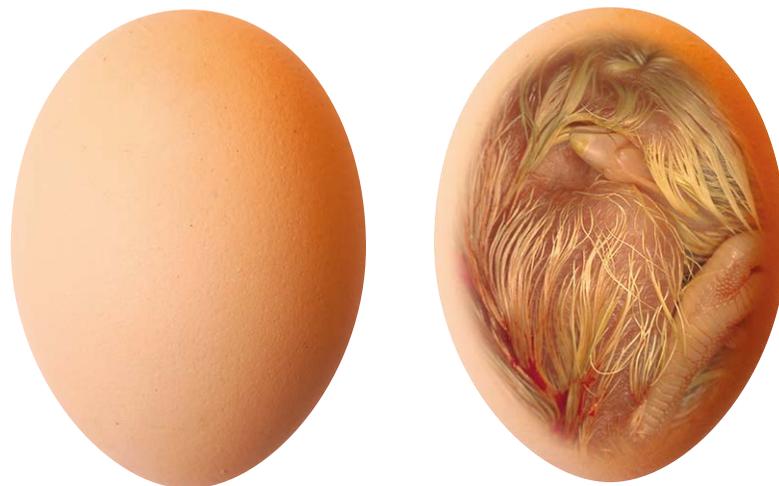


SmartVac



Next generation in-ovo vaccination and nutrition

Royal Pas Reform has developed
an advanced technological
solution to deliver safe and
effective in-ovo vaccination and
nutrition: SmartVac



Royal Pas Reform announces the next step in early nutrition and animal welfare friendly production practices.

After the successful launch of SmartStart™ post-hatch feeding for hatcheries worldwide, it is now introducing SmartVac.

100% effective in-ovo vaccination and nutrition

SmartVac is a new, patented technology that allows 100% safe, consistent and accurate in-ovo vaccination and nutrition. It delivers the injectables only into the amniotic fluid, thus preventing possible injury to the growing embryo.

SmartVac enables the poultry industry to apply a wide range of vaccines in-ovo, including Gumboro, Marek, ND and Coccidiosis vaccines. This is optionally performed in combination with nutritional components, for chickens with a healthy gut, favourable microbiota, enhanced immunity and thus improved field performance.



SmartVac Benefits

SmartVac has major biological and commercial advantages for your hatchery

Earlier immunity

SmartVac provides earlier exposure to various vaccines and nutrients, supporting early development of the immune system and improving the birds' health and disease resistance.

In-ovo feeding

SmartVac positively affects the chick's vitality, early growth and gut health. Adding nutrients while the chicken is still in the egg helps improve the day old chick weight, growth performance and breast muscle weight of broiler chickens.

Animal welfare

SmartVac birds are less stressed when vaccinated in-ovo. Possible injury to the live embryo is avoided because the system only injects into the amniotic fluid. Minimal post-hatch chick handling reduces stress and improves comfort.

More consistency

SmartVac reduces possible human error, with fewer people needing to be trained and monitored than with manual subcutaneous vaccination.

Reduced labour costs

SmartVac in-ovo vaccination significantly reduces the labour required, compared to subcutaneous vaccination of day old chicks.

Uniform delivery

SmartVac uses an automated and uniform process to deliver constant volumes and concentrations of vaccines and nutrients to each embryo, regardless of the size of the egg or embryo.

Reduced processing time

SmartVac reduces processing time from hatcher to farm, eliminating the need for post-hatch vaccination. This means that day old chicks have faster access to food and water, which improves chick quality.

Controlled hygiene

SmartVac ensures controlled hygienic conditions, by maintaining a sterile environment in and around the injection area.

Selective inoculation

SmartVac applies selective inoculation by identifying non-viable eggs (infertile or early deads) and empty egg positions on the setter tray, thus reducing vaccine waste.





Benefits of early feeding

Royal Pas Reform's early feeding methods – in-ovo using SmartVac and post-hatch using SmartStart™ – can have a huge impact on the chick's overall growth and wellbeing.

The trend towards heavier birds in some markets and the use of slow growing broiler strains in others creates a longer growing period in the field, requiring different strategies relating to vaccination and early nutrition.

Stages of early broiler nutrition

Breeder farm

Maternal nutrition



Hatchery

In-ovo nutrition

Post-hatch nutrition



SmartVac



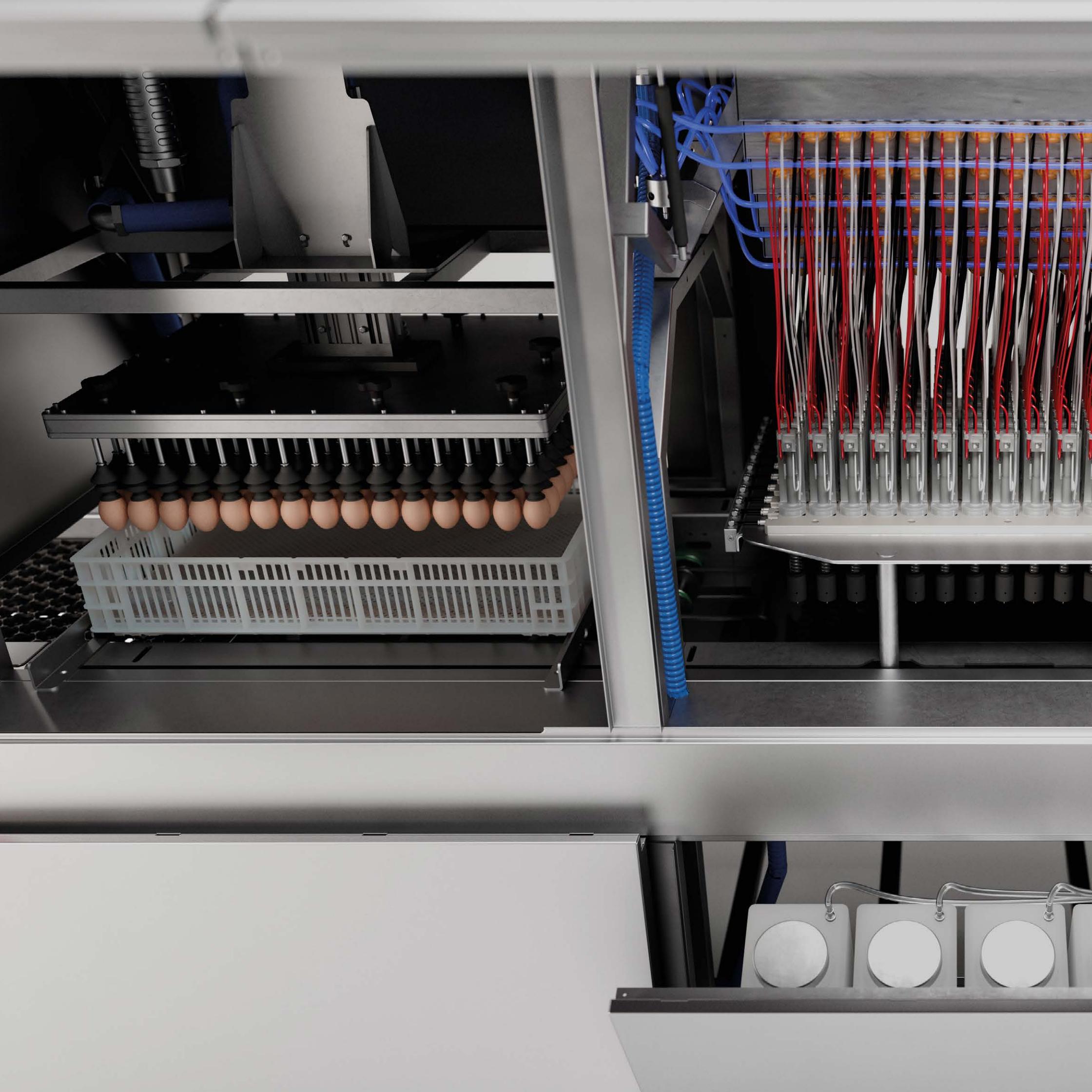
SmartStart™



Broiler farm

Pre-starter nutrition







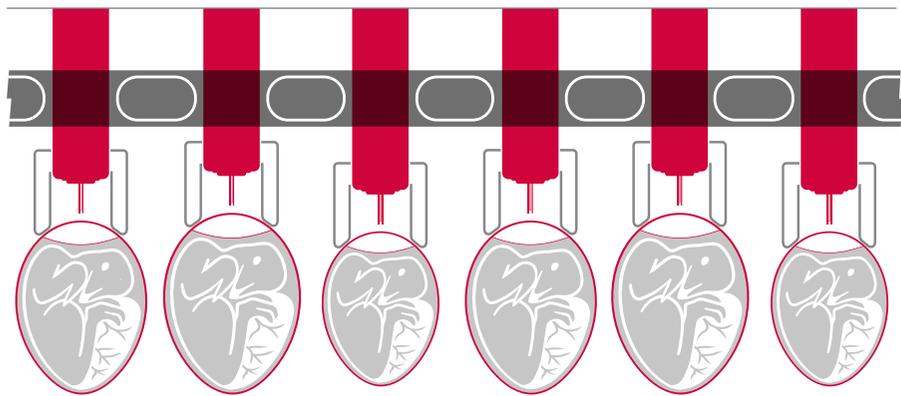
Dual needle system provides extra safety

The innovative SmartVac design features a sophisticated dual needle system, which consists of an outer needle to penetrate the eggshell and an inside needle to dose the vaccine and nutrients.

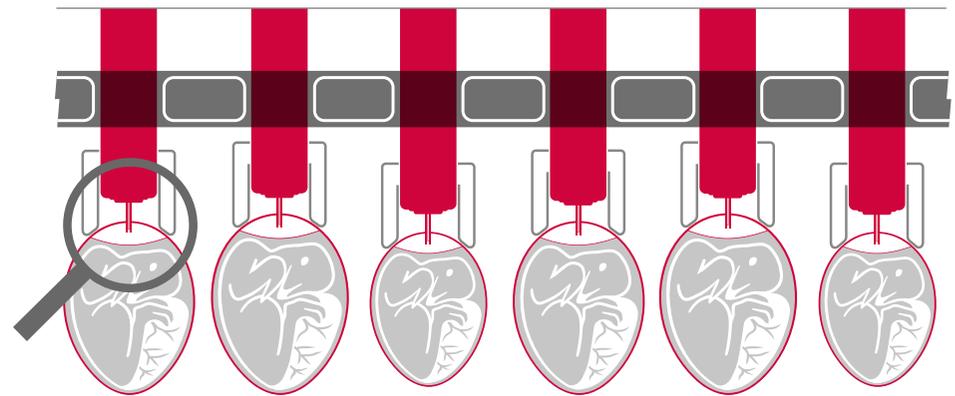
This ensures that each vaccination is administered consistently and safely in the egg's amniotic fluid. The inner needle does not have a sharp end, which avoids lesions to the embryo and promotes optimum security in the process.



SmartVac How it works



1
The injector head descends until the injector's guiding cups touch the shells of each egg in the setter tray. The injectors are not yet fixed, so that their position can be adjusted to the different egg sizes.



2
Special air tubes between the injectors inflate, locking the injectors in the ideal position. The injector head then makes a second fixed, downward movement, causing the injector's outer needles to pierce the shell collectively and precisely.



3
To allow automatic and individual adaptation of the injection depth to each single embryo (regardless of egg size and flock age), the inner needles in each injector then descend individually.



4
The inner needle pierces the membrane and makes another controlled downward movement into the amniotic fluid.

Embryo Soft Touch® (EST®) technology

SmartVac was designed to maximise the safety of the injection process, by focusing on the development level and needs of the growing embryo.

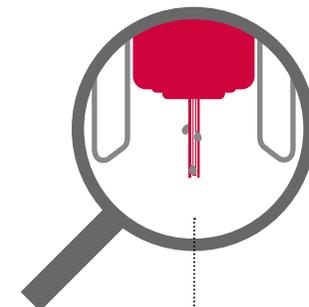
The Embryo Soft Touch® (EST®) sensor on the injector allows automatic and individual adaptation of the injection depth to each single embryo, regardless of egg and embryo size. EST® also detects when the setter tray has an empty egg position or contains non-viable eggs (infertiles or early deads), helping to reduce wastage of valuable vaccine. Only eggs containing grown embryos are inoculated with vaccine or nutrition.



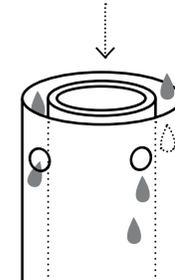
5
The Embryo Soft Touch® sensor detects the position of the embryo and the needle movement stops. Retracting slightly to avoid any injury to the embryo, the inner needle remains in the amniotic fluid.



6
100% of the injectable is delivered safely and precisely in the amniotic fluid around the embryo.



7
As the injector head retracts to the starting position, a sanitisation solution flows down the needles – disinfecting the system and maintaining a sterile environment.



Technical specifications

- Vaccination capacity: up to 50,000 eggs per hour, depending on the tray type and level of automation
- Power: 220V, 1 phase, earth and 0, 50/60Hz
- Installed power: max. 3500 W
- Air consumption: 280 l/min @ 7Bar
- Air pressure: 7 Bar
- Dimensions (l x w x h): 3700 x 1100 x 2100 (mm)
- UI: SmartSense™ Interface, HMI Touchscreen 15.4 inch
- Design: Designed to work as standalone or in line, with a wide range of Royal Pas Reform's hatchery automation systems, including candling and egg transfer equipment
- Tray type: Suitable for a wide variety of trays and baskets
- Dosing volume: 50 or 200 µl/egg
- Injector mobility: Individual
- Injection pump: Individual, micro peristaltic pumps
- Needle set: Dual needle system
- EST® Embryo Soft Touch sensor: Yes
- Guided needle movement: Yes
- Needle action: Step motor, 0.15 mm each step
- Housing: mobile unit; parallel, vertically opening wing doors; glass safety panel; recessed bar, protecting e-stops; bumper



- SmartCenterPro™: Wireless IoT control. During the vaccination and nutrition process, the data is collected by SmartCenterPro™ for informed decision-making
- SmartCare™: SmartVac is backed by Royal Pas Reform's SmartCare™ programme, giving customers comprehensive service, support and training to help maintain a well-trained workforce
- Options: As a modular system, SmartVac can be used in conjunction with a candling and take-out system, a (semi) automatic transfer system from setter tray to hatcher basket and conveyors for transport to and from the vaccination system



Royal Pas Reform

Royal Pas Reform is an international company, which has specialised in the development of integrated hatchery solutions for the poultry sector since 1919.

The company has earned its position as one of the world's leading hatchery equipment manufacturers, through decades of research into the biological and physiological aspects of embryo development, combined with a thorough understanding of all aspects of the poultry production chain – and a dedicated focus on the future.



Royal Pas Reform

Integrated Hatchery Solutions

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