

# Whole Salmon Grading and Distribution System



- Seamless product flow
- Improves performance
- Controls logistics
- Shortens processing time
- Full traceability

# Whole salmon grading & distribution system

Building on over 30 years of experience working in team-partnerships with fish processors large and small worldwide, Marel has gained extensive knowledge in developing innovative processing solutions to fulfill the ever-changing needs of seafood processors.

Marel's highly advanced whole-salmon grading and distribution system features seamless flow of salmon product all the way from slaughtering through processing to dispatching.

It is the most advanced and innovative distribution system that Marel has ever developed for salmon. The system's remarkably high level of automation ensures flexible processing capacity to meet seasonal- or order-book highs and lows – without pressures to increase or decrease the workforce.

The comprehensive system consists of two distinct processing areas: a gutting area, and a packing and distribution area. In addition, the complete system is powered by Marel's INNOVA production management software, which enables managerial overview and control of every stage of the production process.

The system can handle an average of 120 fish per minute, or about 55,000 fish daily.



## Gutting area

After slaughtering, salmon enters the gutting area where quality inspectors feed them into a dual-lane gutting grader. The grader weighs to high accuracy, and then directs the right size and quality of fish to the optimal gutting machines based on fixed-rate function, which ensures the optimal performance of gutting machines. The feeding into the gutters is fully automatic.

By combining the optimized distribution of fish with automatic feeding into the gutting machines, overall performance of the gutting process is considerably improved. Moreover, the need for manual labor is significantly reduced - only one supervisor is needed to oversee the entire gutting system.

The system has a capacity of up to 120 fish/min, and easily handles the combined output rate of the seven gutting machines.



## Packing and distribution area

The gutted fish enters the packing area. Salmon then pass through quality control where they are examined for any defects in appearance, before entering the whole-fish packing and distribution grader. The highly advanced grading and distribution system automatically controls the distribution of each fish, directing it to the optimum process, for example freezing, filleting, or to the automatic box filling station for whole gutted salmon.

The distribution is based on weight and quality, and it is also possible to apply the condition factor (K-factor) to direct specially designated fish to pre-determined processing stations. This can be of great value for the filleting process where fish of similar condition (size) will provide improved yield and quality of finished products.

With all of the plant's logistics operating on Marel's Innova production management software, the distribution to the various processes will also be matched to purchase orders. The system handles up to 120 fish/minute, and box packing has a capacity of up to 28 boxes per minute.

## Packing and distribution grader

- Distribution control to different processes
- K-factor optimized yield management
- Capacity: up to 120 fish/min, 28 boxes/min

Elevator to palletizing

Rework station

## Box packing

Automatic infeed of branded boxes. Boxes automatically fed to match batches from grader and pre-defined target weight based on PO (28 boxes/minute)

## Whole fish grader

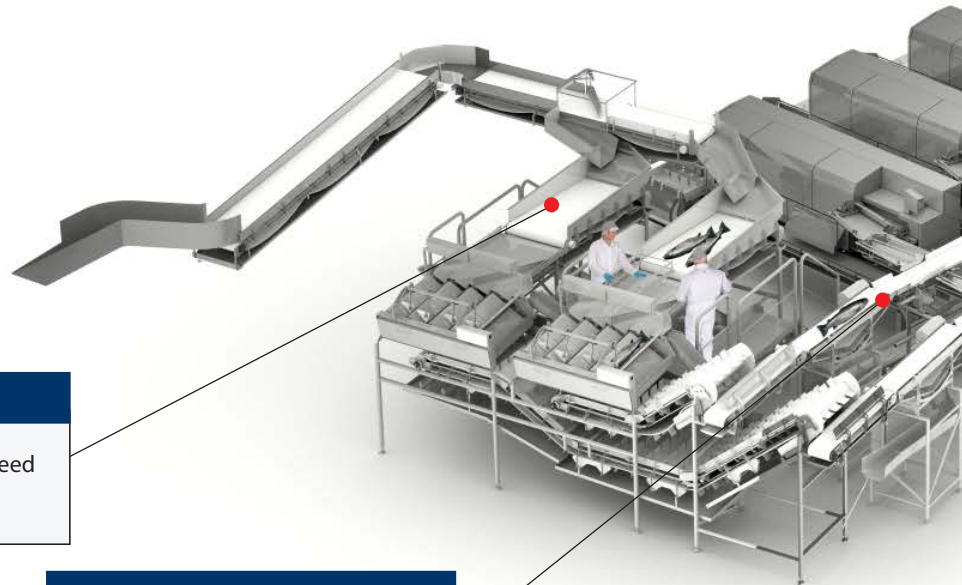
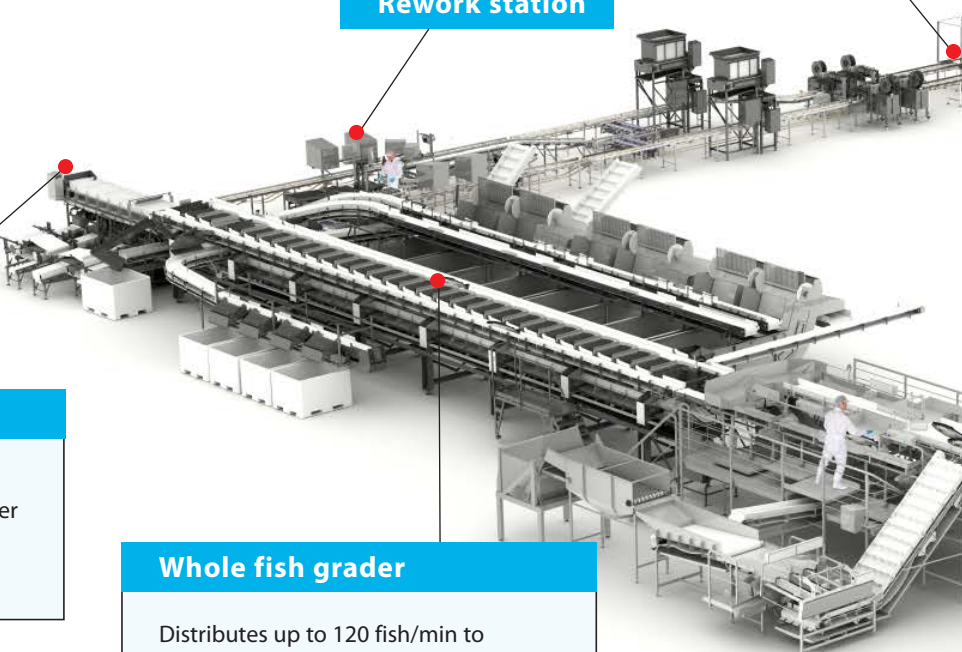
Distributes up to 120 fish/min to different processes and creates batches of whole fish based on PO

## Ergonomic infeed

Up to four quality inspectors feed fish into gutting grader

## Dynamic weighing

For weight grading of each fish





Seamless flow of salmon product all the way from slaughtering through processing to dispatching.



### Palletizing

Robots automatically load boxes on pallets according to PO

### Ergonomic infeed

Up to four quality inspectors feeding fish into grader

### Cooling tank

### Manual gutting

### Automatic gutting

Fish slides gently, correctly aligned into infeed buffer from where it is automatically fed into the gutting machine

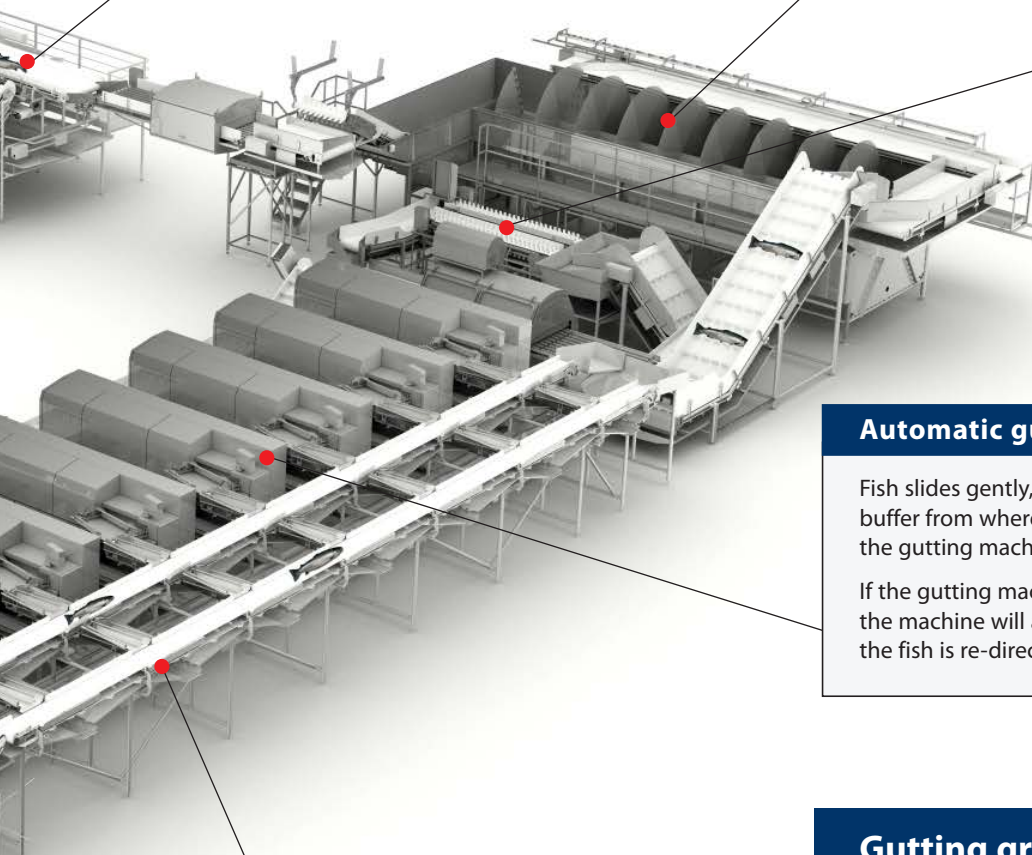
If the gutting machine misses or rejects a fish, the machine will automatically pause while the fish is re-directed to manual gutting

### Gutting grader

- Fully automatic infeed into gutters
- Optimised utilisation of gutters
- Capacity: up to 120 fish/min

### Grading

Dual-lane gutting grader directs fish to the optimal gutting machine, based on fixed rate function



# Customer corner - Bremnes, Norway

When Norwegian salmon processor Bremnes Seashore embarked on a major upgrade of its Bømlo plant, the project included a whole salmon grading and distribution system, the most advanced distribution system that Marel has ever installed in a salmon factory.

Bremnes was founded in 1937 on the island of Bømlo just off Norway's southwest coast as a seaweed reception plant. Since 1958, the company has been producing farmed salmon, and is a pioneer in Norway's aquaculture industry. Today, Bremnes operates salmon farms at 22 locations in the Stavanger-Hardanger region, processing some 250 tons of live salmon daily – into 100 different products sold worldwide, many of them under the company's own multi-award winning Salma and Bømlo brands.

## Achieving optimum quality

"The main reasons behind the upgrade are to boost production capacity of gutted salmon, and to expand production of value-added products, such as fillets, while maintaining our focus on high-quality whole-fish products," says Vidar Helvik, Bremnes Seashore Processing Manager.

"For salmon processors, speed and temperature are essential to achieving optimum product quality and consistency. To ensure this," adds Vidar Helvik, "fish are kept at a constant year-round temperature before being slaughtered, and high-speed processing keeps them at a quality-retaining low temperature. "Our objective is supplying higher-quality products for customers worldwide, with a stronger mix of value-added products. Marel equipment and software play a key role in these efforts."

## A powerful combination

The equipment, as well as all of the plant's logistics, operates with Marel's INNOVA production management software, which provides managerial overview and control of every stage of the production process, including quality control, order processing and packing. At the same time, INNOVA provides Bremnes' customers with complete traceability for every fish – from the time they are hatched until they leave the factory as a processed product.

"The new system gives us the option of processing several different types of products at the same time, resulting in an uninterrupted flow of product on-line, while INNOVA provides us with logistics relating to production planning, packing, labeling and registration for a variety of purposes, among them traceability," explains Bremnes Seashore COO, Bjørn Willy Sæverud.

He continues: "Each fish that leaves our factory can be traced back to the egg from which it was hatched, and the labeling on our boxes has bar-coded data on a host of details, for example size, quality, tracking number, packing date/plant and shelf life, among other key information."

**Bremnes**  **Seashore**





# Empowered by Innova

Marel's INNOVA production management software solution is the backbone to its entire whole-fish grading and distribution system.

It enables managers full control and comprehensive details of every step of the production process, from slaughter to dispatch, including order processing and planning, quality control and logistics management.

The continuous and reliable data collection also ensures full traceability of the products, throughout the entire production process. This function enables operators to trace products back to their original source, thereby minimizing the risk of large recalls. The system also supports quality inspection points as set up in the process according to the plant's quality specifications.

## Throughout the entire process, innova:

- collects and registers relevant data such as flow and rate of production
- enables monitoring online, in real time, of key performance indicators such as yield, throughput and quality
- includes order processing (PO) software that oversees precise specifications on factors such as size, weight, quality, packing requirements, ice dosing and other critical parameters
- has an integrated automatic alarm monitoring function that oversees all alerts and incidents along the line, which helps to significantly reduce downtime

# INNOVA

Food Processing Software



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

With offices and subsidiaries in over 30 countries on six continents and a vast global network of agents and distributors, Marel's expertise in local markets and requirements helps it deliver the best processing innovation for its customers.

Our dedicated R&D teams ensure that we provide the latest technology for all stages of the processing value chain; ranging from single scales to integrated production lines and turnkey systems.