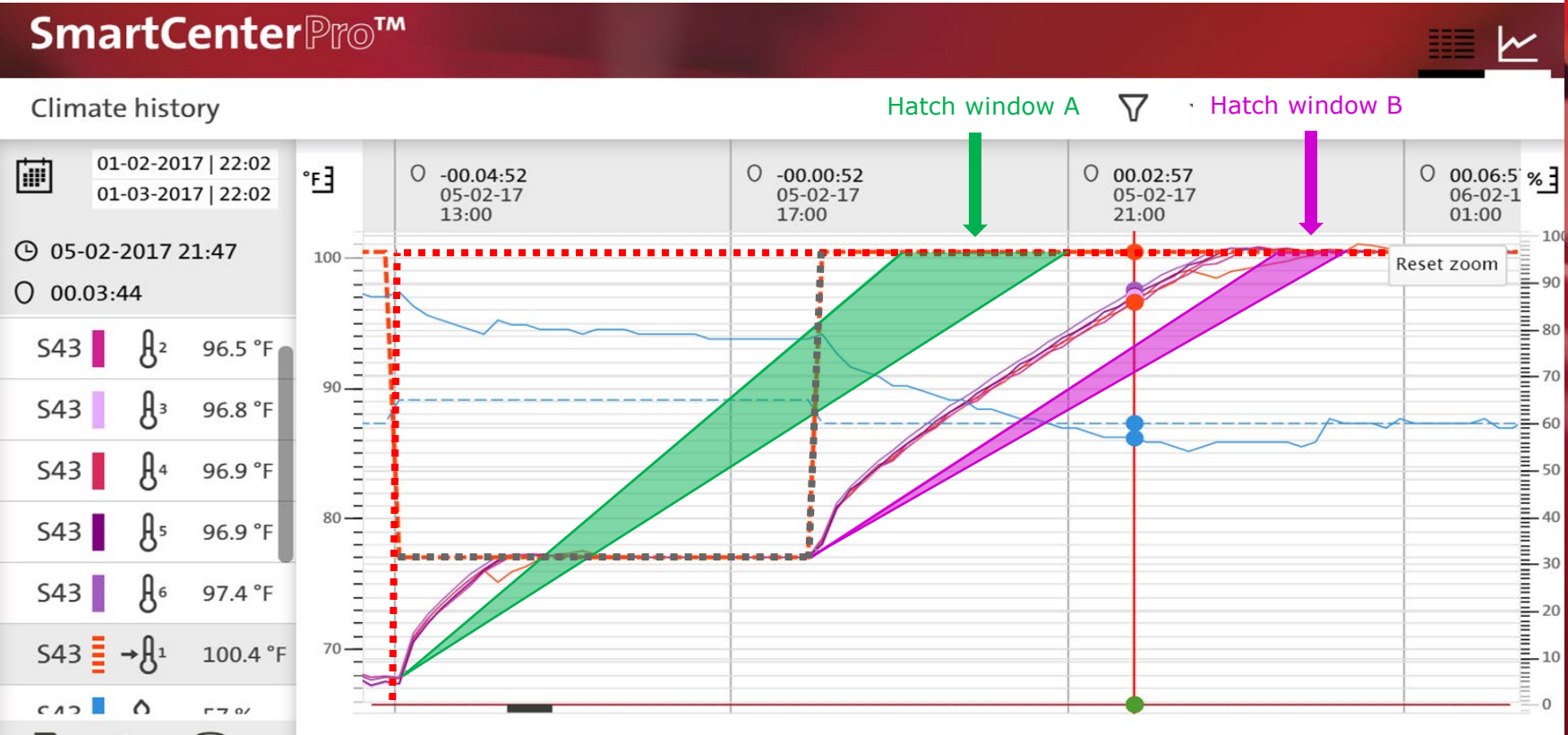
Prewarming: **In the setter room for a minimum of 12 hours**

Preheating: **In the setter for 5 – 8 hours**

Important: **Too short → widens the hatch window!**

Hatch window

Pre-heating inside the setter



Narrowing the hatch window

During incubation: Uniform temperature

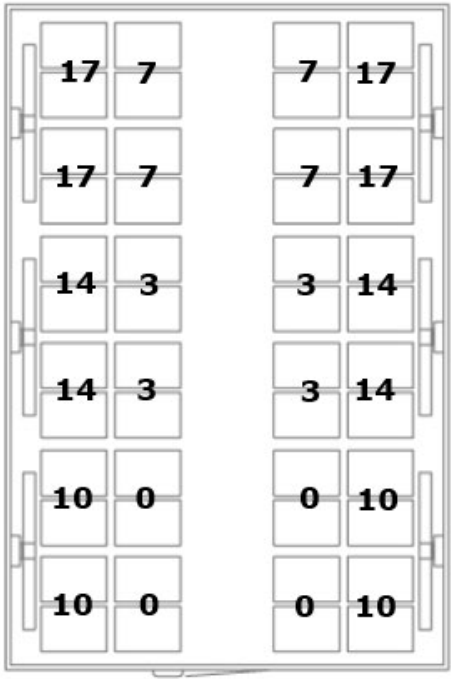
1. Modular single-stage for homogeneous temperature
2. Avoid over-ventilating during first 10 days; ensure clean-air plenum temperature approx. 25 °C
3. Avoid active humidifiers
4. Proper maintenance (fans, seals, leakages etc.)
5. Correct air pressure at inlet and exhaust

Hatch window

Homogeneous temperature

Hatch window

Multi-stage incubation



Hatch window

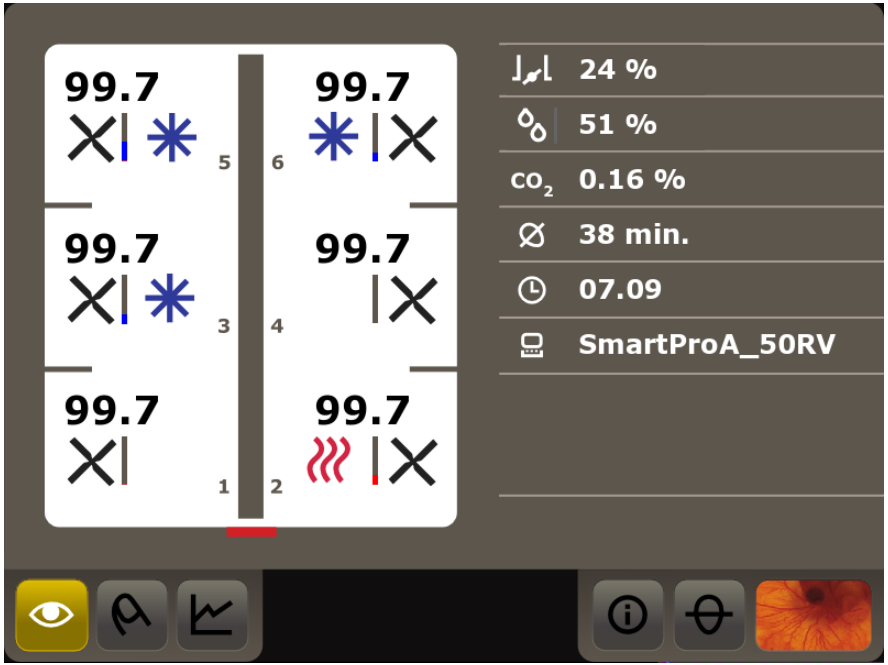
Heating/cooling & air flow

For homogeneous temperature

Hatch window

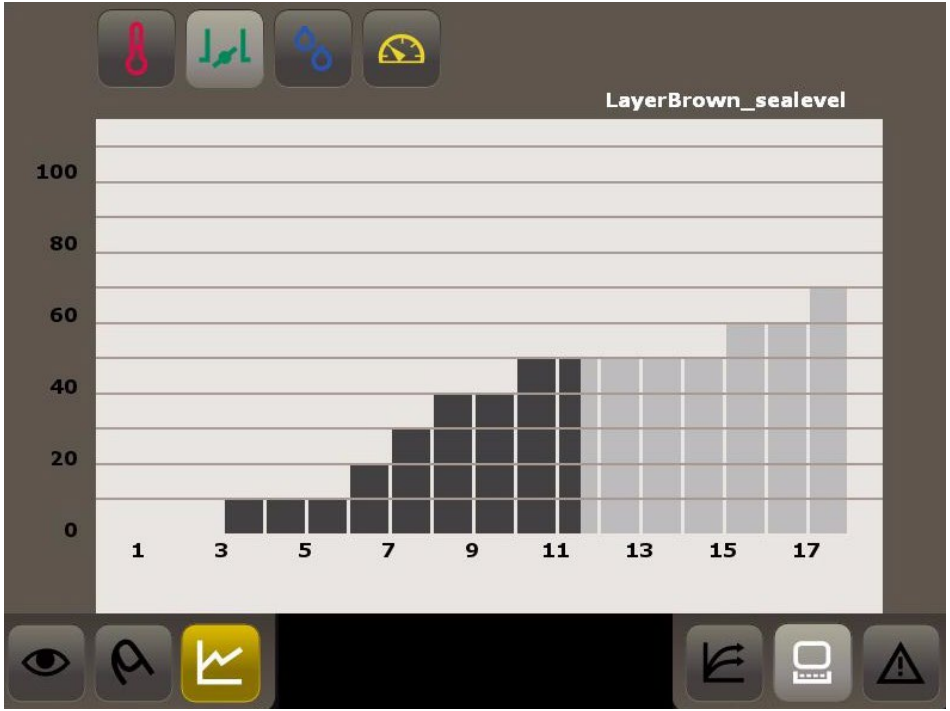
Modular design

For homogeneous temperature



Hatch window

Ventilation & air temperature



25 °C

Hatch window

Humidifying

Evaporation of water takes energy

Avoid local cold spot; especially during the first 10 days of incubation

Narrowing the hatch window

At transfer and during hatch:

1. Removal of ‘cold’ eggs; enough eggs in basket
2. One batch/hatcher (breed, flock age, size, storage)
3. Balanced loading of partially filled hatchers (air flow)
4. Avoid active humidifiers and over-ventilating

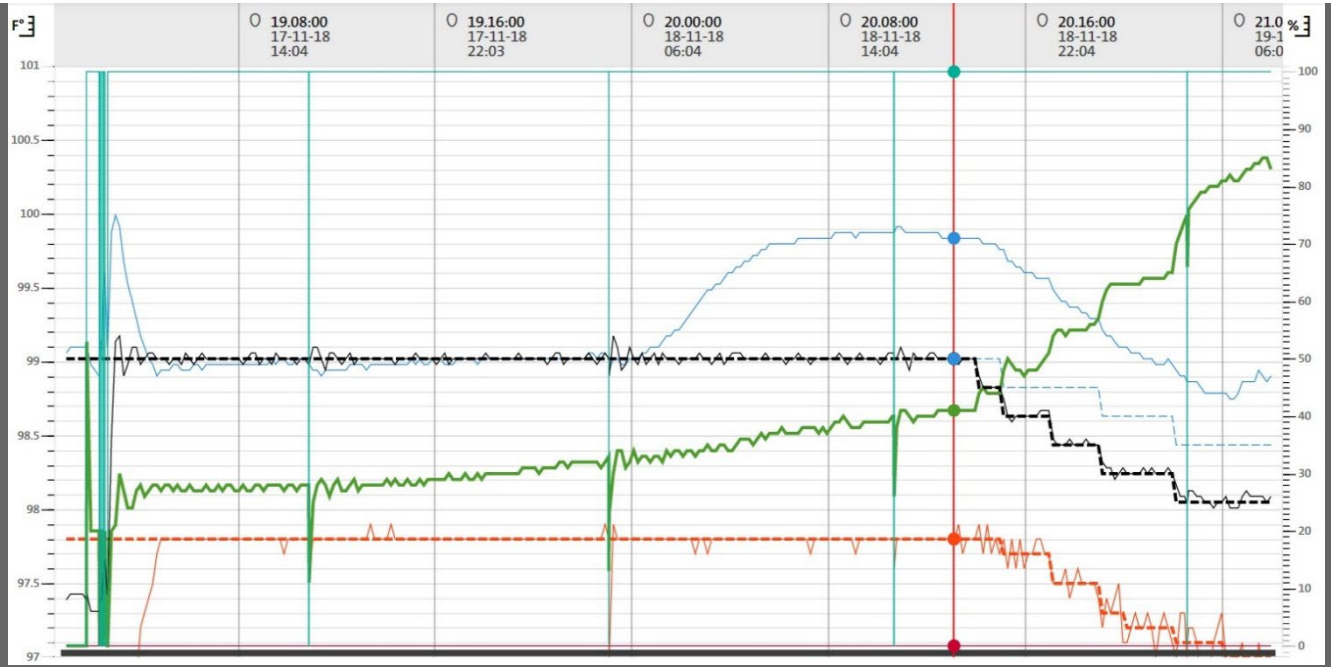
Hatchery Talks

Summary

Summary

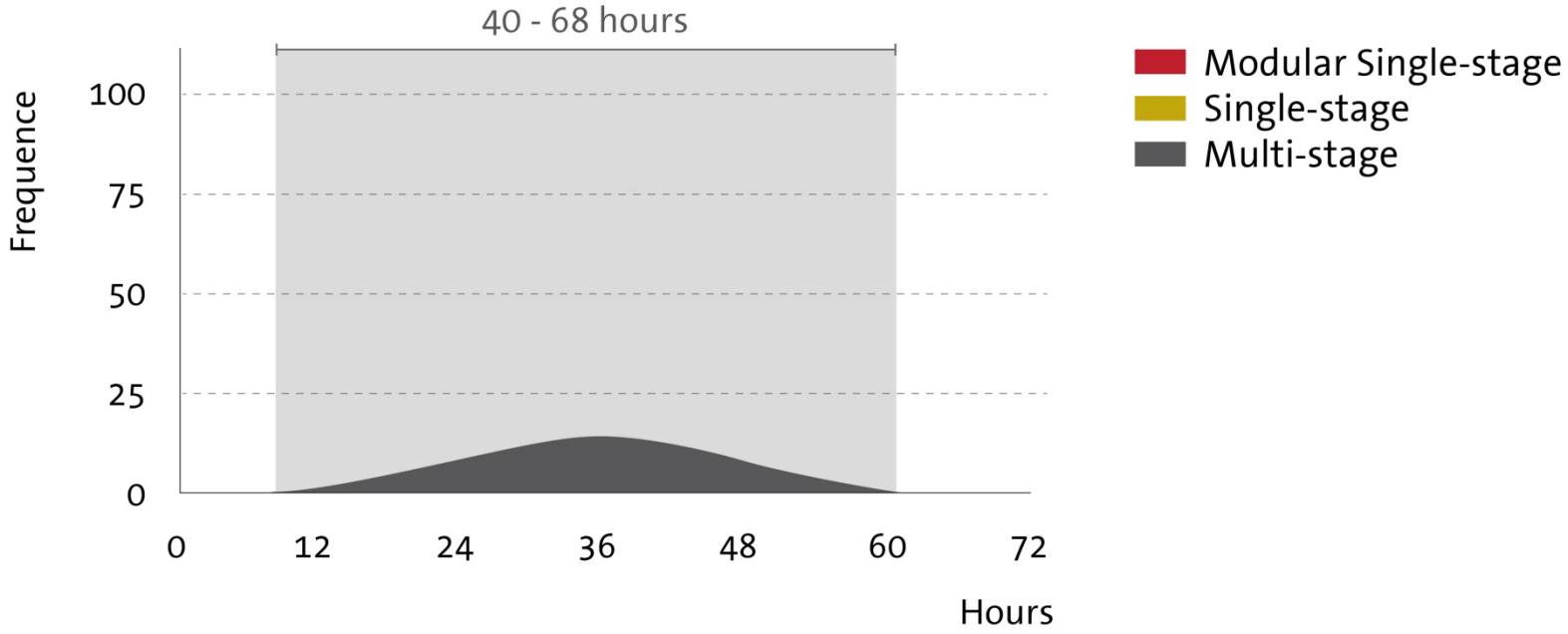
Result of good management

Chicks will hatch when they are ready!



Summary

Good management & homogeneous incubation temperature for a narrow hatch window



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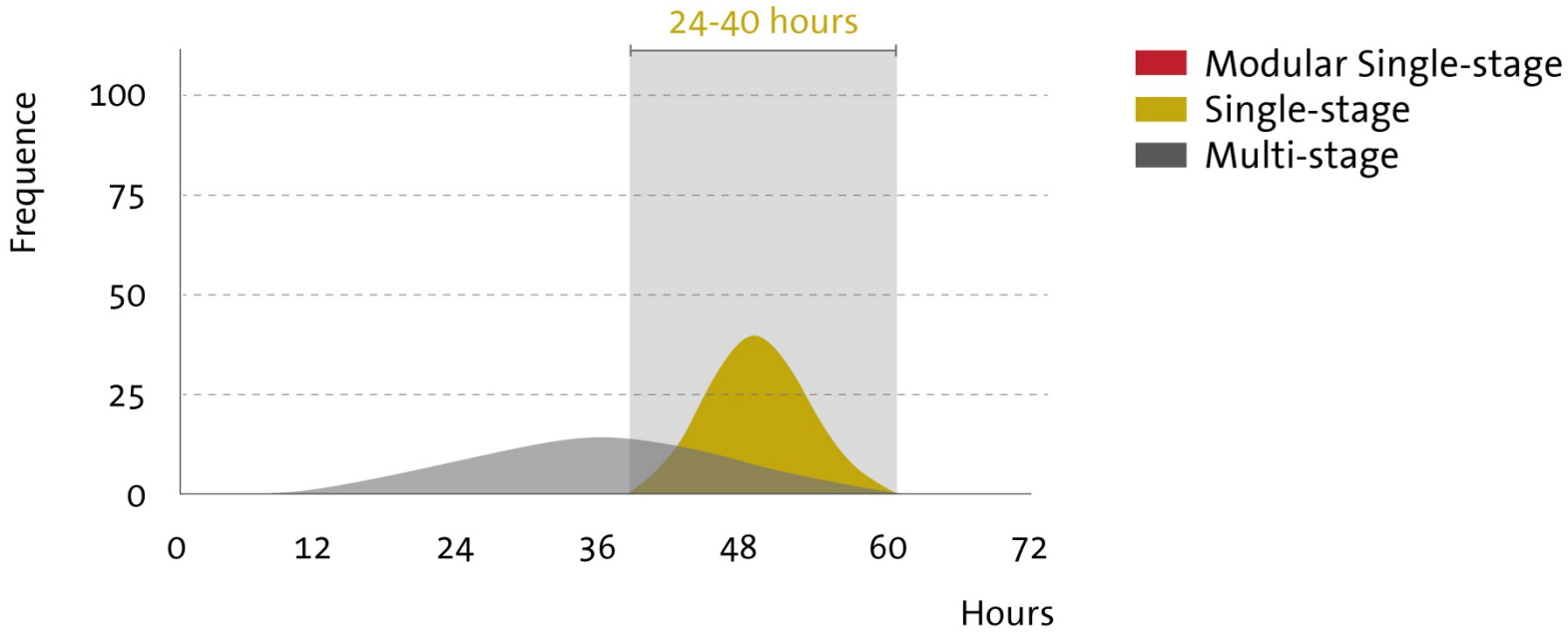

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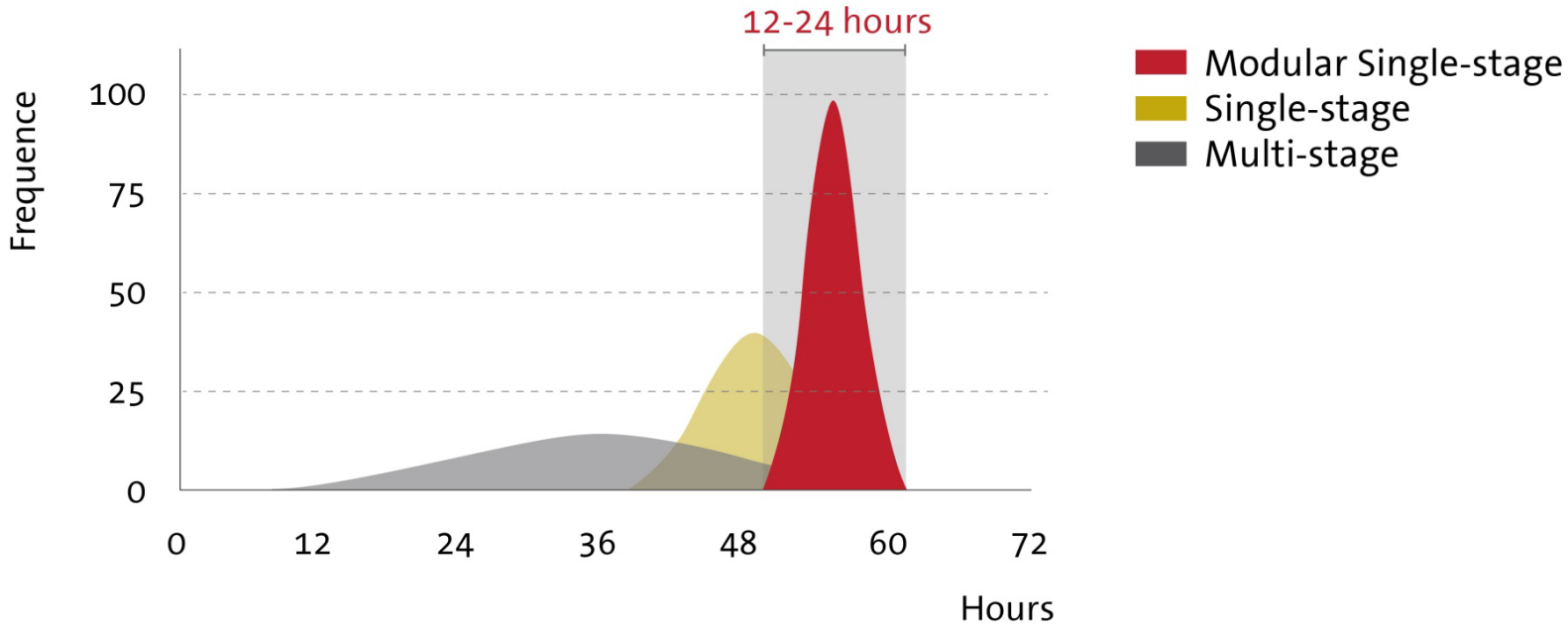

Thanks for watching!

- Webinar-replay + hand-out
- Knowledge section at our website

See you at our next webinar!