

Whitefish processing

Quality whitefish deserves quality processing

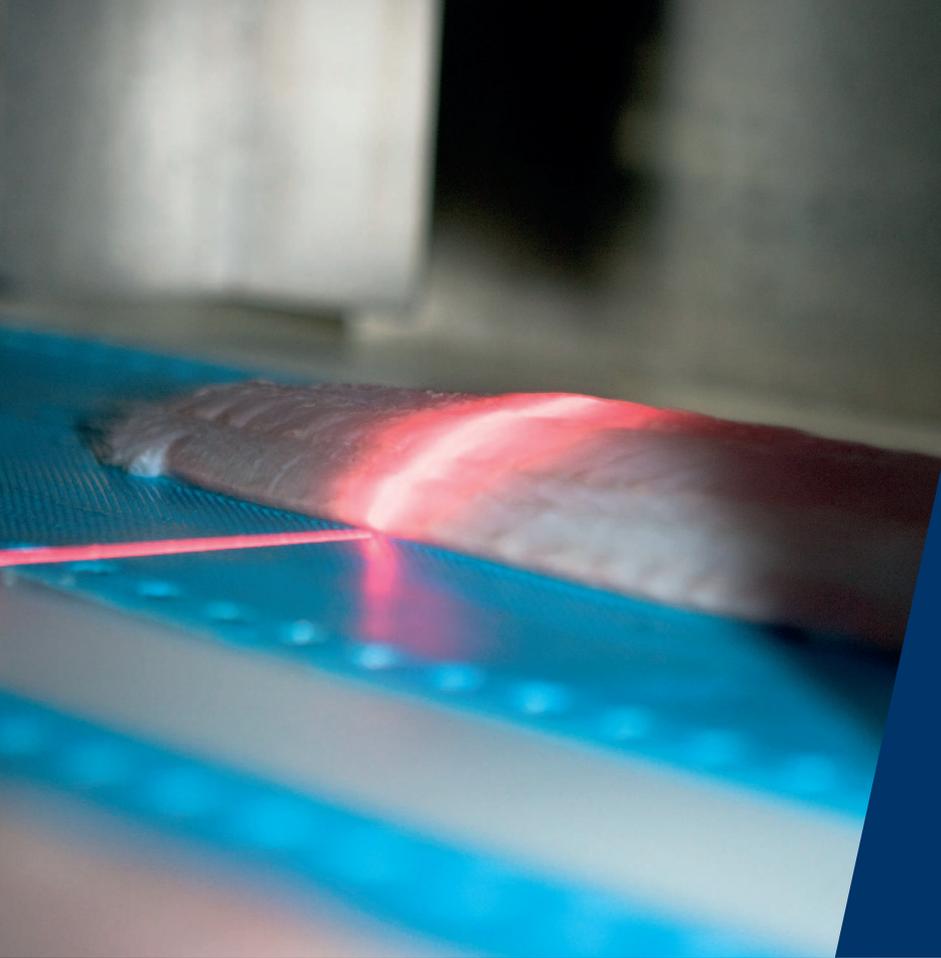


- Optimize throughput
- Improve quality & yield
- Achieve full traceability
- Maximize uptime
- Raise efficiency

Achieve high quality, maximum throughput and excellent yield

Marel's systems and solutions are designed to increase and maintain the highest quality, throughput and yield possible. The Marel team has the technological expertise and the practical know-how to optimize these critical factors and help processors manage their operation every step of the way. Marel's progressive technology and solidly built equipment can deliver accelerated returns on investment by enhancing productivity and streamlining the production process.





The Marel team has the technological expertise and the practical know-how to help processors achieve their production goals

Quality whitefish deserves quality processing

Quality is built into every aspect of Marel's solutions. Standalone units and turn-key processing systems are designed to preserve the best possible raw material quality throughout production; from improved raw material handling and advanced portioning methods to gentle product conveying and packing.

Marel also offers individual QC solutions that monitor and manage the QC process itself. Innova Quality Control software automatically connects QC checkpoints, QC stations and QC assurance systems to deliver a fully paperless QC process.



INNOVA
Food Processing Software

Innova Food Processing Software

Innova enables fish processors to maximize yield and throughput, conform to quality standards and ensure food safety. The powerful Innova software suite helps increase product quality and value by monitoring production, supporting process improvements and raising efficiency. It enables processors to easily benchmark suppliers and prevent potential production problems.

Innova provides a solid foundation for reliable data collection. It ensures full traceability and quality control throughout the value chain as well as communicating with planning and business management systems. This unique tool monitors key performance indicators such as yield, throughput, quality, capacity and labor efficiency. The modular portfolio offers applications for everything from simple device control up to plant-wide total processing solutions .



Full traceability across the complete value chain - from raw material reception, through processing and packing on to dispatch

Weighing, grading & batching

Weighing

The Marel series of precise, accurate and hygienic bench, floor and hopper scales is designed to suit a wide variety of weighing operations and environments. From the simple and reliable M1100 grading and packing scale to the compact, high-capacity Certified Flowscale, Marel offers a range of weighing units specifically designed to withstand the harsh environment of food processing plants – without any trade-off in weighing accuracy.

Grading

Marel graders are as accurate as they are efficient, whether it be small footprint standalone units or highly sophisticated sorting solutions with automatic infeed and batch takeaway systems. Renowned for their robust construction, the average lifetime of Marel graders is 15 to 20 years even in the harshest environments. Marel graders are designed to deliver higher yield and increased throughput with exceptional raw material handling. Every Marel grading system is hygienic in design and easy to clean.

Batching

Marel offers a range of fixed-weight batching and speed packing systems for accurate batches of fresh and frozen fish. Smart design and greater automation improve product handling. The systems weigh raw material into sub-weights, which are then selectively combined to form the optimum batch weight – fully automatic from input to delivery. High-speed precision keeps giveaway as low as possible, while ensuring the exact target weight.

Innova order fulfillment

Innova can communicate with other systems, such as ERP or other planning systems, to give you a powerful interconnected management system and produce your product to order. Enter the orders from your customers each morning and produce only what you know you can sell.



Onboard processing

The renowned M1100 and M2200 marine scales and robust marine graders are equipped with advanced motion compensation devices that make weighing and sorting almost as fast and accurate as on land.

Marel's on-board grading and packing systems process whole fish, fillets, shellfish and even by-products such as delicate roe sacks very efficiently. The marine graders and packing systems are precise and offer improved yield and quality while minimizing product handling.

Using Marel's tried and tested onboard solutions, fresh fish trawlers and pelagic freezer vessels can land products that are graded, boxed, labeled and ready for immediate distribution.



Innova Marine Pack

Integrated hardware and software system for onboard use that enables you to register relevant information like fish species and grades, harbors and fishing gear. The reports provide a graphic view of data and an overview of everything from catch value and packing history to cargo and e-logs.



On-board weighing, grading and packing solutions that improve yield and quality while minimizing product handling

Fillet processing

Filleting and trimming flowlines

Whatever the set-up or scale of production, Marel offers filleting and trimming systems to suit different needs; from highly advanced automatic systems with built-in traceability to basic manual lines that monitor performance. Filleting and trimming flowlines streamline processing with less product handling and continuous data collection in both wild and farmed whitefish processing. The raw material is weighed, graded, cut and packed in a continuous flow, increasing capacity by 50 to 80% per man hour. This results in higher throughput and increased labor efficiency.

Portioning

Marel offers intelligent, high-speed, high-precision portioning systems that are designed to consistently increase the primary product ratio, optimize yield and improve raw material utilization. With solid units like the I-Cut 11 PortionCutter and the StripCutter or sophisticated, high-tech systems like the Flexicut, an endless variety of value-added products can be created; from fixed-sized strips, dices and splits to high-value portions of fixed weight and length. The latest in innovative cutting patterns for loin and fillet cuts is available in Marel's advanced portioning lines that deliver custom made portions directly to orders.

X-ray bone inspection

Processors can reduce bone complaints and increase product value with cutting-edge X-ray bone detection from Marel. The SensorX bone detection system automatically finds bones and other foreign objects in fish products. The advanced technology provides bone detection capabilities that are unprecedented among automatic bone detection systems. After filleting and trimming, the X-ray bone detection serves as an automated QC station as well as the product inspection solution that enables processors to reach a higher level of product quality.

Innova real-time data collection

Accurate data collection is the key to efficient traceability and monitoring. The system collects reliable data in real time and presents it on user friendly dashboards and reports. Real-time data from the processing lets you monitor targets per employee or per process line for yield, quality and throughput.



**Efficient, high-speed,
high-precision portioning
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utilization**



Further processing

Forming

Marel offers both high-pressure and low-pressure formers for fish. The formers increase utilization of raw material, offer great yield and a highly customizable product range. The high pressure portioning and forming of fish enables the development of a wide range of products such as nuggets, croquettes and burgers for the home and catering industries.

Coating – breading and battering

Designed to enhance taste and texture, Marel's coating systems can supply the appropriate application for virtually any type of coating. The number of possible coatings is abundant; be it wet or dry, or a combination of both. Marel's coating applications deliver the exact process sequences needed with efficiency and ease.

Marinating

Marel offers a unique in-line marinating solution designed to process small batches. Keeping this process in-line eliminates the need for manual product handling. Marel has embraced the principle of working with small batches or single products because of its many benefits. Keeping batches small positively influences the distribution of additives and the speed of the process, while product damage is reduced dramatically.

Cooking and frying

Marel fryers deep- or flash-fry product at consistent, high standards. The fryers are equipped with a highly sophisticated oil management system for extended oil life and thus better yield. The end result is an optimally fixed coating that gives the product a perfect crunchy layer and the right appetizing appearance. Marel also offers a line of modular, spiral and linear ovens with high-grade steaming, cooking and grilling capabilities.



Innova Quality Control

The Innova Quality Control module allows quality personnel to enter quality related information at designated control points throughout the production process. All inspections can be directly linked to production, raw material source or final products. Historical data is available for as long as the customer wants and is easy to use for trend analysis.

WHOLE FISH HANDLING

Weighing, grading and batching

- Checkbin and modular graders
- Bulk and fixed-weight batchers
- Table and platform scales
- Flowscales
- Hopper scales
- Multihead weighers

Checkweighing, labeling, tray processing and packing

- Checkweighers
- Wraparound labelers
- Weigh price labelers
- Box/crate labelers
- Multi-lane convergers
- Tray turners and graders
- Ice dosers
- Packing stations and systems

PACKING AND DISPATCH

PRODUCTION MANAGEMENT

INNOVA FOOD PROC

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WHITE
PROCE
ONBOARD
ASH



PROCESSING SOFTWARE



EFISH
ESSING
RD AND
ORE



PROCESSING SOFTWARE

FILLET PROCESSING

Filleting and trimming flowlines, portioning, pinboning, bone inspection and QC

- Flowlines
- Water-jet cutters
- Portion cutters
- Strip cutters
- Water-jet pinboners
- X-ray bone detectors
- QC stations

PRODUCTION MANAGEMENT

Forming, coating and cooking

- Portioners and formers
- Mixers and applicators
- Marinade distributors
- Ovens

FURTHER PROCESSING

Advanced fillet processing

FleXicut

The FleXicut advanced fillet processing system combines high precision bone detection with water-jet cutting for pinbone removal and further portioning of the fillet. The system delivers high quality, high value, boneless products with precision, automation and flexibility. The portioning software is intelligent – it optimizes fillet utilization by finding the best cutting pattern for each fillet. This increases the production of high value loin pieces and makes it easy to portion directly to orders.

The FleXisort product distribution system delivers different pieces to the suitable packing line. The fresh product packing grader with its drop-down flaps treats the raw material very gently. It is designed to reduce overpack and minimize reject and rework. The system reduces the need for skilled labor and greatly improves overall yield and quality in loin and fillet production.

4. Precision cutting

The angle of the water-jet cutters adjusts to the cutting pattern and the location of the bones to make a v-cut as close as possible to the pinbones. FleXicut is also equipped with twin blades for dividing the loin, cutting the belly flap or tail, or portioning the fish to customer specifications.

1. Pre-trimming flowline

Efficient and hygienic flowline for pre-trimming of fillets. Its ultra-gentle product handling is unique and it offers a seamless infeed into FleXicut. After trimming, each fillet gently drops flat on the takeaway belt and is automatically lined up for the FleXicut. This minimizes labor requirements and helps keep product flow seamless.

2. Quality feedback

Innova software provides feedback on quality issues such as tail bones or blood spots from each trimmer, making it simple to correct them. As an option, work stations can be equipped with computer terminals for operator feedback, displaying quality control information and individual production rates.

3. X-ray bone detection

FleXicut locates the pinbones to an accuracy of 0.2mm to determine precisely the optimal cut configuration and cutting angle. The processor can control the level of pinbone material down to 4 to 6% of fillet weight, much less than in manual pinboning.

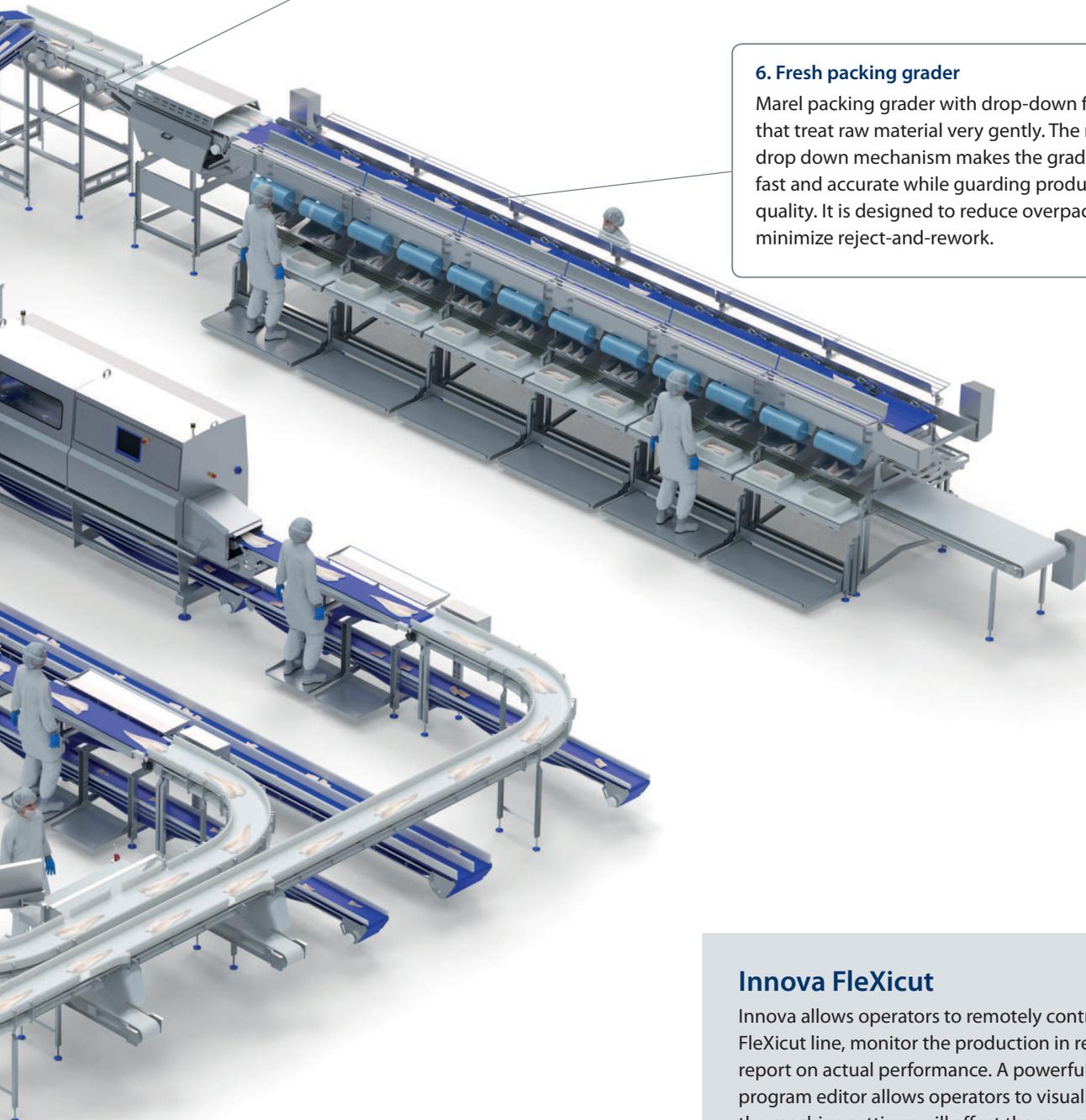
5. Intelligent product distribution

The FleXiSort product distribution system automatically allocates each of the various outputs to different packing lines.



6. Fresh packing grader

Marel packing grader with drop-down flaps that treat raw material very gently. The modular drop down mechanism makes the grader both fast and accurate while guarding product quality. It is designed to reduce overpack and minimize reject-and-rework.



Innova FleXicut

Innova allows operators to remotely control the FleXicut line, monitor the production in real time and report on actual performance. A powerful web-based program editor allows operators to visualize how the machine settings will affect the raw material. Information about all pieces and portions are collected in real time and stored in the Innova database, enabling users to analyze and optimize their portioning and trimming process.



Packing & dispatch

Checkweighing

The M-Check range of checkweighers combines high levels of accuracy with flexibility and capacity, making them the ideal choice for whitefish processing. Approved for process and end of line applications, the checkweighers monitor and optimize the accuracy of processing equipment and ensure compliance with EU and EEA weight legislation across a wide range of products. Marel checkweighers make it easy and efficient to manage underweight, overweight or non-weighed items in the production flow.

Ice dosing

Marel automatic ice dosers ensure continuous, accurate dosing, suitable for various box sizes. Marel ice dosers dispense an exact quantity of ice into fresh-fish boxes, ensuring uniform coverage while keeping excess weight to an absolute minimum. This precision greatly reduces transportation costs, particularly when air freight is involved.

Labeling

Marel labelers are accurate, reliable, inexpensive and easy to operate, ranging from Automatic Box and Crate Labelers to manual and automatic Weigh Price Labelers for a variety of pack sizes. Marel's highly successful weigh price labelers are designed

for maximum efficiency and quality in the weighing, pricing and labeling of retail packs. Different systems are available for packing products into boxes or crates with labels to match. Labeling QC inspection systems are also available to maintain label and pack presentation quality.

Pack handling

Efficient pack turners, singulators and convergers are necessary for a well-functioning packing system. Marel's range of turners and convergers helps make sure that product flow is maintained at an optimal speed, channeling products from multi-lane packing machines into a single line and ensuring correct presentation when a pack reaches a labeler.



Innova customer specific labeling

Innova can help simplify your labeling process and use the data you have already collected to meet different needs with ease. Innova Labeling selects texts and images from the database based on product, customer and destination, so you can use the same label design even if you need to print the label in a different language.





Whole fish sorting & packing system

1. Weighing unit

High precision dynamic weighing unit for weighing a continuous stream of individually separated pieces of various products.

2. Label printing (optional)

Simple or advanced labeling options available where barcode and real-time information can be printed for each batch.

3. Box take-away (optional)

Built-in take-away conveyor for delivering complete boxes to common exit point.

4. Packing stations

Each packing station is equipped with a holding bin, a pack-off chute and a tilted packing table for full visibility and easy access.

5. M3210 industrial controller

User-friendly graphical interface. Touch-sensitive and IP69 water resistant. Built-in Ethernet connection links to standard PCs and Innova Food Processing Software.

Innova production control

Integrated Innova software offers full performance monitoring, traceability and label management. The software provides a complete overview of all aspects of the packing process and its results.



The Complete Packing Solution offers fast and efficient grading, batching and packing of whitefish into fixed-weight packs in a single operation. Product handling is kept to a minimum, which maintains product quality while reducing labor costs. Integrated Innova software offers instant access to yield results as well as full feedback reporting of the packing and grading process.

Service & support



A global reach with a local focus

The Marel service organization operates under the principle of a global reach with a local focus. With offices and subsidiaries in some 30 countries, and a network of more than 100 agents and distributors, Marel is in a unique position to serve its customers wherever they may be located. Regional teams take the company closer to its customers, facilitating faster on-site response times while the international online support team offers remote technical support directly to the site or even the equipment where possible.

Innova OEE

With Innova Overall Equipment Effectiveness runtime information is picked up from the production lines in real time and provides an instant view of the current health of production. This enables you to unleash the full potential of your processing equipment, resulting in increased margins and order fulfillment rates.



Maintain maximum uptime

Marel's comprehensive preventive maintenance program offers a structured way to reduce the risk of unexpected breakdowns and helps maintain maximum performance. Maintenance costs become more predictable and routine tune ups are scheduled to fit into the production cycle.

Spare parts services

Marel offers flexible spare parts packages tailored to different needs. Customers can choose to maintain a full range of common use replacements tailored to on site equipment, keep spare parts kits for planned maintenance of individual items, or get individual parts as and when required. All Marel's parts are manufactured from high quality materials and provide optimal performance for the equipment.

For more information see: marel.com/fish-processing/service



**Efficient maintenance,
equipment and software
services that help processors
run their plants smoothly**

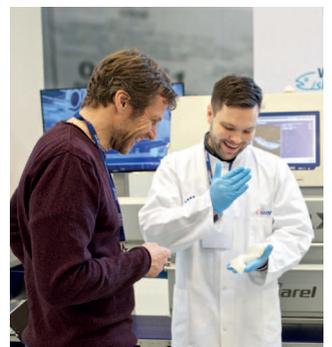


Welcome to our Whitefish ShowHow

Explore the future of whitefish processing

Marel invites whitefish processors from around the world to attend the annual Whitefish ShowHow at Progress Point, the company's demonstration and training facility in Copenhagen. The ShowHow displays the latest processing equipment, highlighting both fully integrated systems and a wide range of standard systems and standalone machines.

Live demonstrations staged in the 900 m² demonstration halls provide a unique, first-hand experience of Marel systems and equipment in action, while a team of professionals is on hand to answer questions. A parallel conference program includes lectures and seminars where Marel's specialists and guest speakers address current processing challenges.



To find out more: marel.com/whitefishshowhow

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