


Creating value through innovation

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# Whitefish processing

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- A close-up photograph of a whitefish head, showing its eye, scales, and gills. The fish is positioned horizontally, with its head facing right. The scales are silvery and speckled with dark spots. The eye is large and prominent, with a blue iris and a yellowish-orange ring. The gills are visible on the right side of the head.
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- Standalone units to complete solutions
  - Automation and digitalization
  - Production control software
  - Intelligent and sustainable design
  - Global service



# The company



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

## Who are we?

Marel is the leading global provider of advanced processing solutions and services to the fish, poultry and meat industries.

We began as an innovator nearly 40 years ago in onboard weighing technology and quickly made our mark in the fish processing industry with the development of motion-compensating onboard scales. To this day, we continue to combine our extensive knowledge of fish processing with annual investments in product development and innovations for processing whitefish and salmon, both farmed and wild, onboard and ashore.

Marel and its partners provide equipment and software that enables you to utilize raw materials better and produce high-quality products while also reducing processing time and increasing automation and food safety.

With manufacturing facilities in 12 locations worldwide, we serve the fish processing industry from two strategic centers with distinct industry knowledge: Whitefish – based in Gardabaer, Iceland, and Salmon – based in Stovring, Denmark.

Both centers have a dedicated R&D team to ensure that we provide the latest technology in processing equipment for all stages of the fish processing value chain, ranging from single scales to integrated production lines and turnkey systems both onboard and ashore.

## Innovation through partnership

Marel thrives on innovation, ingenuity, and its strong partnerships within the industry.

Our cutting-edge equipment and software components help you operate at peak productivity in all markets, irrespective of your operation's size. Our products positively and directly enhance the overall quality and value of seafood.

With offices and subsidiaries in over 30 countries on six continents and a global network of over 100 agents and distributors, our expertise in local markets helps us deliver the best fish processing innovation for your needs.

# Product range



## Primary processing

- Weighing
- Grading
- Batching
- Deheading
- Packing

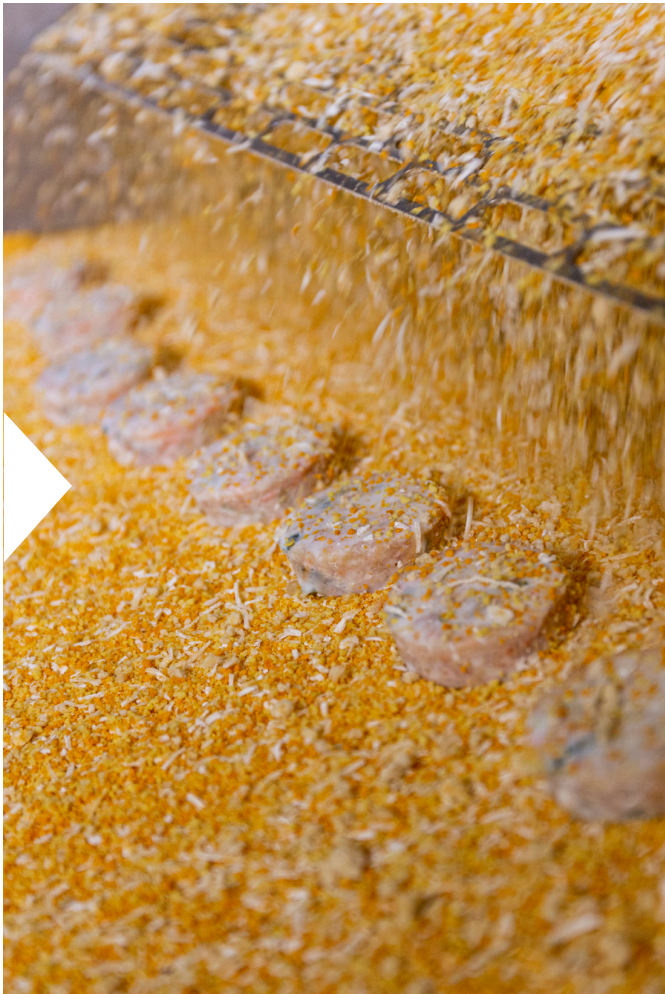


## Secondary processing

- Filleting
- Trimming
- Pinbone removal
- Skinning
- Bone inspection
- Grading
- Portioning
- Batching
- Weighing
- Slicing

◀ **Innova food processing software** - Full Traceability - Real-Time

**Marel products and solutions help fish processors optimize yield, quality, throughput and other critical factors across the whole value chain. Through our partnership with Curio, we are closer to becoming a full-line provide for the whitefish sector with the addition of several innovative processing solutions.**



## Value-added processing

- Forming
- Marinating
- Breading and coating
- Cooking and frying
- Weighing



## Packing and labeling

- Packing
- Checkweighing
- Ice dosing
- Ice machines
- Labeling
- Pack handling
- Weighing

# Software



## Innova Food Processing Software

**Innova combines Marel's production management software and processing know-how to fulfill your individual needs, keeping in step with the whitefish industry's evolving processing trends. It is a powerful and comprehensive software that collects and collates data, allowing food processors to improve performance and enhance productivity. From product delivery to final output, Innova streamlines processes, minimizes unplanned downtime, and enables processors to hit ambitious targets.**

The goal of implementing Innova is to help you to optimize your production performance to reach your goals. Innova provides a solid foundation for reliable data collection and allows full traceability throughout the system. It also allows you to monitor your key performance indicators (KPIs), such as yield, throughput, quality, capacity, and labor efficiency, in real time. These valuable insights will help you identify opportunities for improvements while ensuring that production conforms to quality and food safety standards.

- Take full control of your processes:
- Traceability throughout the system
- Reports and real-time dashboards
- Reliable paperless data collection in a centralized system
- Real-time monitoring of KPIs like yield, throughput and quality
- Experienced food processing consultants

Managers have full control of the production process, empowering them to deal with daily challenges and optimize results, from receipt to dispatch. Information can be displayed in reports and external systems to allow for comprehensive cost analysis and production planning. This allows managers to increase throughput, reduce giveaway, better use labor and raw materials while managing full traceability of the final goods.

The Innova Food Processing Software portfolio ranges from simple device control solutions to total processing solutions. Based on modular designs, the solutions are scalable, thereby providing maximum flexibility for salmon processors, ranging from small operations to large plant-wide systems. In addition, Innova can communicate with your other systems, such as an existing ERP system, to deliver you a powerful interconnected management system.

*Gain full control of your production process.*

# Primary processing



## Weighing

The Marel series of accurate and hygienic bench, floor and hopper scales is designed to suit various of weighing operations and environments across the value chain from raw material reception through processing and packing to dispatch. Marel scales are built to last and come with an industry-leading seven-year warranty on all our M1100-M2400 Bench Scales. We also offer a four-year warranty for the M1100-M2400 Marine Scales—the longest warranty on the market for a marine scale.

## Grading

Marel graders for whole fish are as precise as they are efficient. Whether small footprint standalone units or highly sophisticated sorting solutions with automatic infeed and batch takeaway systems. Marel graders for whole fish are designed to deliver higher yield and increased throughput with exceptional raw material handling. Marel onboard graders are used around the world to grade whole fish, fillets, shellfish, and byproducts such as delicate roe sacks. Every Marel grading system is hygienic in design and easy to clean. Renowned for their robust construction, the average lifetime of Marel graders is 15 to 20 years, even in the harshest environments.

## Batching

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

## Packing

Accurate, efficient, and intelligent, Marel offers whole fish packing systems that benefit processors by significantly decreasing labor costs and improving food safety. The fish is weighed, graded and batched in a single operation, minimizing giveaway and virtually eliminating human error that may disrupt a production line.

## Deheading

The Curio Deheading Machine is an advanced, dynamic, and accurate solution that automates a labor-intensive task with a simple user interface. Such automation reduces manual handling and optimizes raw material yield by minimizing the risk of human error. With the ability to consistently process several species, the Curio Deheading Machine delivers the flexibility processors need to fulfill consumer demand.

## Innova order fulfillment



Innova can communicate with other systems, such as ERP, 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.

*Organize your daily production according to purchase orders or customer expectations.*

# Secondary processing



## Filleting

Curio's unique Filleting Platform offers unparalleled flexibility and delivers a high and consistent yield. A dynamic, robust and reliable design allows the adaptability to fillet various whitefish species and sizes. Based on a single design concept and available in six configurations depending on your needs, the Filleting Platform lets you expand your processing size range capabilities, ensuring a long life for your investment.

## Trimming

Improved product utilization, reduced product handling and increased throughput are just a few of the benefits of Marel's various trimming systems. Our solutions suit all production sizes, from highly advanced systems with built-in traceability, yield monitoring and individual performance feedback to basic lines offering superb ergonomics and process efficiency.

## Pinbone removal with portioning

The FleXicut combines 3D imaging with precision bone detection and further fillet portioning. The FleXicut uses an intelligent combination of water jets and portioning knives to remove pinbones and cut fillets into portions. The system delivers high-quality, high-value, boneless products with accuracy, automation and flexibility. The resourceful portioning software optimizes fillet utilization by finding the best cutting pattern for each fillet, increasing the production of superior loin pieces and making it easy to produce directly to orders.

## Inspection

Processors can reduce bone complaints and increase product value with a cutting-edge X-ray bone detection solution from Marel. The SensorX system automatically finds bones and other hard contaminants such as metal and glass in fish products with unrivaled accuracy and reliability. The advanced technology provides bone detection capabilities that are unprecedented among automatic bone detection systems. After filleting and trimming, X-ray bone detection serves as a product inspection solution that enables processors to reach a higher level of product quality.

Integration with other Marel solutions, such as the RoboBatcher, provides a complete automated solution that increases production throughput, yield and flexibility while reducing footprint, labor cost and giveaway. SensorX is your guarantee to customers and consumers that they will always get safe, high-quality products.

## Portioning

Marel offers intelligent, high-speed, high-precision portioning systems designed to consistently increase the primary product ratio and improve raw material utilization. An infinite number of value-added products are created with solid units like the I-Cut series of portion cutters and the StripCutter. From fixed-sized strips, dices and splits to high-value portions of fixed weight and length. The latest innovative cutting patterns for loin and fillet cuts are available in Marel's advanced portioning lines that deliver custom-made portions directly to orders.



*We are focused on automation, digitalization and sustainability to create a range of solutions that ensure customers can meet and exceed food safety standards with minimal effort.*

## Skimming

Our fish skinner range covers everything from open-top skinners to high-capacity conveyorized skinners that can process several tons of fillets per day. Because each fish species has unique characteristics that must be considered for optimal results, our skinners are highly flexible and suitable for many common species, including flounder, cod, sole, catfish, tilapia, squid and many more.

## Weighing

Durability matters for the future as long lifespan of products is crucial to minimize environmental impact, therefore Marel offers a range of weighing units specifically designed to withstand the harsh environment of food processing plants without compromising accuracy. Our scales are suitable as stand-alone installations or part of a complete production management system. From the reliable and straightforward M1100 packing scale to the compact, high-capacity Certified Flowscale.

## Grading

Our highly accurate graders ensure optimal processing and packing performance by directing fillets, loins and portions based on size and quality—from the straightforward Compact Grader that automates grading and batching cost-effectively, to the completely modular SmartLine Grader that offers maximum flexibility and serviceability. In order to meet the most specific customer requirement, Marel also offers the Custom Grader, tailor-made to customer's needs, which makes its shape and size virtually unlimited. All of our graders can include advanced Innova reporting functions that deliver an excellent overview of your production processes. Based on valuable KPIs provided by Innova, you can make intelligent decisions on how to optimize your grading and batching results.

## Batching

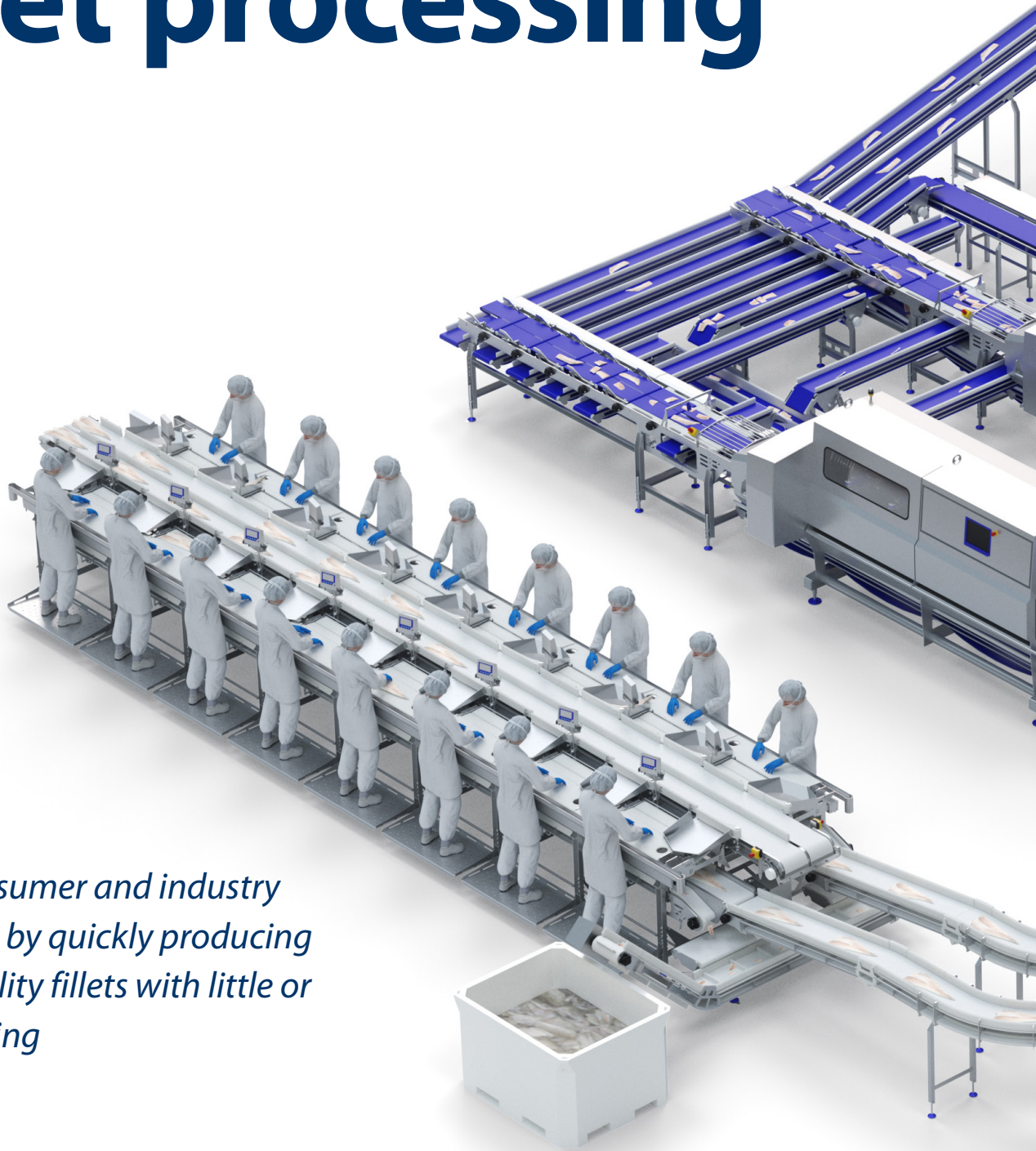
Marel's automated batching equipment efficiently delivers optimal fixed-weight batches of fillets, loin pieces and portions. Featuring an intelligent design that can withstand even the most challenging food processing environments, our batchers are accurate, reliable and robust. Fully automatic from input to delivery, raw material is weighed into sub-weights and intelligently combined to form the optimum batch weight. High-speed precision keeps giveaway as low as possible while ensuring the exact target weight.

## 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.

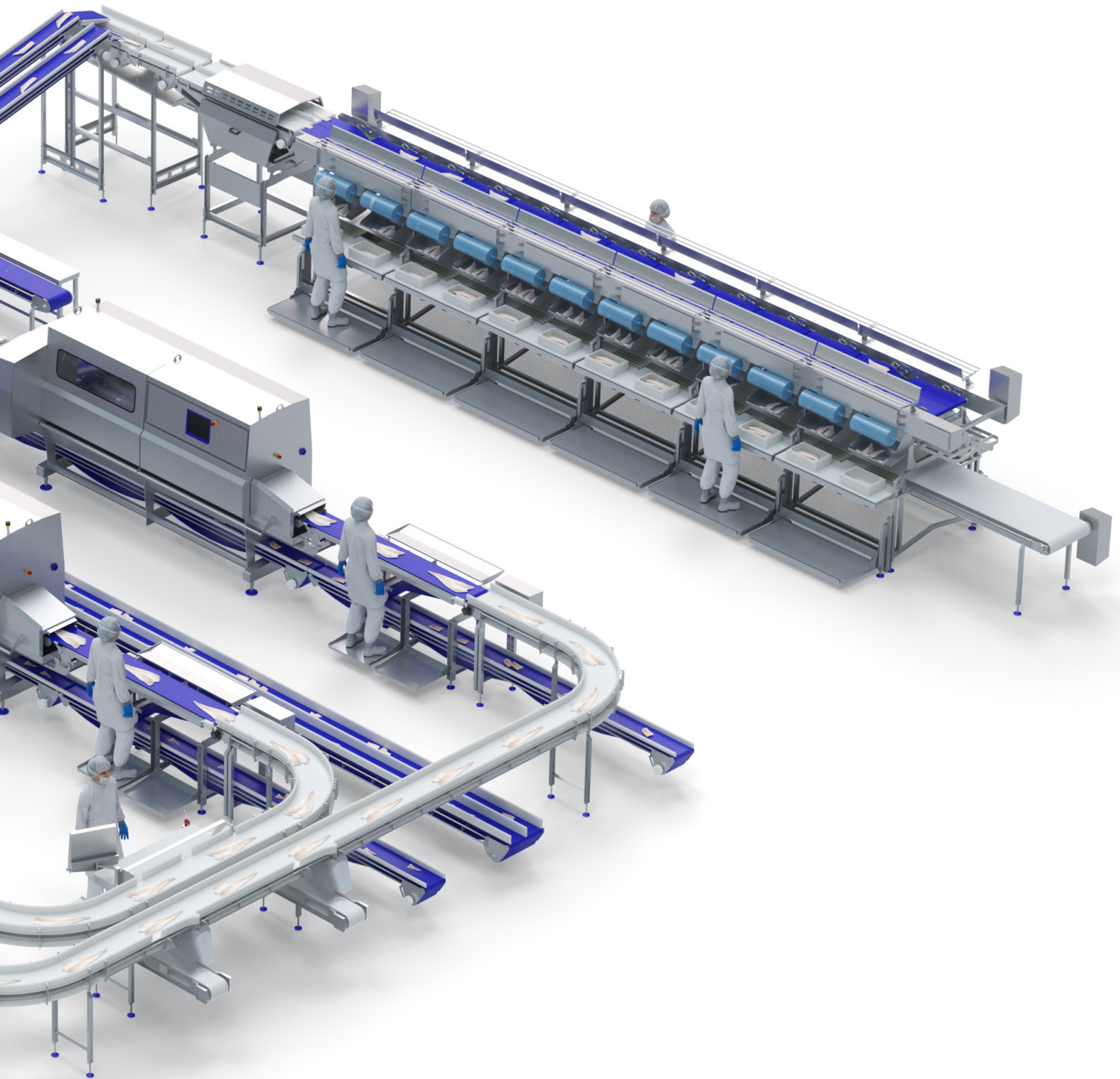
# Fillet processing



*Meet consumer and industry demands by quickly producing high-quality fillets with little or no handling*

## Filleting and Trimming Flowlines

Whatever the set-up or scale of production, Marel and Curio offer various filleting and trimming systems that streamline processing with less product handling and continuous data collection. The raw material is weighed, graded, cut and packed in a constant flow, significantly increasing capacity. The results are increased labor efficiency, better yield and quality of the end product.



## Innova Filletting and Trimming Solution



The Innova filletting and trimming solution is a cost-effective and straightforward software that enables fish processors to monitor and control their trimming and filletting process. With this valuable overview, managers gain detailed information on all critical data such as throughput, yield and individual employee performance, enabling targets and criteria to be established and measured.



# Value-added

## Forming

Marel offers both high-pressure and low-pressure formers for fish. The formers increase utilization of raw material, provide excellent yield and a highly customizable product range. The forming of fish enables the development of a wide range of products such as fish cakes, burgers and natural-looking fillets for the home and catering industries.

## Coating and breading

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 high-quality, uniformly coated products 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 significantly.

## Frying and cooking

The Marel fryers deep- or flash-fry products at consistent, high standards. The fryers are equipped with a highly sophisticated oil management system for extended oil life and thus better yield. The result is an optimally fixed coating that gives the product a perfect crunchy layer and a superb appetizing appearance. Marel ovens offer high-grade steaming, cooking and grilling capabilities, maximizing yield and product uniformity.

## 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.

# Packing and labeling



## Checkweighing

The Marel M-Check range of checkweighers combines the highest accuracy, flexibility and capacity, making them the ideal choice for whitefish processing. Approved for process and end-of-line applications, the checkweighers monitor and improve the accuracy of processing equipment output and ensure compliance with weight legislation across a wide range of products. Metal detection is also available. The system also integrates seamlessly with upstream processing equipment to ensure processing is optimized and giveaway minimized. Marel checkweighers dynamically simplify and efficiently manage underweight, overweight, or non-weighted items in the production flow.

## Packing

Using an exclusive combination of state-of-the-art batching software and innovative robotic technology, the RoboBatcher series packs and styles fish into trays, thermoformer packs, or boxes. Fixed weight packing ensures a result so close to the target weight that giveaway is minimal. Its exceptional grippers are designed explicitly for gentle product handling, ensuring even the most fragile fish isn't damaged during packing. The fully automated dispatch process ensures that once a package, job or recipe reaches the set target weight, it is immediately conveyed for final packing and further distribution. Depending on your packing needs, the RoboBatcher series comes in three types: RoboBatcher Box, RoboBatcher Thermoformer and RoboBatcher Flex.

## Ice machines

The MAJA ice machines offer quick product cooling with slow-melting ice and long-lasting freshness. Thanks to the MAJA ice machines' high efficiency and hygienic design, labor costs are significantly lowered, with less time spent cleaning. A wide range of accessories and options make ice handling, storage and batching easy, effective and save time. Ice made from MAJA machines is up to 30 % lighter than other types of ice used for fish cooling, requiring less to fill displays and reducing transportation costs.

## Ice dosing

Marel's automatic IceDoser ensures continuous and accurate dosing for various box sizes, dispensing precise quantities of ice and providing uniform coverage while keeping excess weight

to an absolute minimum. This precision significantly reduces transportation costs, particularly for air freight. Delivering uniform coverage at up to 16 doses a minute and batches between 1 and 6 kg, the IceDoser works with multiple box types and sizes simultaneously.

## Labeling

Marel's highly successful weigh price labelers are designed for maximum efficiency and quality for weighing, pricing and labeling retail packs. Ranging from manual and automatic weigh price labelers to box and crate labelers for various sizes, Marel labelers are accurate, reliable, inexpensive, and straightforward. Flexible linerless labeling delivers a premium shelf presentation of all popular tray sizes and skin packs. The standard wraparound labels offer plenty of space on both sides to communicate essential product information and comply with all food-labeling regulations. It also eliminates backing paper waste, making it a more sustainable option. Labeling QC inspection systems are available to maintain label and pack presentation quality.

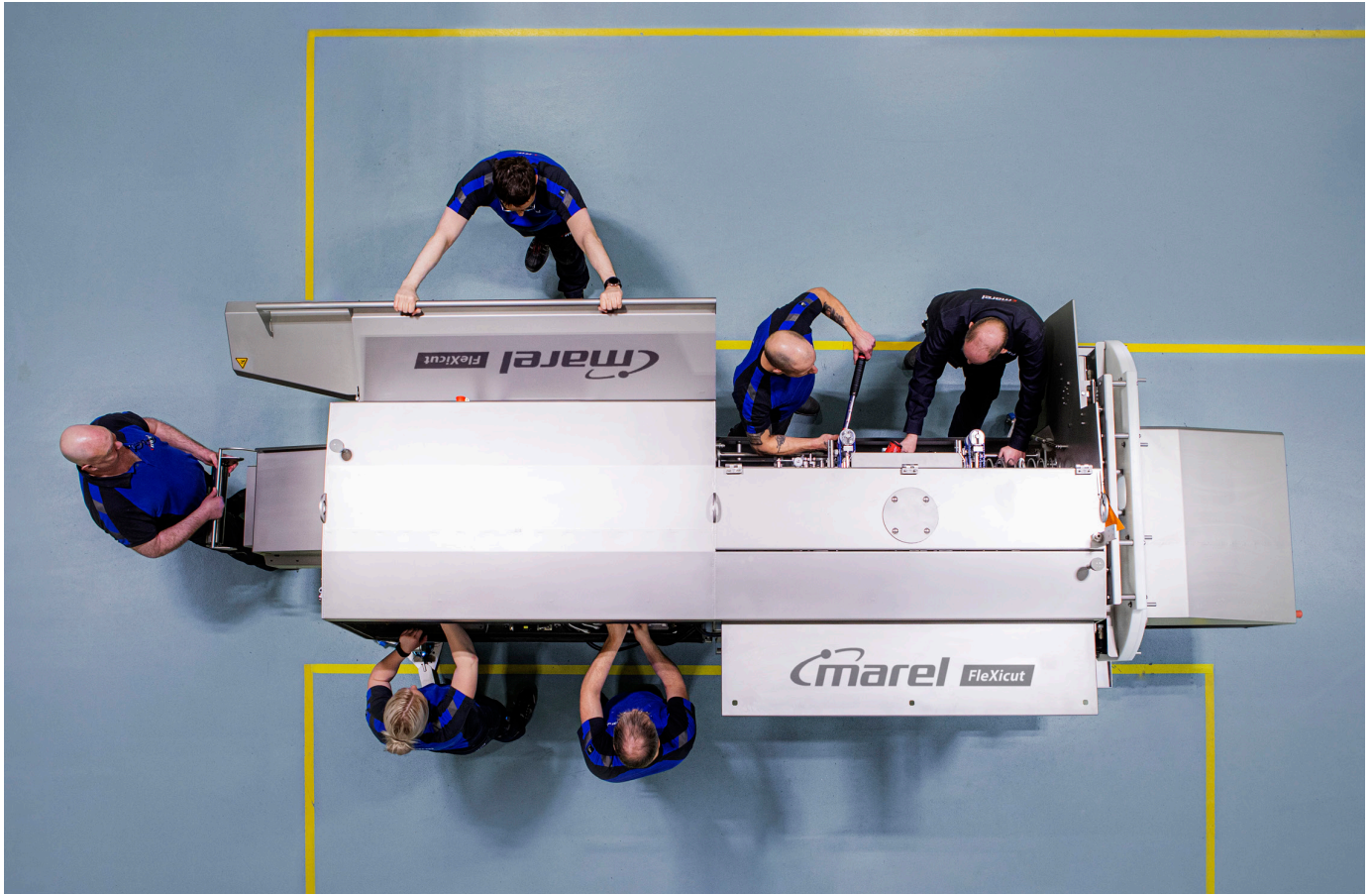
## Pack handling

Efficient pack rotating, singulating and alignment are necessary for a well-functioning packing system. Marel's range of full pack handling equipment helps ensure that product flow is maintained at optimum speed, channeling products from multi-lane packing machines into a single line with perfect orientation for further automated packing steps.

## 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. You can use the same label design even if you need to print the label in a different language.



# Service and support

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.

## Maintain maximum uptime

Customers can have peace of mind with Marel's wide range of customizable service solutions depending on the priorities and preferences of any given operation. Marel's service solutions are tailor-made into a unique and robust service agreement that can easily be adapted as operations change or grow. The comprehensive preventive maintenance program offers a structured way to reduce the risk of unexpected breakdowns and help maintain maximum performance. As a result, maintenance costs become more predictable and routine tune-ups are scheduled to fit into the production cycle, minimizing downtime and extending equipment lifetime.

## 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/en/service/spare-parts](https://marel.com/en/service/spare-parts)

*Improve your output with proactive services.*



# Every connection counts

**Marel offers a wide variety of digital and in-person events where we discuss essential industry information and exhibit innovative processing equipment for whitefish processors from around the world.**

## Physical events

In person, we welcome guests at various worldwide exhibitions where we showcase our latest innovations. Marel is present at all major seafood trade shows to meet our customers.

Every year we host in-house events that focus on the processing of specific proteins and species. We call them "ShowHows," and we invite processors from around the world to join in. 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 facilities that simulate real plant conditions 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.

## Digital events

In some cases, the distance between us can be far, and traveling is time and money-consuming. With our digital events, we can easily meet you online, present our equipment and solutions with webinars, virtual demo tours with simulated production flows, and even facilitate online demos from our demo centers.

*In partnership with our customers, we are transforming the way food is processed.*

*TRANSFORMING FOOD PROCESSING*

