

Stork SmartWeigher Grading and Distribution line



- Unrivalled high-speed weighing and grading accuracy
- Each product put into its most profitable form
- Reliable product logistics with low COO

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Line speeds move ever higher and processing plant performance depends ever more on putting each product into its most profitable form. Therefore the ability to weigh, grade and distribute whole products consistently accurately is now more important than ever.



In this context Marel Poultry developed an 8" pitch whole product distribution line, whose distinguishing feature is a shackle which can be turned automatically through 90° and 180° for more accurate weighing and for additional flexibility in where product is unloaded.

Whole product is weighed in the renowned Stork SmartWeigher and graded automatically for quality in the Stork IRIS (Intelligent reporting, inspection & selection) vision system. Manual quality grading is also an option.

Unloading stations have been updated, guaranteeing top performance at the highest possible line speeds.

Accurate weighing

One cause of inaccurate weighing in a conventional distribution line is when the wings of neighboring products touch during weighing.

A solution is to increase the shackle pitch. This, however, means even higher linear line speed for any given throughput. Marel Poultry's solution is a new shackle, which turns automatically, a technique already in use for many years in the ACM-NT automatic cut-up system. By turning product through 90 degrees right before weighing, the new shackle ensures that wings do not touch in the SmartWeigher. Shackle pitch stays at 8".

Compensating vibrations

Besides unwanted wing contact, friction and vibration are the main enemies of accurate weighing at high line speeds. Stork's sturdy SmartWeigher incorporates a vibration sensor which picks up any vertical vibrations. The weigher's electronics compensate for these vibrations, ensuring that they cannot compromise weighing accuracy. Weighing accuracy is enhanced further by autotaring each individual shackle. The combination of SmartWeigher and the turning shackle ensures consistently high weighing accuracy at the very highest line speeds.





STORK
POULTRY PROCESSING

Accurate grading

Together with accurate weighing, accurate quality grading is essential if the best use is to be made of each individual product.

Stork's IRIS vision system assesses both the front and the back of each product, thereby avoiding both misgrades and costly unnecessary downgrades. The system incorporates the very latest in image capture and data processing techniques.

When installed in a distribution line IRIS grades the whole bird and its anatomic portions at the same time. A single system can therefore be used to identify suitable whole birds for release in the whole product packing area and individual portions, whose further process will be programmed into the Innova control system of the ACM-NT automatic cut-up system.

Correct distribution

The profitability of a processing plant largely depends on the efficiency and effectiveness of its whole product distribution line, as it is here that available product is matched to customer orders. It is essential that this is done in the best way possible.

Once product has been accurately weighed and graded, its end destination is determined by the Innova distribution and control system. This system is programmed by plant management on the basis of incoming customer orders for whole, cut-up and de-boned product.

To ensure that product always reaches its correct end destination, whole bird unloading stations and the TR-1G re-hanger into the ACM-NT automatic cut-up system have been fitted with an innovative unloading mechanism designed to work ultra-reliably with the turning shackle at the highest line speeds.





Robust user-friendly design

The whole product grading and distribution line has been designed with simplicity, robustness and low cost of ownership very much in mind.

The turning mechanism of the shackle is a modified version of that used for the product carrier of Stork's well-established ACM-NT high-speed automatic cut-up system.

SmartWeigher is simple and rugged. It consists of a section of Sigma track, installed into a conventional Sigma overhead conveyor system, to which a load cell and vibration sensor are attached. Product passes over the weigh bridge with no acceleration or deceleration. The weigh bridge has a sensor, which, once installed, never has to be adjusted. SmartWeigher is calibrated during assembly after which no further calibration is necessary, saving processors considerable maintenance and setup time.

The IRIS vision system too has been designed for quick and easy installation, calibration and set-up. Once installed, the system will run for very long periods without maintenance and recalibration.

How it works

Product is re-hung to the distribution line either manually after an immersion chill process or automatically from an in-line air chiller, in which case weighing in the automatic transfer unit is no longer necessary.

A vertical bend in the overhead conveyor separates the products creating space for the shackle to be turned through 90 degrees for weighing in SmartWeigher. As an option wings can be stretched at this point in the process by a wing stretching module.

After weighing, the shackle is turned back through 90 degrees. Product then passes through the IRIS vision system before proceeding to the unloading stations which will release it according to the programme set into the Innova control system. Product selected for cut-up will either be transferred automatically into the ACM-NT cut-up system or released and re-hung manually to it.



Components

The turning shackle

For additional stability, each shackle assembly is suspended from two trolleys. This, together with a new shackle design which allows legs to hang wider apart, helps optimizing the performance of automatic transfer units at each end of the distribution line.

The shackle is fixed to a single disc with a latch which can rotate, allowing the shackle to be turned through 90 degrees and 180 degrees. Turning is done smoothly with minimal product swing.

SmartWeigher/IRIS vision system

Both systems are covered in detail in separate leaflets.

Unloading station

To ensure top performance at the highest line speeds, unloading stations have been redesigned to incorporate a new unloading technique. Each unloading station has two separate pneumatically activated arms, which push first one leg and then the other out of the shackle, ensuring that unloading is done smoothly and ultra-reliably.

The same unloading technique is used in the TR-1G distribution to cut-up line automatic re-hanger.

For some specific setups conventional unloading stations are still available.

Innova distribution and control system

This modular software system is covered in detail in a separate leaflet.

Capacity and weight range

The SmartWeigher Grading and Distribution line is suitable for all usual broiler weights and up to the highest possible processing capacity, well over 14,000 bph (233 bpm).

INNOVA
Food Processing Software





Advantages at a glance...

- Accurate in-line quality grading and weighing system at 8" pitch at the highest possible line speeds
- Suitable for manually re-hung immersion chilled birds and automatically re-hung air chilled birds
- SmartWeigher gives class-leading consistent weighing accuracy with auto-calibration
- IRIS vision system reliably grades both the front and back of each product and its anatomic portions
- Advanced Innova distribution and control system ensures that each product is put into its most profitable form
- Increased layout flexibility as the turning shackle allows product to be unloaded on both sides of the distribution line
- Robust, user-friendly components with low maintenance requirements

Marel is the leading global provider of advanced equipment and systems for the fish, meat and poultry industries.

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