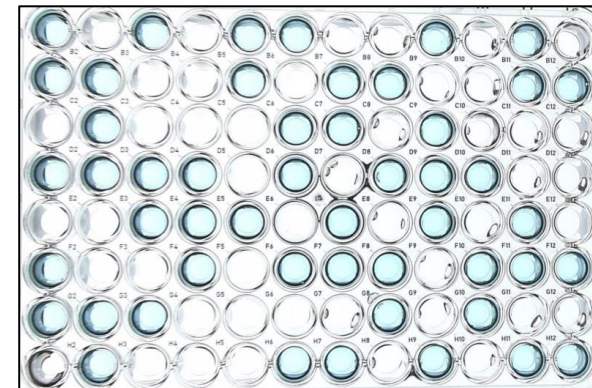


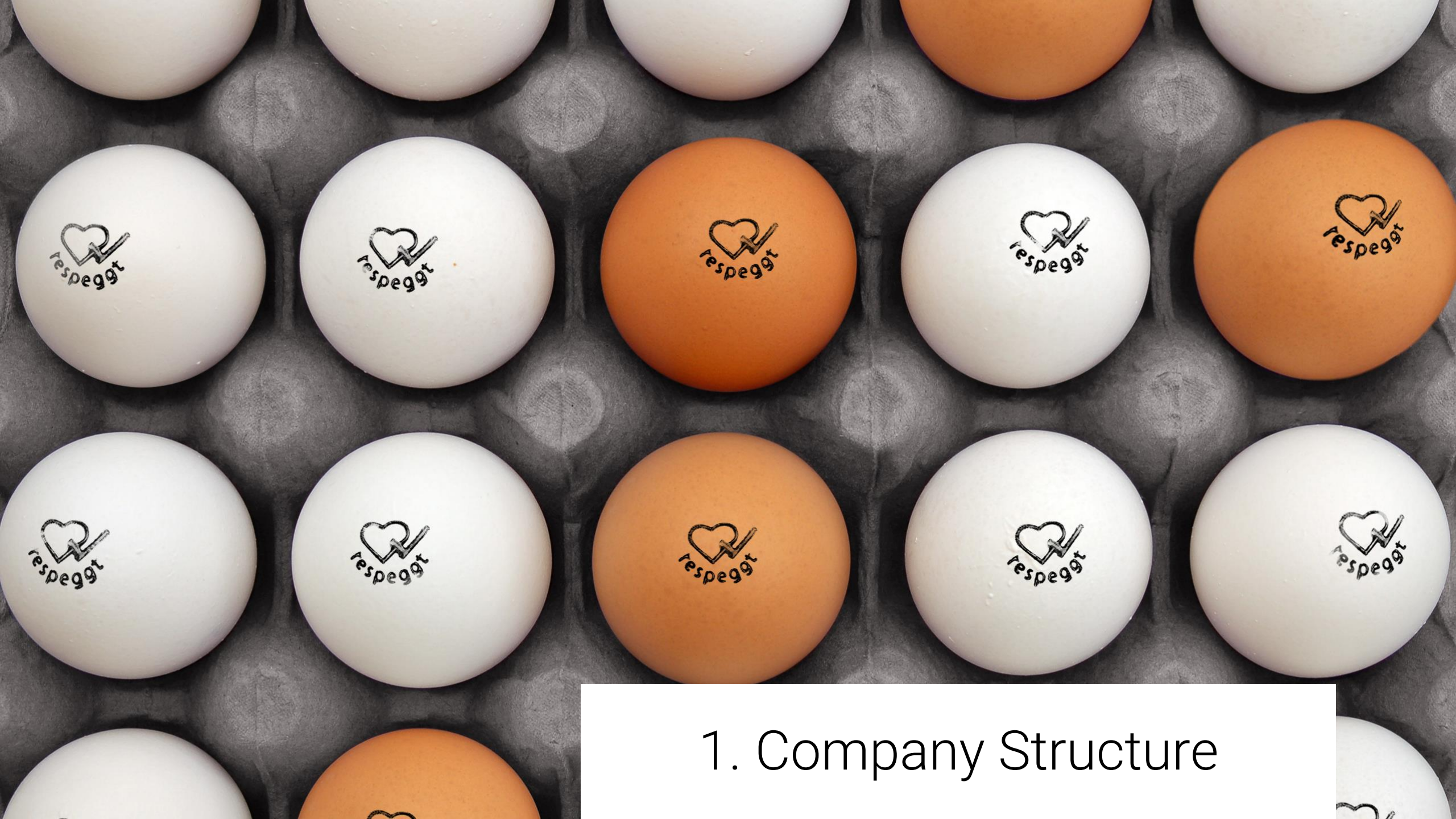


In-ovo sexing with the SELEGGT process

[REDACTED] – 01. November 2022



- 1 / Company Structure (respeggt and SELEGGT)
- 2 / The SELEGGT process
- 3 / respeggt Supply Chain Verification
- 4 / Marketing
- 5 / Example of a cooperation: respeggt & Lohmann Germany
- 6/ Status Quo in Europe
- 7 / Recommendation for the UK



1. Company Structure

1. Company structure



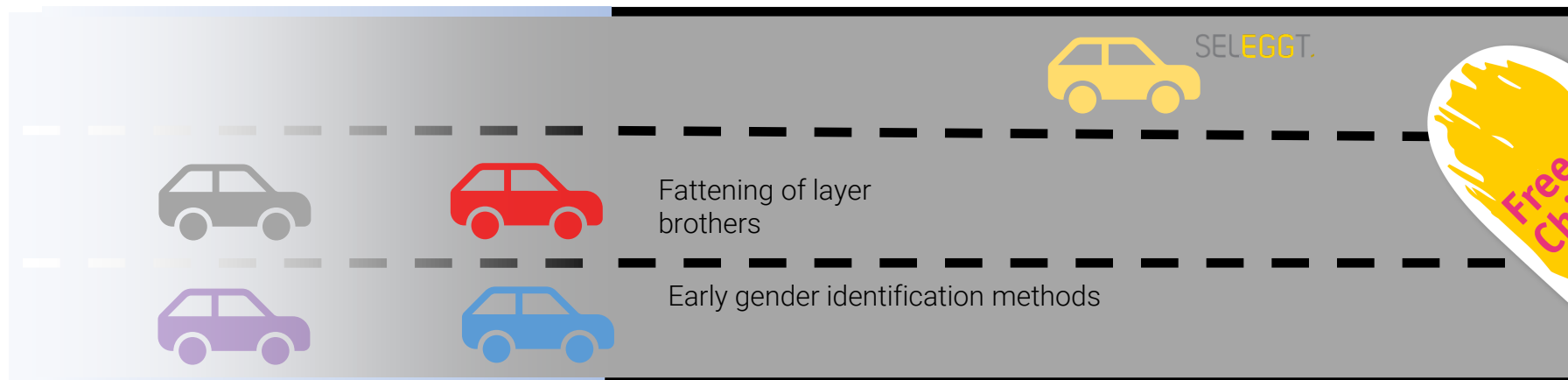
Technological company:

1. Development of gender identification in the hatching egg, e.g. SELEGGT process (basic research by the University of Leipzig)
2. Research on gender identification before the 6th day of incubation process

Service orientated company:

1. Gender identification in the hatching egg
2. Supply chain verification

- Independent companies
- No exclusive agreements with system partners





2. The SELEGGT process

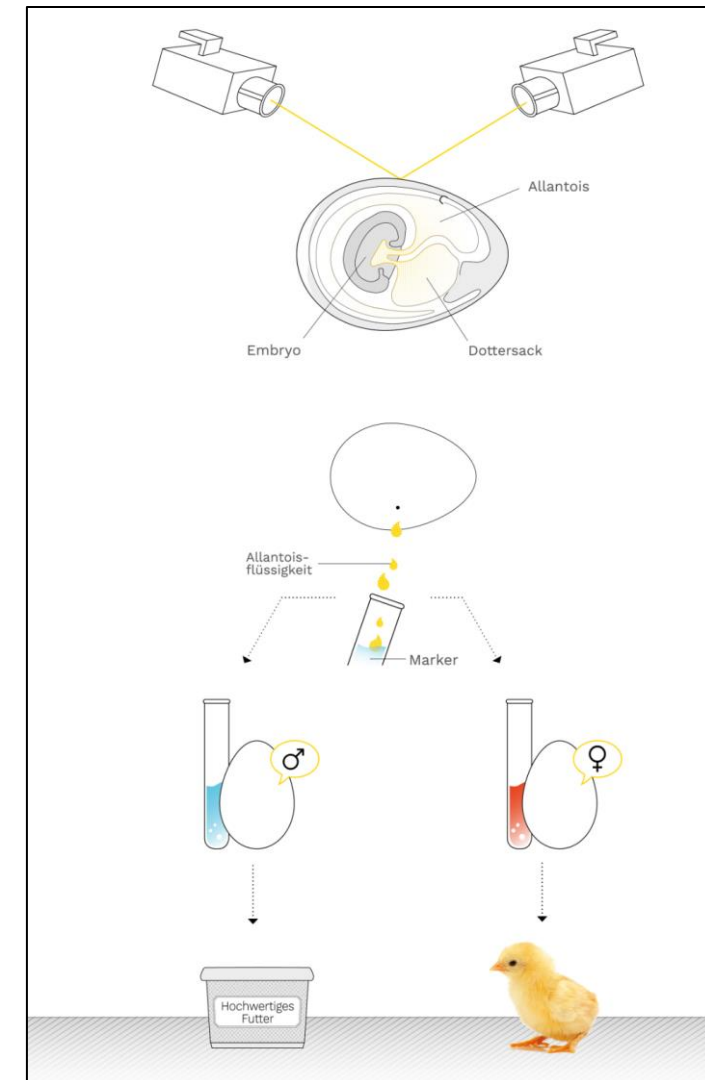
2. The SELEGGT process

- Hormone analysis on **9th day of incubation**, before start of brain activity (day 12)
- The eggshell is perforated with a laser (0,3 mm)
- The sample of **allantoic fluid** is taken by suction
- The hole in the eggshell is closed with **bee's wax**
- Analysis using a **patented marker**
- Hatching eggs are sorted into male and female:
 - Male embryos are used to produce **high quality protein feed**
 - Female chicks hatch on day 21 of incubation

9 days old
Size = 3 cm

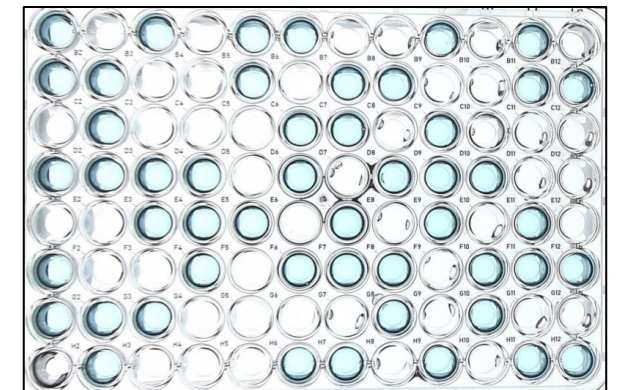


15. Days old
Size = 15 cm



2. The SELEGGT process

- Individual egg treatment
- Non-Invasive extraction of the allantois fluid
Laser, no needle, Desinfection
- SELEGGT method is practicable for
all genetics and egg colours
- Single component Circuit, Lab and Sorter
for maximal safety and scalability



2. The SELEGGT process

SELEGGT Circuit → The Machine

- A Circuit can analyse 1 hatching egg per second (capacity \approx 4 Mio female chicks per year)
- **Accuracy** \approx 97 - 98 %
- Since 2019, a total of 9 million chicks „free of chick culling“
- **Status running Machines:**

2 x SELEGGT Circuit in the largest hatchery in Europe

Verbeek Broederij BV., Netherlands

1 x SELEGGT Circuit in the Lohmann hatchery in Ankum, Germany

1 x SELEGGT Circuit in respeggt sexing centre in Barneveld, Netherlands

1 x SELEGGT Circuit in respeggt sexing centre in Wader, Netherlands

2023: 9 SELEGGT Circuits in production



SELEGGT CIRCUIT

Video of SELEGGT process: <https://www.youtube.com/watch?v=eGkGxQ-nBDc>

2. The SELEGGT process

Further automation of the process such as:

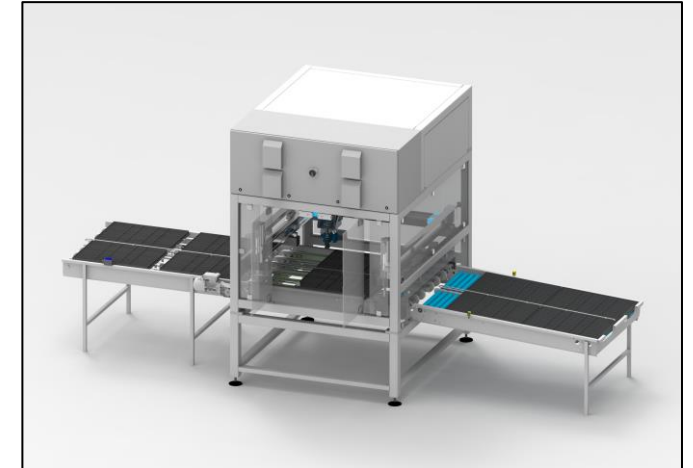
- Automatic candling and egg quality detection (2022)
- Automated sorting robot (2022)
- Automated tray infeed and outfeed (2023)

New personnel requirements:

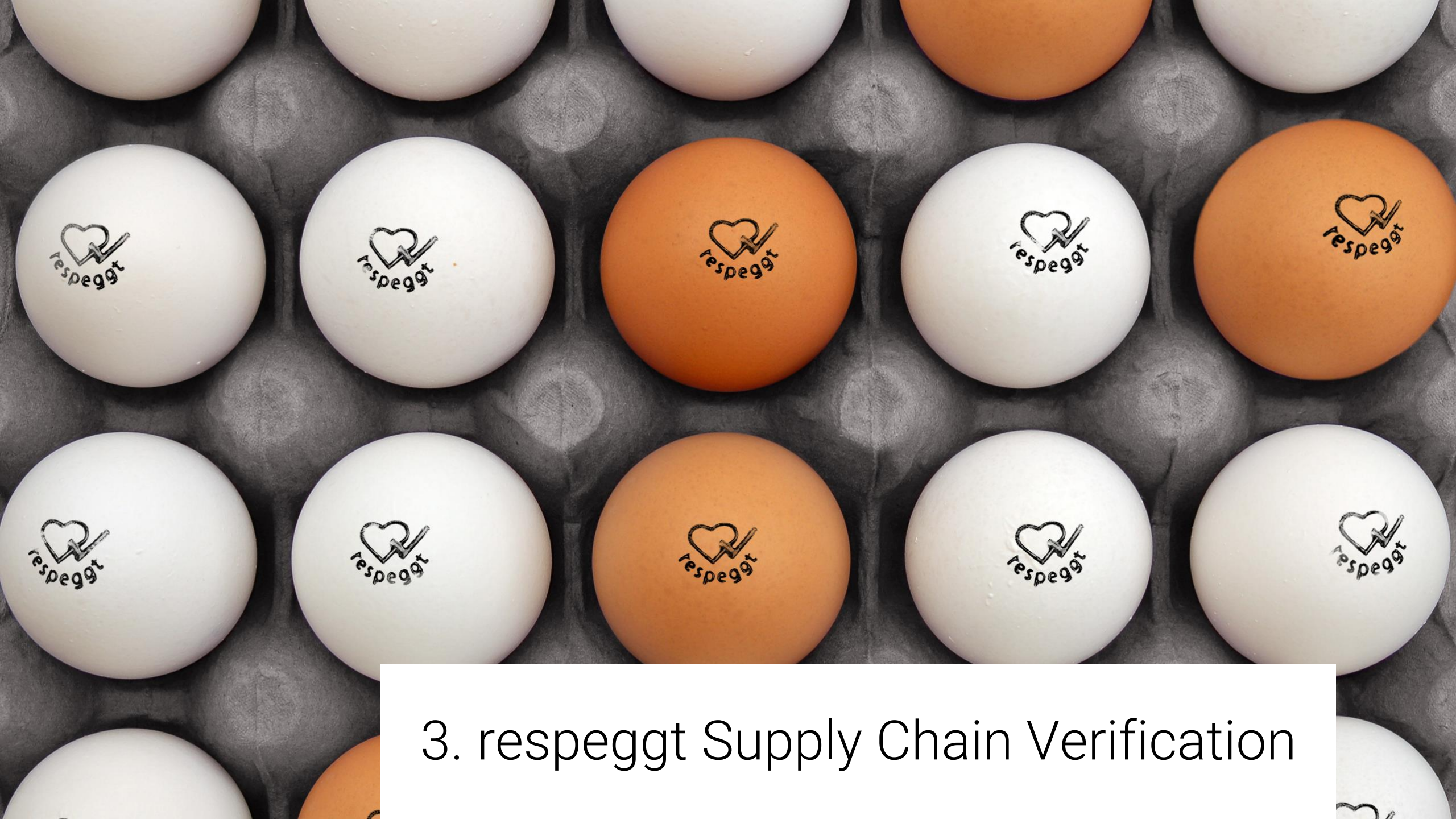
shift supervisor + 3 persons
(1 lab, 1 Circuit, 1 sorting robot)

→ 2 persons less

→ No contact with the eggs



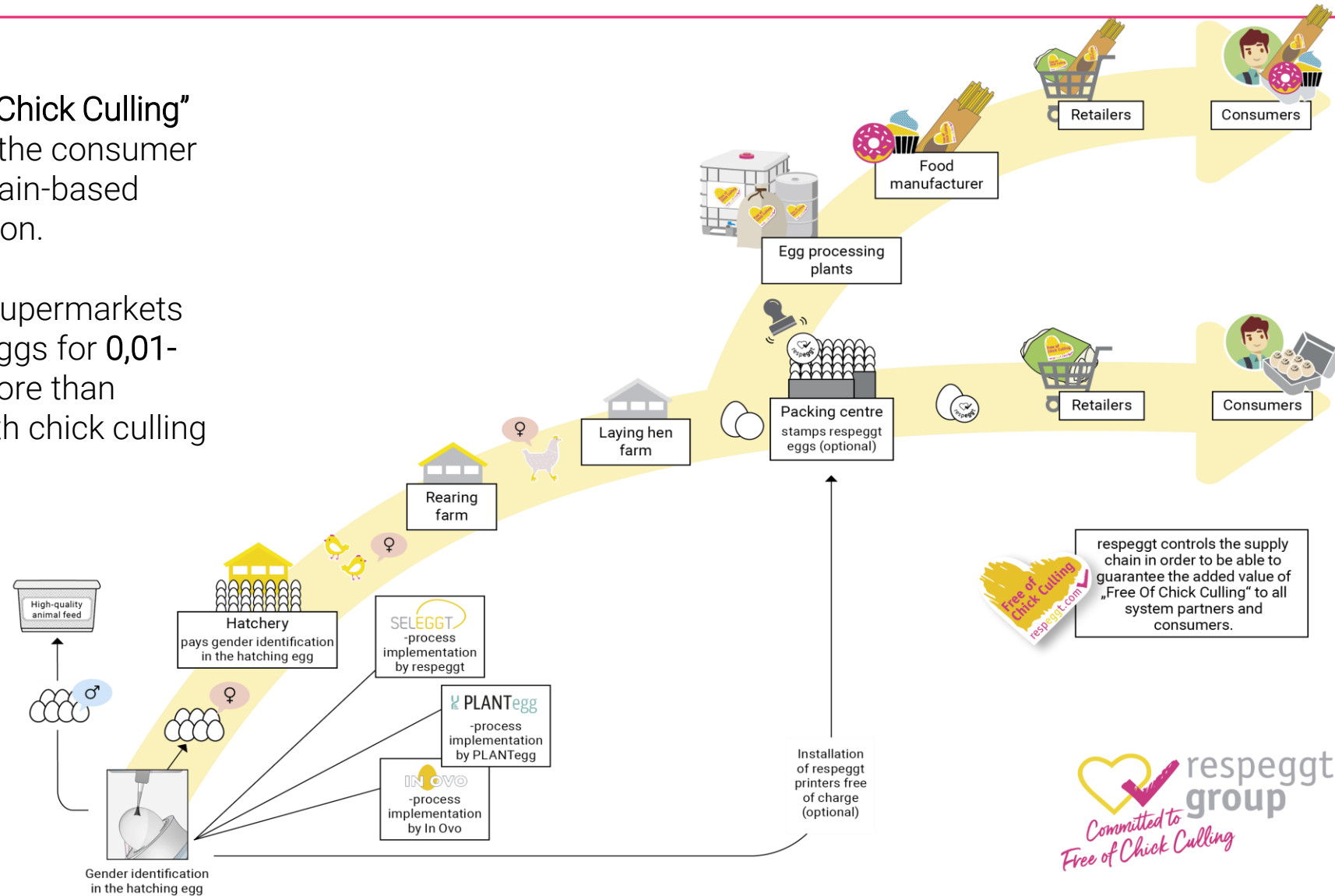
SELEGGT Sorter



3. respeggt Supply Chain Verification

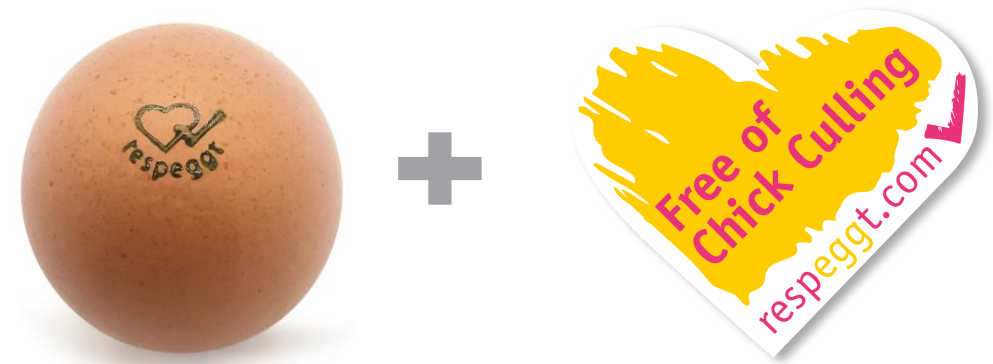
3. respeggt Supply Chain Verification

- The promise “Free of Chick Culling” can be guaranteed to the consumer by applying a blockchain-based supply chain verification.
- Market observation: supermarkets are selling respeggt eggs for 0,01-0,03€ per table egg more than conventional eggs with chick culling



3. respeggt Supply Chain Verification

- This guarantee can be visualized by **marking respeggt eggs** with the respeggt stamp and by printing the **heart-shaped respeggt label “Free of Chick Culling”** on egg boxes and food stuff.
- The added value “Free of Chick Culling” can be checked by the consumer on <https://www.respeggt.com/en/>



**Are your eggs “Free of Chick Culling”?
Check for yourself!**

Since we control the complete supply chain from the hatchery to the packing centre, you can simply check our website to see both whether your eggs really come from a respeggt laying hen and which solution has been applied to avoid chick culling.

Are your eggs “Free of Chick Culling”? Check for yourself!

Type of rearing ▾

Country of origin ▾

Laying farm

Check producer code now

3. respeggt Supply Chain Verification

Installation of the respeggt printer is free of charge
for the packing centre and other partner





4. Marketing

4. Marketing

The respeggt heart logo on egg packaging.
A selection

REWE



famila



JUMBO



MIGROS

PENNY.



coop



Combi
Kaufland



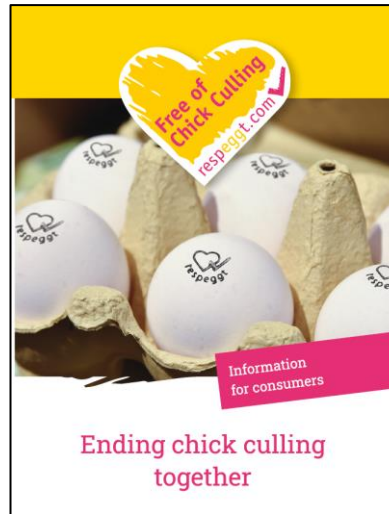
4. Marketing

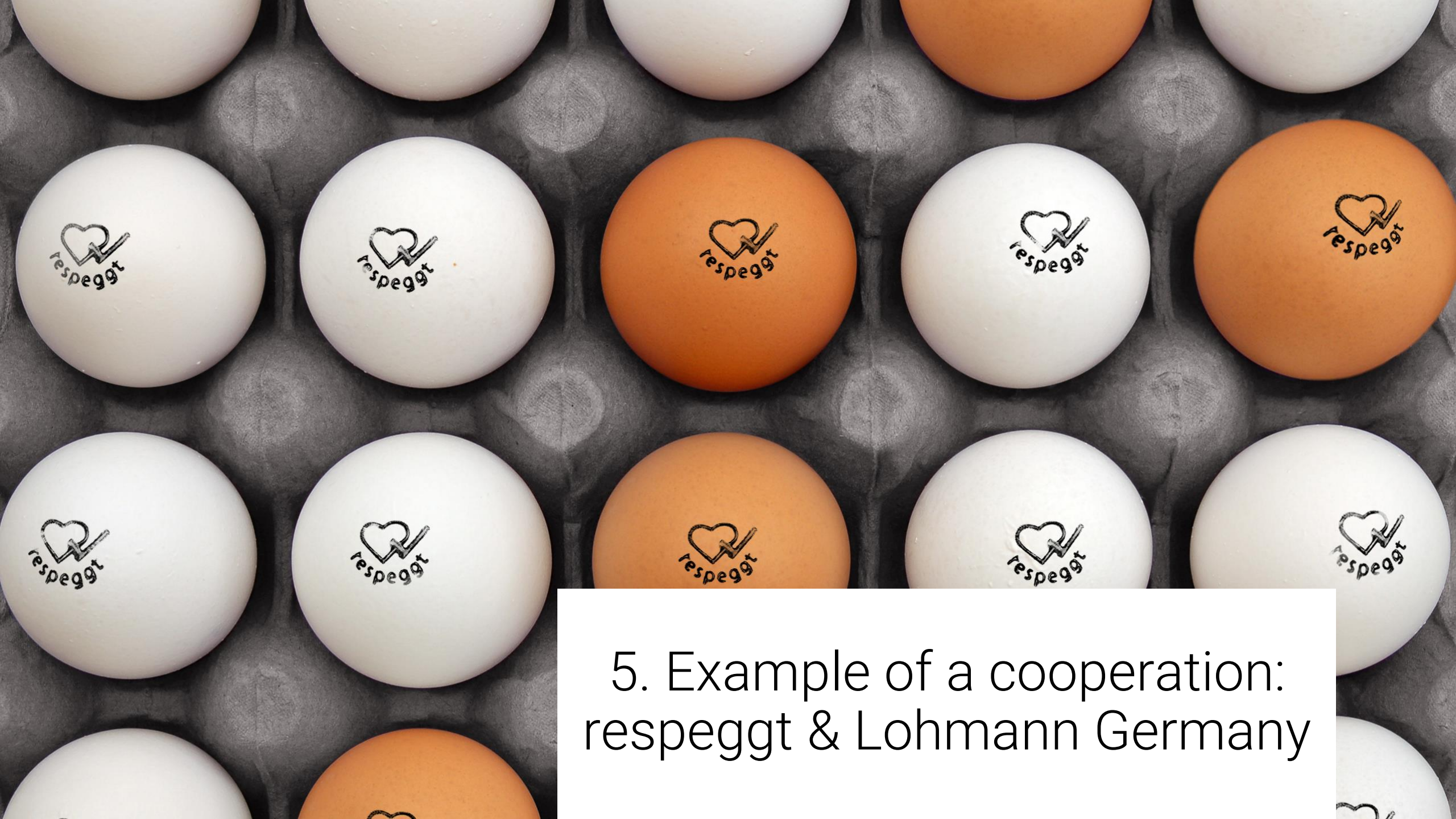
The respeggt heart logo is also available for foodstuffs. A selection



4. Marketing

- International **LinkedIn** channel
(www.linkedin.com/company/respeggt-gmbh)
- **Facebook** for each country
- **Consumer website** currently in 3 languages
- **Flyers (B2C)** and other materials that can be used in supermarkets, fairs etc.
- **Flyers (B2B)** and other materials that can be used by system partners
- Active presence of respeggt at **poultry fairs and conferences**





5. Example of a cooperation:
respeggt & Lohmann Germany



5. Example of a cooperation: respeggt & Lohmann Germany

- November 2018: first eggs “Free of Chick Culling” at REWE retailer in Germany
 - 2019-2021: Barneveld; cooperation with Ter Heerdt, Verbeek and others
 - July 2022: contract signed between respeggt and Lohmann
 - August 2022: Installation of the Circuit in Ankum
 - September 2022: hatching of first respeggt chicks with 99% accuracy
- 424,576 respeggt chicks hatched at Lohmann so far
- average sexing error only 1,8%!



6. Status Quo in Europe

6. Status Quo in Europe

Germany:

- Up from 01.01.2022 no German hatchery is allowed to cull male chicks. There is no latest day for the gender identification defined. Up from 01.01.2024 hatcheries in Germany can only perform a gender identification in the hatching egg before day 7 of incubation.
 - Many retailers have committed to change all fresh eggs in their shelves to “Free of Chick Culling” eggs
 - A new research was commissioned by the German agricultural ministry to define the beginning of pain perception of a chick embryo. The study by the TU Munich will be finished in the beginning of 2023 and will focus on day 7-14 of incubation
 - On the 31.03.2023 the German government will decide if the law forbidding a gender identification after day 6 of incubation by the 01.01.2024 can remain in place.
-
- The law has increased the demand of brother layer fattening immensely because there is no technology for in-ovo sexing available today that can operate according to the law up from 2024. Unfortunately, there are no regulations on how to keep brother layers, which is why problems are increasingly coming to light. Due to the increase in feed prices brother layer fattening has dropped drastically in the middle of 2022.
 - In-ovo sexing for the German market is mostly practiced in the Netherlands. Only two German hatchery have in-ovo sexing technology installed (1x Cheggy, 1x SELEGGT).
 - Today respeggt eggs are mostly sold under free range housing and under barn housing

The Netherlands:

- No political action is currently foreseeable
 - Due to the high exports of chicks, laying hens and table eggs to Germany the Dutch egg sector already started to reduce chick culling
 - There are four SELEGGT machines, one In-OVO machine and one PlantEGG machine working in the Netherlands
 - A big focus in Dutch agricultural policy is on reducing emissions and co2. Therefore, brother layer fattening is seen very critically
 - **It seems that the practice of culling chicks will not be stopped by these measures.**
-
- Today respeggt eggs are mostly sold under organic housing

6. Status Quo in Europe

France:

- A law is confirmed since February 2022
- The law claims that a gender identification is allowed until the 15th day of incubation. Every hatchery in France must order a technology for a gender identification in the hatching egg in 2022 and use it up from 2023. Male “sexing-error” chicks that still hatch can be culled. Male chicks from white feathered genetics can be culled. The law is to be valid for 5 years.
- A big focus in French agricultural policy is on reducing emissions and CO2. Therefore, broiler layer fattening is seen very critically
- The law already has the effect that every hatchery in France plans to implement the hyperspectral analyses on day 15 of incubation (CHEGGY machine from AAT) because it is the cheapest technology
- Because the law still allows chicks to be culled there cannot be a communication towards the consumers of eggs “Free of Chick Culling”. In fact, chick culling is not prohibited by this law.
- **It seems that the practice of culling chicks will not be stopped by these measures.**

Italy:

- A law is confirmed that prohibits chick culling from 2026 onwards. It is neither defined what solutions should be used neither until which day in-ovo sexing is allowed.
- One of two Italian hatcheries has installed a hyperspectral analyses on day 15 of incubation (Cheggy)
- There are already 3 different table egg brands in Italian supermarket that communicate “saving male chicks”. In these cases Cheggy technology was used.
- Italian NGOs are pushing toward in-ovo sexing as the solution to end chick culling. They prefer the earliest possible day for the in-ovo sexing.
- Chick culling will not be tolerated by the government from 2026 onwards. Neither for error-male chicks nor for white feathered genetics.
- **It seems that the practice of culling chicks will be stopped by these measures.**

6. Status Quo in Europe

Austria:

- An industry agreement was defined by Zoos, hatcheries and poultry farmers.
- It seems that this agreement includes that chick culling is allowed as long as the dead day-old male chicks can be used as feed.
- All 9 Mio. dead day-old male chicks are used as feed today in Austria.
- **It seems that the practice of culling chicks will not be stopped by these measures.**

Switzerland:

- A round table of all relevant stakeholders has been organised. They decided that by 2024 chick culling should be stopped by the gender identification in the conventional sector and by brother layer fattening in the organic sector
- The round table allows a gender identification in the hatching egg until day 9 of incubation
- The round table plans to cull the male “sexing-error” chicks to use them as feed
- A letter of intend has been signed with In Ovo in the Netherlands but it seems this cooperation the cooperation has already ended and they are looking for new partners
- **It seems that the practice of culling chicks will not be stopped by these measures.**
- Today respeggt eggs are mostly sold under free range housing

EU

- In the Green Deal and Farm to Fork strategy the EU Commission decides whether there should be an EU law banning the culling of male chicks.
- The French and German government as well as several NGOs are supporting this idea
- **There is a rising awareness of the topic in Spain, Denmark and Norway. respeggt is receiving many requests. But there is a lot of concern about rising prices in the industry.**



7. Recommendation for the UK



7. Recommendation for the UK

Goal:

- Ending chick culling in the UK

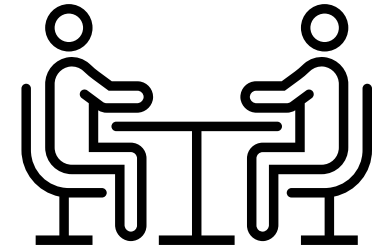
Proposed procedure:

- **respeggt** installs equipment (SELEGGT Circuit, SELEGGT Lab, SELEGGT Sorter) at its own expense in UK hatcheries
- **respeggt** pays and supervises staff for SELEGGT process
- **Hatcheries** provide a separate room, electricity and water & the required quantities of hatching eggs
- The hatching eggs/chicks always remain the property of the **hatcheries**
- **Hatcheries** offers chicks and pullets “Free of Chick Culling” for the UK market

7. Recommendation for the UK

Conditions:

- respeggt invoices the hatchery a **price per female respeggt hatching egg**
- A **minimum amount** of female hatching eggs per year per hatchery is defined in the contract



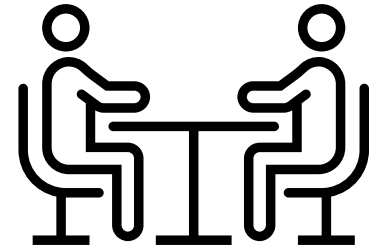
Benefits:

- Staff used for SELEGGT process will be paid by respeggt
- Independence of genetics, suitable for all colours
- Earliest possible in-ovo sexing technology
- Supply chain verification for the promise “Free of Chick culling” is included in the price
- **0,05 € / laying hen** compensation from respeggt to the laying hen farm, if the SELEGGT process was used to end chick culling and all documentation was provided
- Use of respeggt label and stamp incl. marketing support

7. Recommendation for the UK

Why do we advise against buying the machines?

- Within SELEGGT there are:
 - regular improvements of the machines
 - permanent research
 - customized adjustments according to practical experience
- Within the industry there are:
 - a large number of research projects
 - Changes in scientific knowledge about pain perception
 - New technological developments
 - major changes in prices



Thank you for your attention!



respeggt group – „Free of Chick Culling“
www.respeggt.com – www.seleggt.com