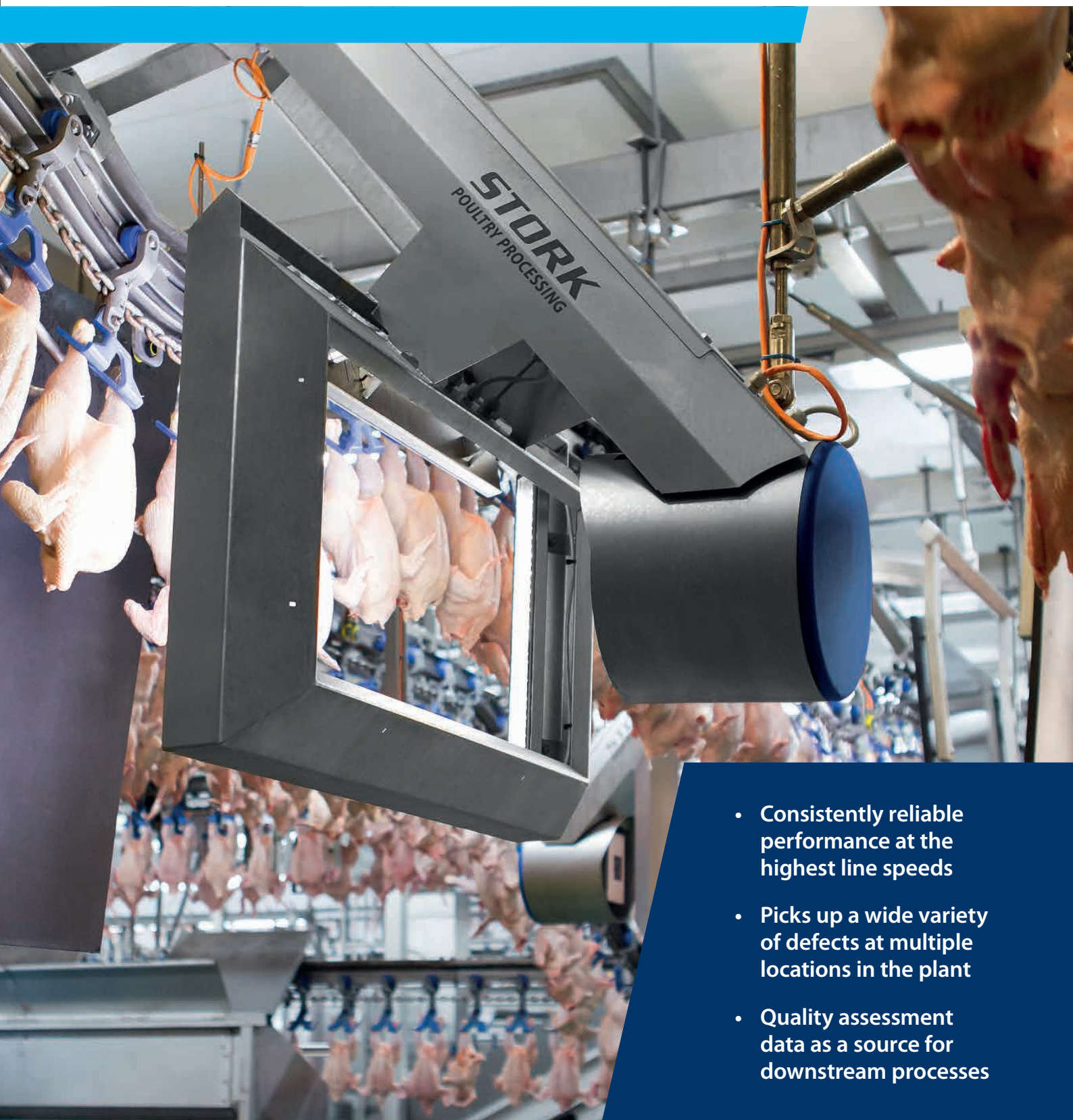
marel POULTRY

Intelligent reporting, inspection & selection

IRIS vision system



- Consistently reliable performance at the highest line speeds
- Picks up a wide variety of defects at multiple locations in the plant
- Quality assessment data as a source for downstream processes

Capture product quality

Downgrades occur even in the best run operations. Management's priority is to keep these to a minimum and to spot those that do occur so that they can be dealt with separately.

Nothing, however, stands still. Line speeds are increasing. Customers are becoming ever more demanding and relentless pressure on margins demands that quality control is done ever more accurately. This is not just to ensure consistent top quality, but also to stop products being needlessly and wastefully downgraded.

To satisfy today's and tomorrow's tougher quality grading requirements, Marel Poultry offers Stork IRIS (Intelligent Reporting, Inspection & Selection). The IRIS vision grading system uses the very latest image capture and data processing techniques, giving exceptional performance at the very highest line speeds.

What it does

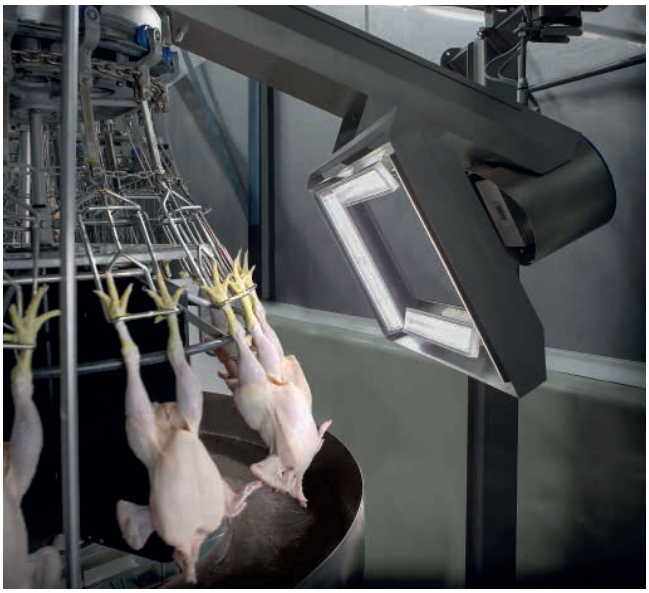
IRIS can be installed at multiple locations in the processing plant to assess whole products and their anatomic parts.

It is used to identify downgrade whole products and parts in the killing and defeathering line, evisceration line and downgrade whole products and anatomic parts in the whole product distribution and ACM-NT automatic cut-up lines.

IRIS is fully integrated into the Innova PDS plant-wide information and control system. Information received from IRIS will help determine how product is to be handled downstream.

How it works

The system consists of a high-speed digital camera mounted behind platen in a water-tight cabinet, LED lighting and advanced recognition software.



IRIS in the defeathering department

IRIS uses shape, color and texture to detect defects and will reliably pick up broken wings, red and blue bruises, faecal stains and remaining feathers. It will also pick up skin damage.

Recognition software processes the images received from the camera and allocates a quality grade to each portion of the product's seven anatomic parts.

IRIS in the evisceration department

This information is passed to the Innova PDS control system, which then determines the optimum destination of each whole product and portion. These destinations will be based on the programme set by production management and in use at the time.

For truly optimum grading, an IRIS system can consist of two cameras. One grades the front of the product; the other the back. The final destination of each product and its parts will therefore depend on a 360° assessment.
Information from IRIS is used to generate real-time reports on the quality profile of individual flocks from individual growers.

Consistent high performance

Stork IRIS uses state-of-the-art technology. The system has been designed not just for today’s high line speeds but also with future requirements and applications very much in mind.
The use of a high-speed digital camera and LED lighting means much sharper images with less shadow.
Sharper images and the system’s advanced recognition software allow IRIS to pick up and assess an impressively wide range of defects.
The system grades both water chilled products and air chilled products equally well and can also be used to grade high value “speciality” products such as corn fed, organic and free range, whose shape and color differs from that of standard broilers.
The system’s user Interface allows processors to enter quality assessment profiles for different customers, products and flocks, allowing managers to manage efficiently at all times and under all circumstances.

IRIS DF in the defeathering line

Installed in the killing and defeathering line, IRIS will detect damaged product, product with too much residual feather, undersized and badly bled product. If required, these can then be unloaded automatically at the end of the defeathering line.
There are many advantages in installing the IRIS visual grading system directly after defeathering. Thanks to this early quality check, defects are more easily detectable and there's more time to plan production efficiently.

Flock quality
IRIS installed in the defeathering line is an invaluable tool giving plant management full information on the quality of product entering and leaving the primary process. The quality of the supplied flock can be determined in a very early stage.

Veterinary aid
IRIS DF is also useful to assist veterinary inspection. As the system identifies color and shape, it will recognize products which are too small, damaged in some way or which have not bled out. These can then be released automatically at the end of the killing

Utmost assessment
All the time, IRIS keeps a watchful eye on the passing products, determines the best possible destination of each whole product or portion and generates fully comprehensive reports.
Combined with an IRIS station in the defeathering stage, utmost assessment and allocation can be achieved; a first quality check for product planning and a second check for precise destination of each portion.

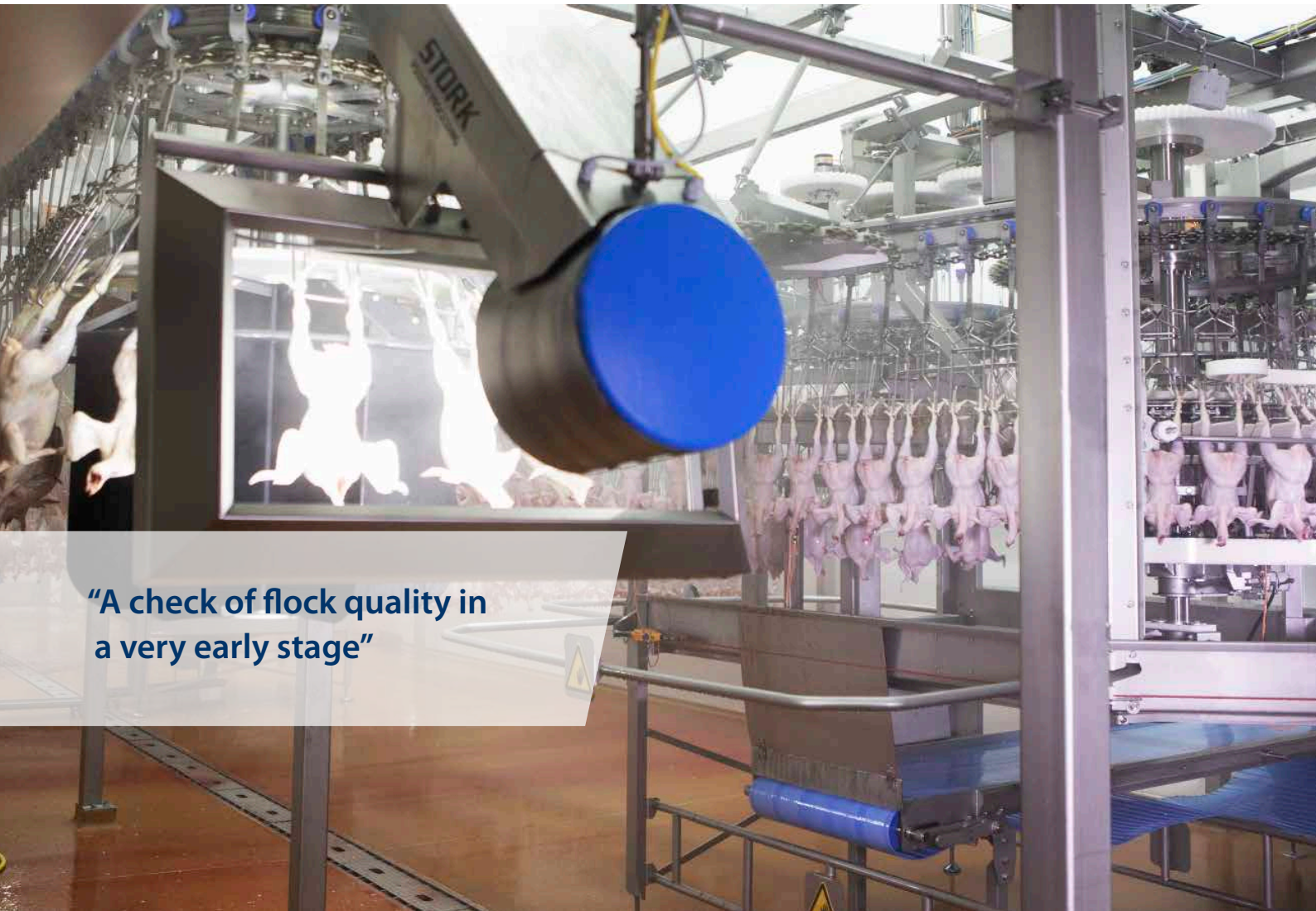
IRIS NT in the cut-up line

Installed in the cut-up system, IRIS is an interesting application in situations where an ACM-NT cut-up system also serves as a whole bird selection line. In this way, IRIS NT is used to identify and release products for sale whole.

Fast selection
With no separate distribution line available, products pass directly from chilling to the cut-up department. In the cut-up line, IRIS performs its task just before products will enter the ACM-NT modules. IRIS can assess them within a second. That is sufficient for decision-making about their destination.
When a B-grade part is detected, such as a broken leg, the product passes on to the cut-up modules. A-grade products are discharged from the line before they attain the cut-up modules, destined to be sold as whole products.

Easy to install, calibrate, use and maintain

The IRIS system has been designed for quick and easy installation, calibration and set-up. IRIS does not have to be "taught".
Once installed, the system will grade consistently to the same standard. IRIS will work for very long periods without recalibration or maintenance. The use of long-life LED illumination is just one of the system's features which cuts cost of ownership. IRIS can be supported remotely from the Marel Poultry Help Desk.

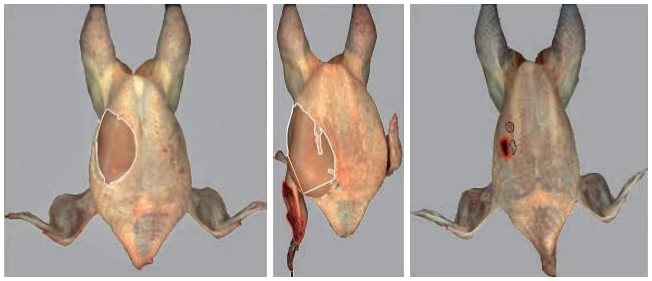


"A check of flock quality in a very early stage"

line. In addition to that, broken wings, deskinned products and remaining feathers can also be detected in an early stage.

Improved detection
In the defeathering line, IRIS benefits from an improved product separation and presentation. That's because the product is resilient in this processing phase and spreads out more easily. Particularly wing defects (red wingtips, remained feathers) are better noticed and in general detection of torn skin and bruises improves.

"Extra time"
Early product assessment helps processors to adjust supply to demand. Already having insight in the quality of the flocks and products when they spend about two and a half hours in the air-chilled tunnel, processors can use the "extra time" for accurate planning.
If required, this IRIS DF system can be combined with another



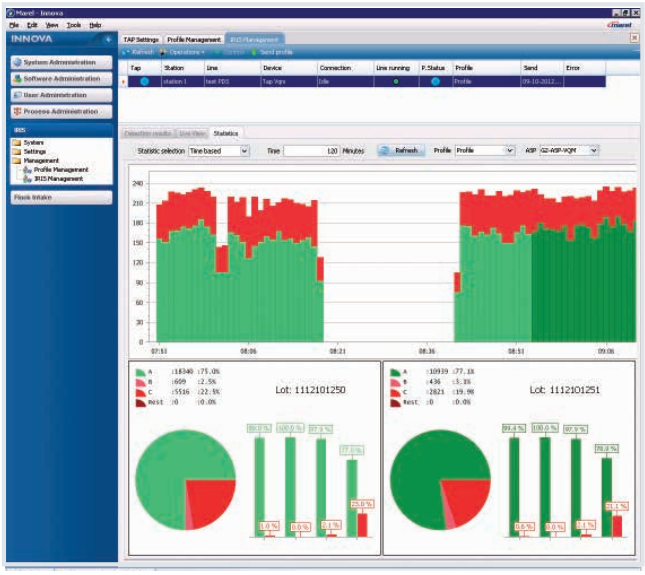
IRIS system in the distribution or cut-up stage. This will provide the utmost assessment and allocation; as the skin is no longer wet and shiny, better evaluation of e.g. epidermis quality is possible.

IRIS EV in the evisceration line

When installed in the evisceration line, IRIS will perform exactly the same tasks as in the defeathering line. As product separation and wing presentation can be even better evaluated in the evisceration line, results are truly optimal.
Before chilling, IRIS can be more critical on torn skin without concern for false positives (no chill tunnel effects like discoloration).
When the Innova PDS system is used to assess product through the chilling line, every bit of information on the quality of birds assessed can be used to distribute products in downstream whole bird and/or cut-up lines.

An additional advantage is that production management has 2-3 hours advance warning of the quality profile of products in the system. IRIS will also pick up different defects on a single part, one of which might cause the part to be downgraded while the rest of the product remains A-grade quality. The ability to grade both the front and back of leg portions helps ensure that downgrades do not find their way into automatically assembled standard weight packs, thereby compromising the efficiency of this operation.

Not estimates, but facts.
By installing the IRIS visual grading system directly after evisceration, knowledge about product quality becomes available very early. IRIS is fully integrated into the Innova PDS information and control system. Data received from IRIS will help determine how product is to be handled downstream.
For Innova PDS, matching products with incoming orders ecomes a lot easier in this early stage; the processor exactly knows what to expect and can make the appropriate selections to meet the order requirements.



Early decisions aren't based anymore on estimates but on facts, and every product will exactly be put into its most profitable form.

IRIS GDR in the distribution line

In the distribution line, IRIS will perform its task immediately after the products have left the chilling tunnel. Now, the products have assumed their ulterior shape and are ready for precise assessment.

In this stage, IRIS will pick up residual feathers, skin damage, bruises, scratches and red tails on both the front and backside. The system is so precise that it can accurately detect the size of a bruise or length of a scratch, allowing production management to establish very precise standards for downgrading.

A-grade or B-grade
Using the information received from IRIS GDR in the distribution line, Innova PDS determines what happens to a product with a downgraded portion. It is likely that the product will be sent for cutting, producing six A-grade portions and just one single B-grade portion. The downgraded product or portion will then be released separately as and where required in the processing plant.

> **"We are noticing increased accuracy in differentiating specific quality parameters"**
>
> Thomas Graf, Bell Switzerland

Advantages at a glance…

- Consistent and ultra-reliable at the highest line speeds
- Can be installed at multiple locations in the plant
- Will grade both the front and back of the product
- Will reliably pick up a very wide range of defects
- Can accurately determine the size of a bruise or length of a scratch
- Allows plant management to set very precise standards for downgrading
- Suitable for both air and water chilled product
- Suitable for high value "speciality" products
- Easy to install, calibrate, set up and use
- Virtually maintenance free
- High intensity long-life LED lighting

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

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