

SmartWeigher

# Precise in-line weighing up to top capacities

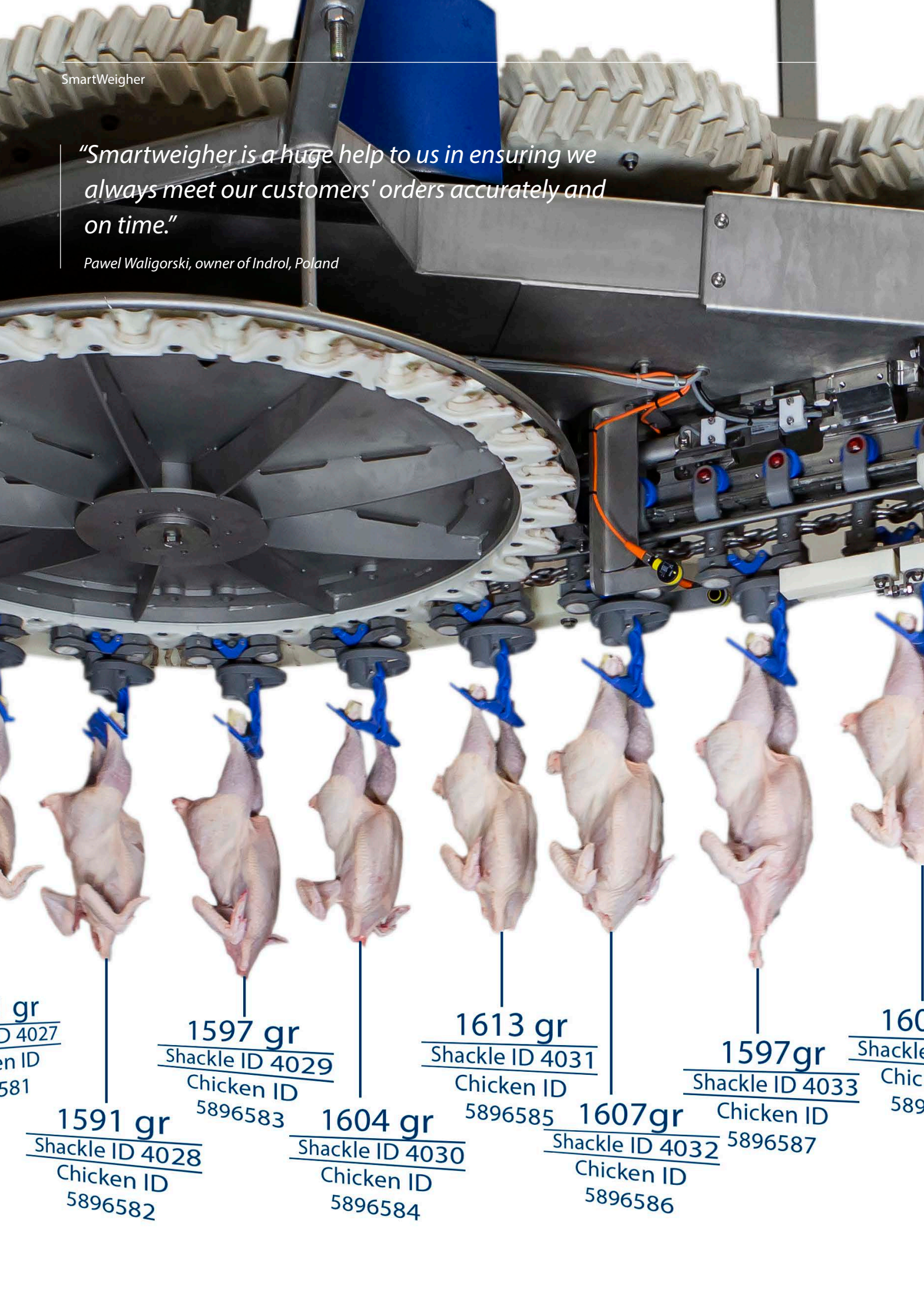


- Reliable, consistent and accurate weighing at the very highest line speeds
- Can be installed at multiple locations in the processing plant
- Self-learning and auto-calibrating



*"Smartweigher is a huge help to us in ensuring we always meet our customers' orders accurately and on time."*

*Pawel Waligorski, owner of Indrol, Poland*



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# Putting each product into its most profitable form



**Giveaway, yield loss and wrongly allocated product are all issues faced by broiler processors who want to optimize their margins. If they're to operate even more efficiently and profitably, they need in-line weighing and quality grading systems, which can be relied upon to perform consistently and accurately at today's high line speeds.**

Technology, which can reliably assign the correct weight and quality grade to each product, will ensure that all products are always put into their most profitable form. With its SmartWeigher and IRIS systems for weighing and quality grading products in line, Marel offers just such technology. Both systems are run by Marel Innova distribution and control software. This allows plant management to program the best destination for each product. It also monitors yields and provides detailed reports.

## High speed weighing precision

SmartWeigher has been developed to weigh consistently and accurately at today's highest line speeds. Building on experience gained over decades, Marel has come up with a rigid, robust design, which does the job perfectly time after time and which is also easy to live with.



## Process information

SmartWeigher plays an important role in the process information chain. Innova software ensures that all weight information obtained from SmartWeigher stays with the product as it moves through the processes, giving management the exact weight profile of each product.

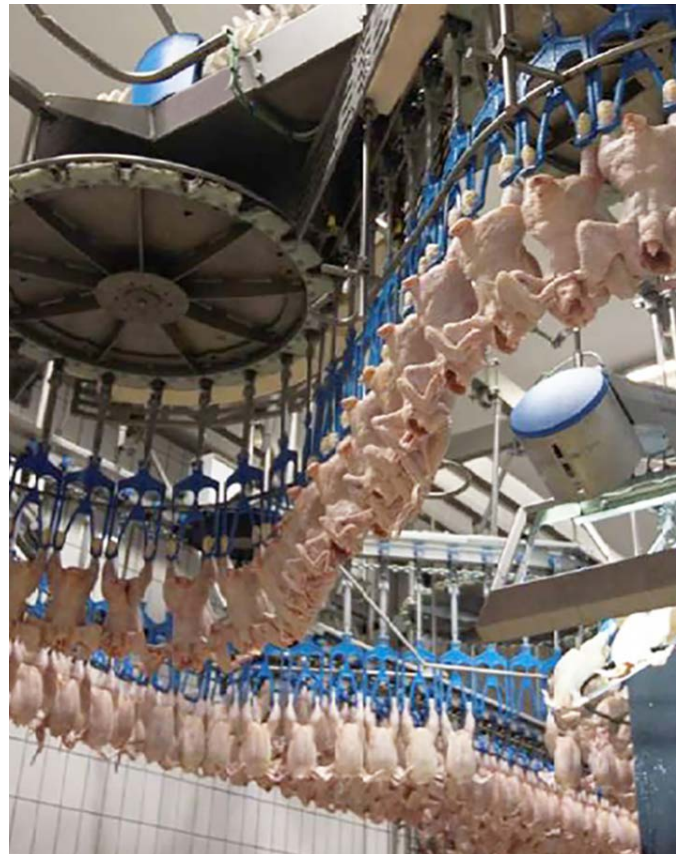
Products can be weighed directly at the earliest possible occasion in the plant, in the killing line. From that point on, the shackle identity and the chicken identity will be inseparably combined with the exact weight figure.

As long as the product stays inline, even after being transferred from one shackle to another and after being cut up, the original product data gathered by SmartWeigher remains 'attached' to the product all the way, for as long as the whole product stays shackled.

Together with IRIS visual grading, various integrated sensors all through the plant, as well as Innova software, SmartWeigher offers process management the most accurate and complete process information. All this gathered data provides a reliable basis for well-founded decision-making downstream.

# Weighing anywhere in your process

SmartWeigher can be installed in killing, evisceration, whole product distribution and automatic cut-up lines. At any of these instances, weighing can be performed with utmost precision, providing relevant information to the system.



## SmartWeigher in the defeathering line

In a killing line equipped with CAS SmoothFlow modified atmosphere stunning, SmartWeigher is installed in front of the automatic killer. In lines where birds are stunned electrically, the system is installed at the end of the blood trough. The weight information obtained can be used for a variety of purposes. First and foremost it forms the indispensable starting point for all subsequent downstream checks on yield. It can also be used to help with the evaluation of individual flocks, to check on grower performance and make payments to them.

## SmartWeigher in the evisceration line

In the evisceration line, SmartWeigher is installed at its end just before automatic rehang to the air chilling line. Comparison with weights at the start of the killing line will show whether eviscerated product yields are in line with expectations. If not, the reason for the shortfall can be investigated, allowing timely remedial action to be taken. Weighing at the end of the evisceration line also gives the weight profile of products entering the chiller. In today's volume broiler plants this can accommodate more than 35,000 products. If flock weights are heavier or lighter than expected, this information will become available some two and a half hours before products are weighed in the distribution line. Production management therefore wins extra time to change plans and reduce any negative impacts.



### SmartWeigher Grading and Distribution Line

In the distribution area, SmartWeigher can be part of a larger integrated solution, the SmartWeigher Grading and Distribution Line. This consists of a SmartWeigher, IRIS vision system, Innova PDS software, the turning shackle and high-speed unloading stations. The award-winning SmartWeigher Grading and Distribution Line at 8" pitch weighs, grades and distributes broilers at the highest possible processing speeds with utmost, consistent accuracy. Innova PDS distribution and control software determines the end destination of each weighed and graded product. Plant management can program the system in accordance with incoming customer orders for whole, cut-up and deboned products. The result is that every single product in the line is put into its most profitable form.



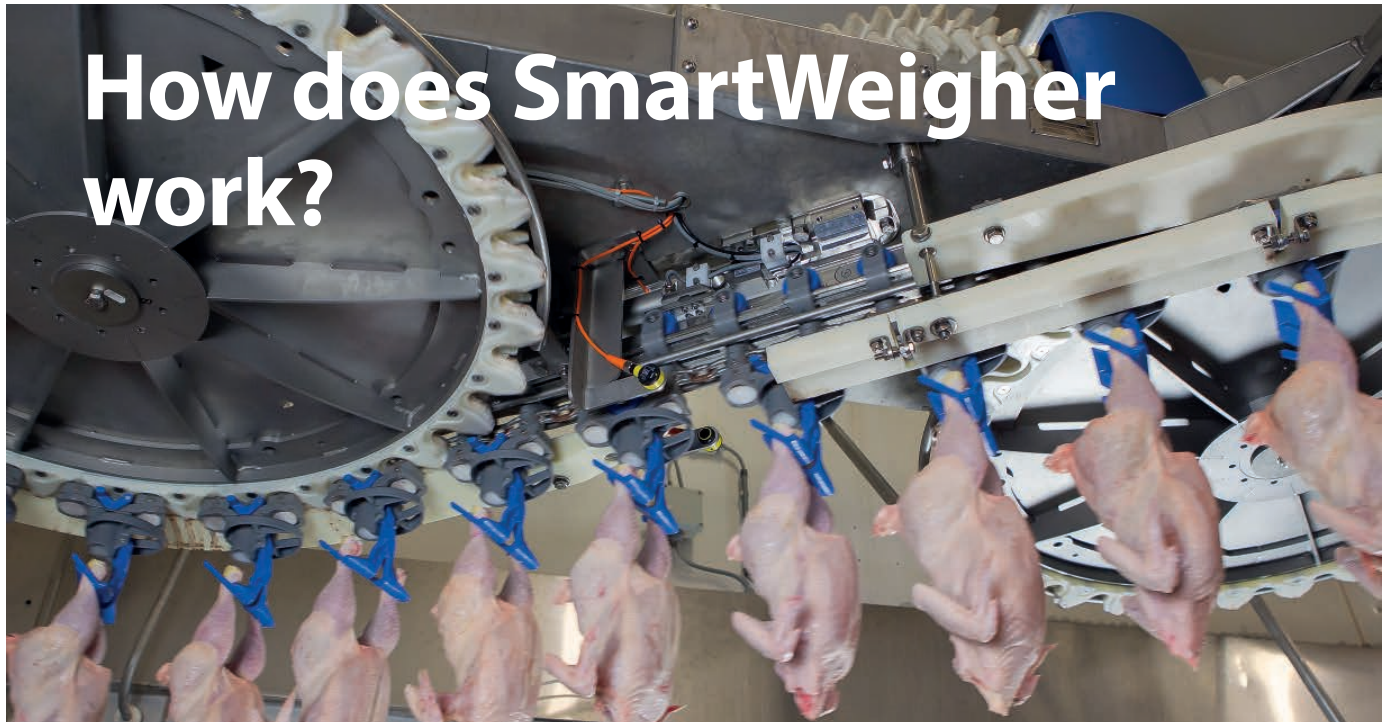
### SmartWeigher in the distribution line

After chilling, products are rehung automatically to a distribution line. This is where the work of marrying up available products to customer orders really begins. Some products will be released for sale whole while others will proceed for automatic cut-up and deboning, the aim always being to extract the maximum revenue from each product and part. In high throughput plants a single 15,000 bph distribution line will often feed two or more ACM-NT cut-up systems. With a SmartWeigher run by Innova software, each cut-up system can be programmed to accept products within a certain weight range, allowing cutting modules to be set more precisely and helping to optimize cutting yields. Yields benefit in another way too.

By comparing distribution line weights to those recorded at the end of the evisceration line, processors will be able to check on air chiller performance and, if necessary, make the necessary adjustments in good time.

### SmartWeigher in the cut-up line

SmartWeigher can also be installed in an ACM-NT cut-up system, where it can weigh either whole products or back halves. Weight information will often determine how a product is to be cut and in what modules. When the weight range of products being fed to the cut-up system is wide, certain cutting modules can be doubled up. One module will cut lighter product; the second heavier product. Both yield and quality benefit. In lower throughput plants, a SmartWeigher installed in the ACM-NT system can do away with the need for a separate whole product distribution line. In this situation, products, whose weights are needed for sale whole, are released first. Products for cutting are conveyed through the system's cutting modules.



**SmartWeigher's main selling point is its ability to weigh supremely accurately at line speeds of up to 15,000 bph. How does it do this? SmartWeigher is a simple rugged construction. It consists of a section of Sigma overhead conveyor track installed into an S curve. The two wheels of the S curve have a system of four gear wheels mounted on top of them. Their role is to take tension off the chain during weighing. Products pass over the weighbridge with no acceleration or deceleration. A single sensor starts the weighing process. A transducer then filters out any vibration. The result is extremely accurate weight readings.**

#### **Shackles**

In kill and evisceration lines, it's flock rather than individual product weight that is important. In both lines SmartWeigher works with standard killing and evisceration shackles at 6" pitch, where the wings of neighboring products will touch. SmartWeigher is, however, more than accurate enough to give precise flock weights. Being able to weigh each individual product precisely is, however, vitally important in the distribution line, as it's here that the decision is taken on the most profitable final destination for it. That's why Marel developed an innovative turning shackle, which can be rotated through 90 and 180 degrees. These shackles are installed at 8" pitch and are turned through 90 degrees for weighing, ensuring that the wings of neighboring products cannot touch. In the ACM-NT cut-up system, SmartWeigher works with the system's turning product carrier. These are installed at 12" pitch. The accuracy of SmartWeigher in both distribution line and cut-up line is further enhanced by auto taring each shackle/product carrier, so that it's only the net weight of the product which is recorded.

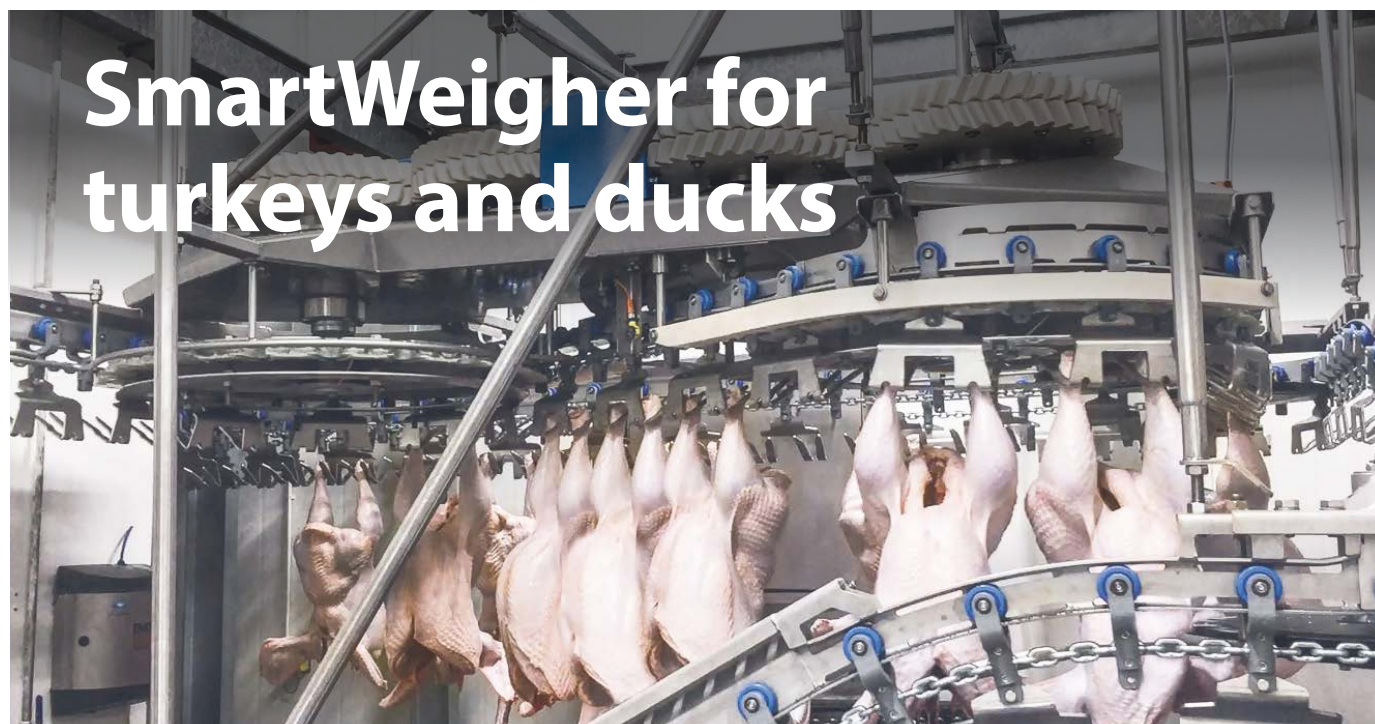
#### **Vibration filter and auto tare**

Apart from unwanted wing contact, friction and vibration are the main enemies of accurate weighing at high line speeds. Marel's sturdy SmartWeigher incorporates a vibration sensor which picks up any vibrations from the overhead conveyor. The weigher's electronics compensate for these vibrations, ensuring that they can't compromise weighing accuracy. The accuracy of SmartWeigher in both distribution line and ACM-NT systems is further enhanced by auto taring each shackle/product carrier, so that it's only the net weight of the product which is recorded. If the chain has to be shortened because of chain stretch, the auto tare software picks this up immediately and compensates for it automatically.

#### **Easy to live with**

SmartWeigher has been designed to be simple, robust and easy to clean. The overhead installation of SmartWeigher is a big advantage. Unlike other weighing systems, it doesn't take up any floor space in the factory. Staff can pass underneath the hanging steel structure so that accessibility is unobstructed. Once installed, the system's single weighing sensor never has to be moved. Each SmartWeigher is calibrated during assembly. No further calibration is necessary. The weigh bridge and four gear wheels need virtually no maintenance. Periodic checks on these and on the two corner wheels at each end of the weigh station are all that is necessary. All surfaces are smooth without blind spots and can be cleaned easily. The system's electronic controls are integrated within SmartWeigher's beam. In short, the system needs little attention. Cost of ownership will be very low.





**Given today's production volumes, a fast way of assessing quality has become indispensable for turkey and duck processors. Being able to weigh accurately is a key component in determining product quality. Marel offers turkey and duck processors its advanced technology SmartWeigher, a system that weighs and classifies products efficiently and supremely accurately.**

Management will be able to use the weight information gained as input material for Innova PDS plant production and control software. This software ensures that, once weighed, each product is tracked downstream and then allocated to the destination that will put it into its most profitable form. All downstream processes benefit.

#### **Distribution**

Turkey and duck processors will usually install SmartWeigher in the distribution line, where the system weighs whole products with the utmost precision. The program set by plant management into Innova PDS then determines whether they'll be released as products for sale whole or proceed for cut-up. Achieving maximum yield for each whole product and part is always the key objective.

#### **Evisceration**

If SmartWeigher is installed in the evisceration line, processors will gain extra time for determining the destination of all products entering the chilling system. This is a huge help in ensuring that customer orders are met accurately and on time. SmartWeigher in the evisceration line will also allow turkey and duck processors to keep a close eye on losses during the chilling process and take any corrective action necessary.

#### **Benefits:**

- Consistently accurate weighing at the highest line speeds
- Advanced weighing technology compensates for unwelcome vibration
- Self-learning shackle auto-tare for enhanced accuracy
- Can be installed at multiple locations in the plant
- Can be integrated with IRIS quality grading systems and plant-wide Innova software
- SmartWeigher, IRIS and Innova together ensure that each product can always be put into its most profitable form
- Simple, robust and easy-to-clean construction
- Unobstructed passage underneath the overhead installation
- Calibration set during assembly. No further need for in-plant calibration
- Very little maintenance needed
- Low cost of ownership

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