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**Fish processing**  
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**The future of whitefish processing** has arrived at Brim

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**Marel is creating a more sustainable** fish industry

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**Marel, Curio and Valka** are transforming fish processing

# Insight



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## Going beyond equipment and into the future of fish processing

From a demand for more sustainably processed products to the rise of eCommerce, and shopping for frozen to fresh to ready-to-eat, the industry is shifting. We are constantly learning how to help processors maintain global food production, decrease food waste, and adapt to the consumers' evolved preferences while facing labor shortages.

We are developing new solutions and uniting with like-minded innovators to help our customers improve their speed and scale to adjust to this changing market environment. In this issue of Insight, we explore the ways that we are helping fish processors become more flexible, reduce processing time, and increase automation, leading to improved food security worldwide.

Marel is transforming food processing, and a big part of that transformation is going beyond equipment with the rapid evolution and application of new technologies in food processing. Smart factory technologies such as robotics and advanced data-driven solutions

help processors keep lines operational, sustainable and efficient, and improve product quality and employee wellbeing.

Connected by a rich history of knowledge and experience, we have united with Curio and Valka to accelerate into the future with a broad range of cutting-edge solutions that continue to help fish processors meet the industry's challenges and gain a competitive edge. Our wide range of equipment is built for processors of all sizes and various species, and together, we are in a vital position to reach our customers worldwide quickly and efficiently as a united solution provider.

Through our continued collaboration with customers like you, we are helping to ensure the safe, sustainable and affordable production of food around the world. It is our hope that the stories in this issue continue to inspire you to work towards our shared goals.

**Gudbjorg Heida Gudmundsdottir**  
*Executive Vice President of Marel Fish*



# The future of whitefish processing has arrived at Brim

Brim is catching and processing fish more efficiently and sustainably after investing in Marel, Curio and Valka solutions

A significant element in the transformation that is taking place in fish processing is the rapid evolution and application of new technologies. Today's fish processors need to keep lines operational and efficient at all times.

Smart factory technologies such as robots and automated digital solutions have allowed Icelandic whitefish processor Brim to achieve this by streamlining processes and improving product quality, raw material utilization, efficiency and employee work conditions. Today, Brim is one of the most advanced whitefish processing plants in the world.

## Time to upgrade

Observing the rapid development of technologies over the last few years in the fish processing industry, such as automation, robotization and digitalization, Brim felt it was time to upgrade their existing equipment to stay ahead of the competition and move towards a more sustainable future. Many of the processes along their line were done manually, and those that were automated had outdated machines. As one of the largest fishing companies in Iceland, their annual throughput of up to 24,000 tons of fresh and frozen fish is exported to over 30 countries worldwide.

Responsible fishing and processing, emphasizing the sustainable use of fish stocks and innovation, have driven Brim's evolution since its founding. In the summer of 2020, Brim closed their factory doors for three months to install an entirely new production line. To increase raw material utilization, improve product quality, and streamline processing performance, Brim installed some of Marel and Curio's most advanced solutions. A Valka Cutter had been previously installed for Brim's redfish processing.

## Successful installation, terrific results

Although this came at a time when the factory was closed to anyone outside of Brim because of COVID-19, Marel service technicians were allowed to enter to install the solutions successfully. By July 2020, the line was back up and running. The result is improved yield, better consistency, a wider variety

of products and increased capacity per man-hour. The innovative technology has allowed them to create value from what would otherwise be considered waste and utilize nearly all of the raw material. "Today, we are proud of our smart factory, where there is a high level of connectivity, making it easier for Brim to meet customer orders quickly and precisely, making full use of the valuable raw material," says Gísli Kristjánsson, Director of Production at Brim.

## Automated from beginning to end

Upon entering the facility, the tub of fresh catch is weighed with a floor scale and automatically fed into the line with a large robot. Fish is graded by size, deheaded with Curio's Heading Machine, filleted with the Filleting Platform and skinned, delivering high throughput and yield. Heads and skin are then sent for drying and sold as a byproduct while fillets continue to move down the line.

Fillets are sent to the Flexitrim, where each station is equipped with a screen that provides the information operators need to trim the fillet perfectly, and delivers real-time traceability and monitoring to management. Fillets are then seamlessly streamlined into the Flexicut, where the fillet is scanned for optimal pinbone removal and cut into portions. Each portion is then sorted according to customer orders in the Flexisort and scanned through the SensorX for further bone detection. The gathered information is sent to the RoboBatcher Box to optimize packing and minimize giveaway.

Once boxes are automatically checkweighed and labeled, the IceDoser dispenses a precise amount of ice into the box, ensuring that coverage is uniform and excess weight is kept to an absolute minimum. Innova controls the robotic box distribution in dispatch, and boxes are automatically palletized.

## The game-changers

The Flexicut is a solution that has significantly increased Brim's production capacity and raw material utilization by effectively automating and thus speeding up the trimming. The data-driven technology gives Brim the power to make smarter decisions according to customer demands. "By analyzing and optimizing the raw material, the Flexicut delivers the most value from the different sizes of fish and gives us the agility to fulfill orders without having to think about how to best utilize the rest of the fish."

Another benefit to the level of automation that Brim has adopted through the Marel, Valka and Curio solutions is the increased well-being of line operators by reducing physical efforts and manual labor. Jobs that were once physically demanding have now evolved into monitoring roles, and employees are growing within the company. →

*Icelandic fish processor Brim is running one of the world's most advanced facilities after installing innovative equipment*



### Digitalizing the line

Through real-time monitoring and order management, Innova has made Brim's production scheduling according to market demand much easier, and products are now fully traceable from vessel to market. "With Innova, we have more information about the product than ever before and a clear overview of the status of every order. We can see how much raw material is being utilized and how many products have been packed," says Kristjánsson. "It makes scheduling easier and allows us to monitor our production status in real time."

By combining the traceability capabilities of Innova with the high levels of automation of the Marel and Curio solutions, customers can rely on Brim to deliver high-quality, fully traceable and safe products.

### A long and strong relationship

Established in 1985, Brim is among the largest fishing companies in Iceland. With close to 12% of Iceland's cod-equivalent catch quotas, the company employs roughly 800 people and has an annual revenue of around 300 million euros. Brim's operations cover the entire value chain from fishing, through processing, to the sale and distribution of their products.

The relationship between the two companies goes back to Brim's founding in 1985 with the purchase of scales. Over the years, that relationship has evolved through cooperation and collaboration to transform fish processing.



## Meet our new high-quality pinboner

The latest edition of our Pinbone Remover MS 2610 for salmon is a straightforward machine that effectively does the job without damaging the fish, using less water and is easy to use.

### Removing the bones, not the quality

The process of pinbone removal in salmon is a matter of removing the 32 bones in every fillet—a labor-intensive job that, if done by hand, that risks damaging the fillet, can cause gaping and increase the risk of bacteria. A pinbone remover extracts the bones with a toothed roller as the fillet passes on a conveyor belt below without damaging the fillet.

### A good starting point

The MS 2610 is an excellent primary machine to begin automating your pinbone removal. It can be used as a standalone machine for manual infeed or integrated into a production line, either as a single lane machine or dual lane. The Pinbone Remover has three-speed settings for the pinbone roller to adapt to the fish's varying conditions. Likewise, the pressure on the pinbone heads can quickly be adjusted by a weight bar if needed. An optional drip tray and a filter unit are available to collect the pinbones and offal under the machine.



### Reduced water usage

We have applied a new type of water nozzle to maintain the tooth roller's cleanliness for maximum performance at all times. Water consumption is decreased to 5 liters per minute per lane, approximately 20% less than other pinbone removers. The open design and quick-release system on all conveyors make cleaning easy.

Find out more about the new Pinbone Remover MS 2610 [marel.com/pb-ms2610](https://marel.com/pb-ms2610)

# 5 ways Marel is creating a more sustainable fish industry

We are always working towards a world where quality food is produced sustainably and affordably

We at Marel take our role in mitigating climate change very seriously and we are fully committed to protecting our planet and preserving its resources. Sustainability is at the core of our innovation process and embedded throughout our operations, enabling our customers, our investors and us to take sustainable food production to the next level.

The food industry faces many global challenges, including climate change, diet-related diseases, water scarcity, lack of food traceability and food safety risks, to name a few. In a world where sustainable development is a necessity, food processors require solutions that meet the needs of present generations without compromising future generations.

We continuously monitor how our operations and the systems and solutions we provide affect society economies, and the environment.

## 1. Minimizing climate impact

The sustainable use of raw materials, water and energy is a top priority for the fish processing industry. Throughout the entire fish processing value chain, Marel encourages and promotes the most sustainable use of resources to minimize environmental impact and prioritize environmental protection. We focus on building solutions that have the least impact on the environment and maximize the efficient use of resources, including raw materials, water, and energy.

Knowing that reducing food waste, energy and water consumption significantly minimizes our customers CO2 footprint during production, we created the FleXicut. The FleXicut is an advanced solution that optimizes fillet utilization in pinbone removal, filleting and portioning. Raw material utilization is maximized with X-ray pinbone detection that intelligently determines the optimal cut configuration and water-jet cutters accurately cut as close to the pinbones as possible using only a tablespoon of water per fillet. The FleXicut exemplifies Marel's commitment to transform the way fish is processed more sustainably.

## 2. Ensuring food safety

We embrace our role as a company in the global fish industry by ensuring the highest food safety and quality standards. For over 40 years, Marel has been helping fish processors reduce processing time and increase automation, leading to improved food safety worldwide.

By automating tasks that are otherwise done manually across the fish production line, food safety risks are minimized by eliminating the chance of human contamination. Building equipment that is accessible and easy to clean is also one of the many ways that we ensure safe products for consumers.

Another is X-ray technology that enables fish processors to detect and reject foreign materials that can have devastating consequences for consumers and processors. Offering high levels of consistency, accuracy and quality, this type of technology is far superior to the manual inspection processes that preceded them. A fine example of this is Marel's SensorX—a proven industry-standard solution for bone detection that automatically finds bones and other hard contaminants in fish, enabling processors to deliver consistently safe, high-quality products.

## 3. Eliminating food waste

We believe that every gram counts and decreasing food waste continues to be a big part of transforming the way fish is processed. We work towards decreasing food waste and increasing raw material utilization through automation and digitalization. Our goal is to maintain the highest possible food quality and drive greater overall efficiency and sustainability from catch to table by moving towards demand-driven production.

Simply put, automation reduces human error and increases optimal cutting, trimming, portioning, and packaging to reduce food waste. Our range of automated fish processing machines, solutions, and services increase yield, utilize as much of the raw material as possible, and create valuable by-products that reduce food waste throughout the entire supply chain.

## 4. Catch to table traceability

Consumers demand full transparency and traceability from their food. Not only do they want to know the nutritional value of their fish, but they also want to know the origin and the safety standards involved in their journey from sea to supermarket. Traceability is an integral part of Marel's innovation for developing solutions and software so that fish processors are equipped with the data needed to meet and exceed expectations.

Our Innova Food Processing Software provides processors with full traceability of products throughout the entire value chain. This valuable information gives fish processors the ability to withdraw or recall products that have been identified as unsafe or incorrectly labeled, contributing directly to food security, increased efficiency and improved nutrition for consumers around the globe.

## 5. Corporate initiatives

As an important step in our sustainability journey, we have committed to the Science Based Targets initiative to meet the goals of the Paris Agreement, aiming for carbon neutrality well before 2050.

In addition, Marel has been inspired by the UN Sustainable Development Goals (SDGs) call to the private sector for corporate responsibility, transparency and being a part of the solution. We believe innovation is the primary way to make an impact and a meaningful contribution. We are focused on three of the SDGs: to improve food security and traceability (goal 2), support sustainable development in food production (goal 9) and ensure sustainable consumption and production patterns (goal 12).

Marel is adopting climate-related reporting as recommended by the Task Force on Climate-related Financial Disclosures (TCFD), giving us a powerful tool to understand and act on the risks and opportunities associated with climate change.

## Our commitment continues

We continue to work towards reducing our direct and indirect carbon footprint and do everything in our power to support our customers on their journey to climate change mitigation. Our vision of a world where quality food is produced sustainably, safely and affordably enables us to think big, but only in partnership with our customers can we transform the way food is processed.

# Tianyun builds new brand Trout Fresh with Marel automation

The company has created successful brands such as "Tianyun," "Tianshan Salmon," and "Tianshan Trout," as well as the food brands "ZunGui" and "GuiLai".

## Marel's automated solutions have allowed Chinese trout processor Tianyun to seize opportunities in a post-Covid market with new brand Trout Fresh

Xinjiang Tianyun Organic Agriculture Co., Ltd. is a leading fish producer, processor and retailer in China with an annual farming and pre-processing capacity of 6,000 tons. From ecological breeding and farming premium trout to processing and selling products in their restaurants, Tianyun's business covers the entire value chain. Tianyun has invested in Marel equipment to automate some of their most integral processes in order to cater to the high market demand for portioned and sliced trout products effectively and efficiently.

When the COVID-19 pandemic hurt traditional sales in 2020 but elevated online and offline operations, Xinjiang's brand "Trout Fresh" seized the opportunity and launched a trout processing project that delivers a wide range of high-quality, convenient products to fulfill consumer demand.

### Addressing labor insufficiency

The ambitious project required a new facility that was completed in just seven months. Most processors in the Chinese aquatic processing industry are small or medium-sized enterprises where manual processing is still predominant and capacity is low. When the facility planning began, Tianyun was determined to install advanced automated equipment to address the labor shortages they faced.

"It's quite difficult to recruit workers in Xinjiang and even harder to retain them," says Mr. Zhan Taorong, Deputy General Manager of Tianyun. "By implementing automatic processing equipment, we can solve the problems of labor insufficiency and lack of skills." Three Marel machines were installed to create a diversified range of standardized products and reduce labor dependence—the MAJA Skinner, I-Cut 130 PortionCutter and Multi-Angle Slicer I-Slice 135 MA.

### Marel's reputation speaks for itself

Once the decision to move towards automation was taken for the Trout Fresh project, Tianyun compared equipment and solutions from several suppliers around the world, and Marel was the clear choice. "Marel has a strong reputation in the industry by virtue of its proven technology, reliable equipment performance and low failure rates," Mr. Zhan explained.

*"The cutting capabilities of Marel's slicer for fixed weight or fixed thickness combined with the consistent presentation and the high quality of the end products is something that other suppliers in the market are unable to offer," says Tian Gang, Production Manager at Tianyun.*

### A market destined to grow

The domestic trout market in China has been rapidly growing since the beginning of 2021 and demand for trout products from restaurants and retailers have steadily increased. Since the second quarter, domestic sales of trout products have grown to the peak

level before the pandemic. The rapid development of e-commerce channels further drives the sales of portioned and sliced products in small packages.

"These portioned and sliced products are sold mainly through retail channels, especially the emerging online retail channels such as Hema Fresh and Meituan. Requirements for the products sold through these channels demand a high standard of quality, appearance and hygiene, and the weight of the products needs to be very accurate. It is difficult to recruit the highly skilled workers required for such precision portioning and slicing, and it is time-consuming to train them. The automation provided by Marel's solutions mean that the high requirements from our customers can be easily satisfied," Mr. Zhan says.

When it comes to the future development of the trout market in China, Mr. Zhan shows his confidence: "In the next few years, the domestic trout market is expected to continue to grow rapidly. Given the short transportation radius of fresh products, we are considering setting up new facilities to increase capacity. In the new facilities, we will work with Marel to a further and deeper level."

### About Tianyun

Xinjiang Tianyun Organic Agriculture Co., Ltd. is a fish farming, processing and retail leader located in the trout production base in Nilka County, Ili, Xinjiang. The company began by selling whole fish and fillets when it was founded in 2014. Today, Tianyun processes fish and sells portioned, sliced, filleted and whole fish to retail, restaurants and hotels across China. The company has built a complete salmon and trout value chain covering research and development, fry breeding, intelligent farming, processing, cold chain logistics, marketing and food services.

Tianyun is a nationally accredited high-tech company, a specialized and innovative "little giant" in the Xinjiang autonomous region, and one of the Food Basket Guarantee Enterprises recognized by the NDRC. Tianyun has been accredited with the Best Aquaculture Practices (BAP) certification and HACCP certification.

The company breeds 8 million trout per year, with an annual capacity of 6,000 tons and more than ¥100 million in sales. As the new Trout Fresh project progresses, its capacity will increase to 10,000 tons within three years.



# United, Marel, Curio and Valka are transforming fish processing



Our shared vision is of a world where quality food is produced sustainably and affordably.

**Driven by a passion to help feed our growing world, Marel, Curio and Valka are united to create innovative and sustainable solutions for the seafood industry.**

We do this by producing automated, data-driven and robotic fish processing solutions that ensure food safety, eliminate food waste and provide complete traceability. Our wide range of equipment is built for processors of all sizes, from single-skill units for specific processes such as weighing, cutting and bone removal to complete solutions such as grading, filleting, portion-cutting and slicing lines.

Driven by shared experience and knowledge, we help fish processors meet the industry's challenges and gain a competitive edge. We share a long history of developing cutting-edge solutions for the whitefish, salmon and seafood industries in close collaboration with our customers around the world. With our fingers constantly on the pulse of the industry, our customers are maximizing their raw material, decreasing their dependence on labor, and efficiently adapting to the ever-changing market demand.

Driven by innovation, we create solutions that utilize digitization, automation and robotics. Our joint technical know-how accelerates the development of state-of-the-art technology and allows processors to adapt swiftly and intelligently to a rapidly changing market. Our advanced equipment, solutions and software help fish processors optimize yield, quality and throughput across the value chain while decreasing labor dependence and raw material waste.

Driven by commitment, we support our customers in maintaining optimal production flow, uptime, and output with local sales and service teams. Together, we are in a key position to reach customers quickly and efficiently worldwide by leveraging our global sales and service network in over 30 countries, ensuring proximity to customers for sales, installation and aftermarket services. We continuously strive to maintain close partnerships with our customers, helping them secure reliable and high-performance production throughout the life cycle of their equipment. Our strong local presence is also key to understanding the market, consumers, retailers and trends in the food industry.

Driven by data, we improve productivity and help you make more informed decisions for your business. Helping you produce the right product at the right time for the right customer is our priority, and the key is data. Through our data-driven solutions, the opportunity to increase product value, significantly reduce food waste and move towards a more demand-driven production is well within reach. With reliable data, processors have access to vital machine insights that can help optimize your line and reduce downtime when service is required.

Driven by collaboration, we grow with our customers to meet and anticipate their needs. Through our customer partnerships, we share valuable information that moves the innovation of the fish processing industry forward. As the food processing landscape changes and consumer demand evolves, our customers can count on us to grow alongside them with the equipment, software and solutions that they need. Whether large or small, from sea to table, Marel, Curio and Valka have the equipment for your fish processing needs.



# Fish packing perfected with robotics

Marel's RoboBatcher series is the world's leading intelligent robotic solution for fish packing, improving food safety, minimizing giveaway and eliminating human error

At a time when covid-19 has made it difficult for fish processors to find and depend on labor, adapt to shifting market demands, and maintain line flow, automation has become increasingly significant. For operators, the intelligent automation of the RoboBatcher series translates to minimal giveaway, improved food safety, significantly decreased labor costs, and eliminated risk of human error and dependency that may be detrimental to a production line.

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 fixed weight boxes so close to the target that giveaway is minimal. The fully automated dispatch process ensures that once a box reaches the set target weight, it is immediately conveyed out for final packing and swiftly replaced by a new box to pack. Depending on your packing needs, the RoboBatcher series comes in three types: RoboBatcher Box, RoboBatcher Thermoformer and RoboBatcher Flex.

## Transforming the way fish is packed in boxes

With unprecedented accuracy and speed, the RoboBatcher Box automatically styles and packs up to 24 boxes simultaneously, with up to 12 various predefined jobs, into polystyrene and cardboard boxes for retail, catering, and further processors. Fillets can be packed skin to skin or meat to meat. Icelandic fish processor Vísir installed the RoboBatcher Box in November 2019 and has experienced tremendous results in their fish production. "The system is now such that no human hand touches the product after it enters the robot, and as a consequence, each packed box is much closer to the desired weight," Ómar Enoksson, Production Manager at Vísir, explains. "The resulting combination of faster production speed and less handling has had a significant impact on product quality."

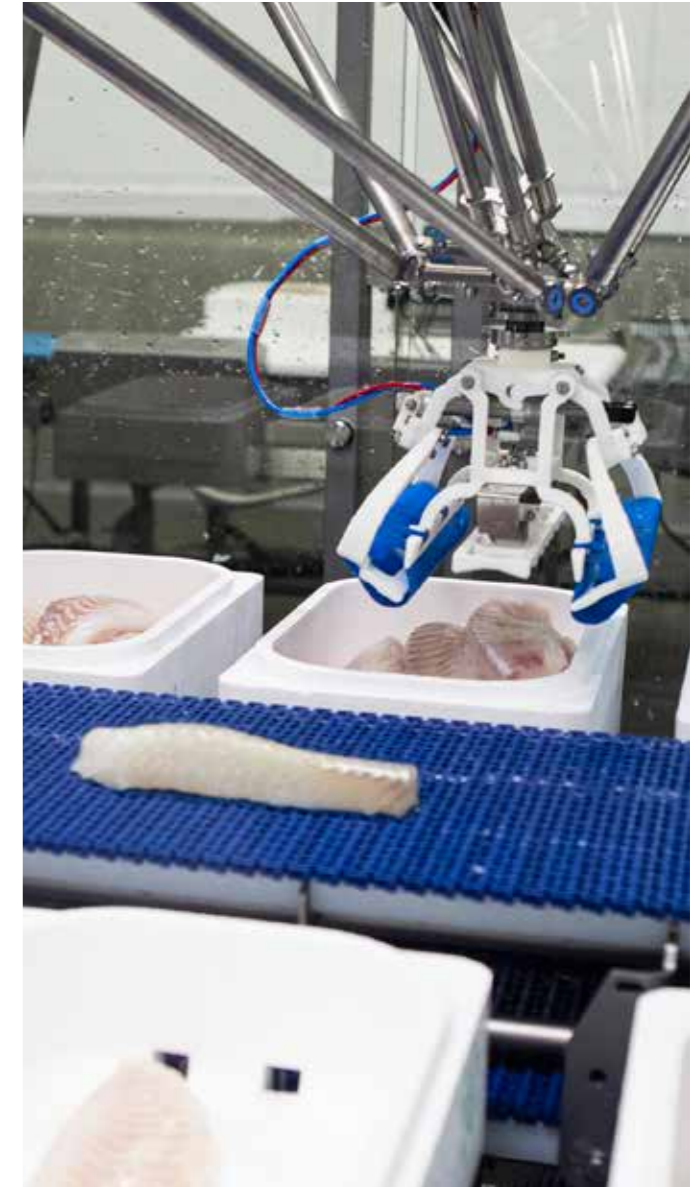
## Packing slices, portions and whole fillets

The fully automatic RoboBatcher Thermoformer packs fish portions, slices and whole fillets into thermoformers at an impressively high speed. The intelligent recipe control software combines the individual weights of incoming products to a fixed batch weight, fulfilling orders quickly and efficiently and processing up to 120 pieces per minute. Primex Norway was among the first seafood operators in the world to install a RoboBatcher Thermoformer for whitefish. General Manager Martin Rasmussen said of the positive changes in their production line, "we can control and monitor the giveaway much better. We can also utilize the fish differently because it makes more uniform packing possible, compared to manually." To learn more about the RoboBatcher Thermoformer, visit our whitefish and salmon product pages.

## Adaptability is key

The RoboBatcher Flex is a highly flexible system designed for high throughput and accuracy of fixed-weight and catch-weight packing of fish fillets into trays. With the capability to intelligently batch and style various portions of fish products, the RoboBatcher Flex accommodates a wide range of plastic and polystyrene trays. The system handles up to three individual tray jobs simultaneously and provides full traceability for individual portions. "We are not just reducing operational costs and maximizing yield—we are improving the quality of the products and creating a system that will positively impact the operators' working environment because access to labor is becoming a more significant challenge," says Global Product Manager of Robotics at Marel, Søren Raahauge. "We are sure that the future lies in automation."

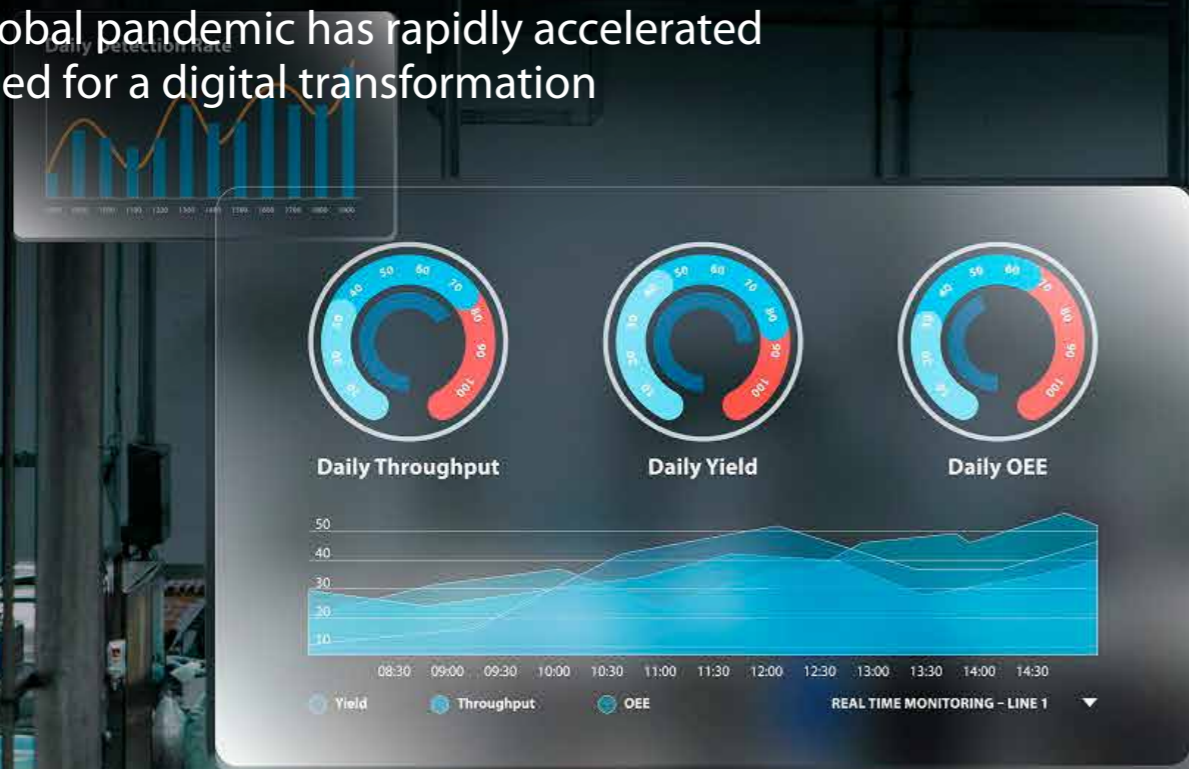
For more than 30 years, Marel has produced innovative equipment and solutions for the fish processing industry that have improved yield, quality and throughput across the value chain for countless customers. By continuously transforming food processing, we enable our customers to increase yield and throughput, ensure food safety and improve sustainability in food production. Please visit our pages for the whitefish and salmon industries to learn more about our fish processing solutions.





# Why is digitalization essential for fish processors?

The global pandemic has rapidly accelerated the need for a digital transformation



It's no surprise that digitalization is transforming the fish industry. But what's behind the "digital" buzzwords, and what do they mean for your business?

## Significant improvement opportunities and accelerating progress

Although progress has been underway for many years, the global pandemic has dramatically accelerated the rate of change for digitalization. Innovative solutions have been vital in responding to the rapidly changing environment, and most businesses have ramped up their investments accordingly.

Adopting new technology, for example, by integrating fish processing software across your production line, can give you a competitive edge, whereas delaying necessary changes leaves you at risk of being left behind. But digital transformation does not mean impulsively throwing technology at problems. On the contrary, a successful digital journey requires a clear vision and purpose, supported by in-depth expertise. As Innova Sales Director René Kjaer advises: "Be well-prepared before embarking on your digital transformation and don't underestimate it. Succeeding in this transformation takes clear objectives and well-thought-out planning."

The idea of digitalization might seem daunting, but the nature of the fish industry—accustomed to constant change and the need to adapt—means that processors are ideally situated to take on the challenge and reap its rewards. With a proper understanding of your company's goals and the technology that can support them, your digital journey can bring enormous benefits.

## What are the differences between digitization, digitalization, and digital transformation?

You've probably heard these terms before, but you might not be sure as to what they actually mean. And you're not the only one—though they're often tossed around interchangeably, they refer to different (though related) concepts. Let's have a look at the differences.

**Digitization** means converting information from an analog format to a digital format, for example, making a digital version of paper-based inspections and saving them to an online database where real-time reports are generated.

**Digitalization** is the process of adopting digital technology like end-to-end fish processing software to enhance existing work processes, for instance, creating dashboards that display real-time KPIs on a processing line's performance.

**Digital transformation** involves more profound and widespread changes to how a business uses digital technology. It's about understanding and implementing the true potential of digitalization not only to improve existing processes but to

transform how you do business. Put simply, we digitize information from analog to digital, digitalize processes to make work more efficient and digitally transform organizations and their relationship with technology.

## The power of real-time data and control

Real-time data analysis supports business decisions. Raw data is a precious resource, but only if you have the tools to make sense of it. Indeed, most organizations collect enormous amounts of data, but very few make good use of it. In an industry where every detail counts, this is a missed opportunity for improvement.

The good news is that fish processors are becoming increasingly aware of the power of data-driven insights to optimize their use of raw materials, enhance fish quality and safety, and guarantee traceability and support for continuous improvement. Using advanced digital solutions such as Innova Food Processing Software, fish processors receive up-to-the-second data on critical factors such as yield and throughput, use of raw materials, process statuses, overall equipment effectiveness (OEE), and much more. This allows managers and supervisors to make informed decisions at a moment's notice.

Reliable data analytics can highlight opportunities for improvement and alert you to potential issues in real time, enabling you to maximize productivity and troubleshoot issues before they become serious problems. Errors can go undetected for long periods without this ability, leading to costly and potentially dangerous predicaments.

Overarching food production software like Innova also provides a centralized source of information so that all systems are connected and operate in harmony. Moreover, with the ability to automatically collect, analyze contextualize, and convert production data into valuable insights, you can make optimizations that add up to substantial cost savings and numerous other benefits.

## Meeting growing demands for traceability, transparency, and compliance

Today, both consumers and regulatory bodies demand complete transparency and the highest fish quality. They want to understand every step of a product's journey: where all its ingredients came from, how it was made, its nutritional value and if it was ethically sourced. This is why it's essential to have a digital system that records every step of a product's journey.

You can easily include detailed information on every label, and the consumer can see all the information they need to make their decision. This can increase the value of your product and give you a competitive edge.

Comprehensive data collection also supports paperless traceability, which is vital to minimize contamination risks and costly product recalls that can damage your brand's reputation. By the time fish lands on a consumer's plate, it's undergone multiple steps of production, risking chemical, physical and biological contamination along the way. →



Without the benefit of digital data collection, tracing back through multiple steps can be a slow and challenging process, prolonging the time it takes to identify and address the issue.

Fortunately, with the right software, you can store this information and have it ready at your fingertips so that products can be instantly traced if needed. In practical terms, this could mean the difference between a fast and easy resolution and a costly and damaging recall.

Detailed monitoring and data collection are also crucial to meet the industry's strict regulatory demands. In fact, compliance is one of the most valuable uses for digital transformation, yet it's an area where many fish producers fail to use the available solutions. This is largely due to a lack of awareness of how sophisticated digital solutions have become. Rigorous data collection can help your operation at every stage, allowing you to monitor products closely and ensure compliance with ever-increasing fish safety regulations.

### Automation is vital

The fish industry has already invested heavily in automation, with far-reaching benefits across multiple levels of production. Fish processors are under constant pressure to produce larger amounts and wider variety, and it's no secret that automated processes can perform tasks faster and more accurately than their manual counterparts. Moreover, fish safety concerns are greater than ever following the global pandemic, and minimizing human contact and human error in processing can have substantial benefits.

Labor shortages and worker engagement are another huge concern, especially as we enter a post-quarantine reality where fewer people are willing to return to onsite work doing repetitive and potentially dangerous tasks. Digital technology, therefore, plays a pivotal role in filling this gap. Fish producers benefit immensely from lower labor costs and protection against labor shortages, and employees benefit from safer work environments, more options for remote work, and more fulfilling roles.

It's important to note that automation isn't just about digitalizing individual processes. Rather, it's a matter of connecting all automated processes across the entire company to create an integrated, centralized approach. Fragmented automation is inefficient and can lead to lost opportunities to connect processes more effectively. Therefore, it is worth investing in a complete production control system such as Innova, which gives you a real-time overview of your entire enterprise.

### Succeeding on your digital journey

Now that you understand why digital transformation should be at the top of your strategic agenda, you might be considering the next steps. We know the process may seem daunting; digitalization projects are a large undertaking, and digital transformation can completely alter the status quo.

You need to consider not only the performance of your software solution but also your work partnership and service before, during, and after implementation. Choosing the right technology partner is crucial.

Fortunately, Marel offers the full range of software solutions and support you need on your digital journey. A data-driven approach has been at the core of our business since our foundation in 1983, and we have decades of experience guiding organizations on their digital journeys.

We offer a host of Innova Food Processing Software solutions backed by a global service network of experts. Innova is a powerful end-to-end solution that allows fish processors to manage their factories by linking equipment and processes to function together as a single entity. It ensures reliable data collection in a centralized system, providing real-time data insights, historical trends analysis reports and full traceability throughout the production process.

**Do you want to learn more about the potential of your digital journey? Contact one of our Innova specialists today to know more about how our digital solutions can help improve your business.**



# Hands-free handling

The newest edition of the I-Slice 3400 offers expanded flexibility and delivers outstanding salmon slicing for retail packs

Consumer demand for a wider variety of salmon products continues to grow and the refined edition of the Retail Pack Slicer I-Slice 3400 is the machine to fulfill it.

Smaller package sizes are in particularly high demand and the I-Slice 3400 slices and batches salmon to fit every pack size and weight, as low as 50g. An optional multi-angle slicer upgrade cuts salmon at an angle between 8° and 72°, allowing for the production of a broader range of products such as short slices.

A multilingual color touch screen makes the I-Slice 3400 easy to operate and the automated process makes it safe to use. The result is utmost efficiency and superior product presentation on a board, tray, or conveyor for skin packing.

Before cutting, each fillet is measured to ensure optimum utilization and reduced waste. Every cut is made with extreme precision, delivering the individual slice's defined target weight and providing accurate fixed-weight packs.

The slices in each batch are automatically aligned and evenly spaced to match the board size for exceptional pack presentation. Batches of between 2 and 50 slices are perfectly placed on boards, trays, or conveyors for skin packing with a total weight of up to 1000g. Manual handling is significantly reduced thanks to the high level of automation and precision of weight and batch creation.

**Marel offers complete solutions with up to 4 slicing units, including checkweighing and rework stations.**

Find out more about the I-Slice 3400 [marel.com/i-slice3400](https://marel.com/i-slice3400)



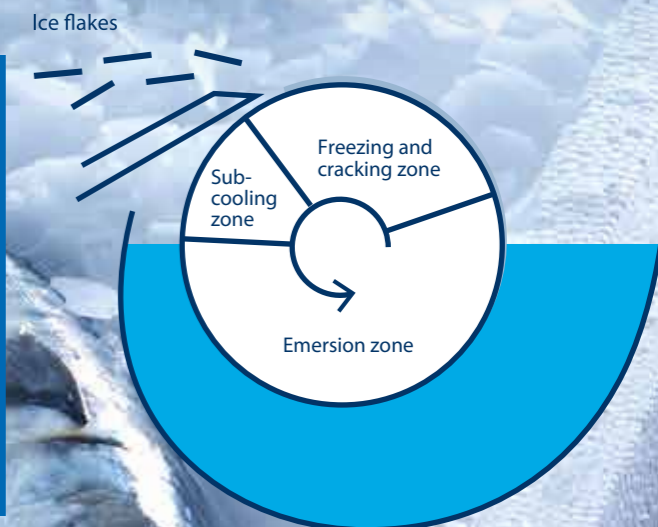
# The importance of ice

## Production system of MAJA flake ice

A deep-frozen metal cylinder, rotating in a water reservoir, guarantees constant ice quality. With each rotation, water freezes on the evaporation drum and then flakes off, leaving the machine as dry-frozen ice.

This system of ice production was developed by MAJA and has proven its reliability for more than six decades. It is efficient, cost-saving and does not require special maintenance.

**Developed and brought to perfection by MAJA!**



Ice is more than just a means to keeping your fish and seafood refrigerated. Ice can lower transportation costs, create a more attractive in-store display and better preserve your products.

Marel acquired German ice machine manufacturer MAJA in 2018 and maintains the legacy by continuing to use the brand name and equipment that customers have grown to trust and respect. With several cooling solutions in the portfolio, Marel helps customers of all sizes find the appropriate solution for effective, efficient and environmental refrigeration of their fish and seafood products, directly after the catch, during transport and storage, as well as in sales display.

MAJA's ice machines offer quick product cooling with slow-melting ice and long-lasting freshness. Thanks to the high efficiency and hygienic design of MAJA's ice machines, labor costs are significantly lowered, with less time cleaning and manually moving the ice. No water is wasted as 100% of it becomes ice. 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.

### Made in Germany

Manufactured in Kehl-Goldscheuer, Germany for more than six decades, MAJA ice machines are robust, reliable and hygienic, and are available with capacities of 85 kg to 12 tons in 24 hours. MAJA Flake Ice Ice Machines are designed and manufactured to meet the strictest hygiene requirements. We also understand how important it is to make the cleaning process as effortless and straightforward as possible and incorporate this in all design aspects. MAJA is one of the few manufacturers on the market that offers a patented self-cleaning system.

### Pioneer in environmental ice production

The topic of replacing environmentally damaging refrigerants with ecologically sound alternatives is, more than ever before, a big concern for the refrigeration industry. Ice machine producers have a responsibility to provide their customers with environmentally friendly concepts.

MAJA has been an innovative pioneer in using natural refrigerants since 2008 and offers a complete series with different capacities for direct operation. In 2008, MAJA took the lead with the RVH-CO2 ice machines, which are still in daily use to produce flake ice by customers worldwide.

Based on MAJA's excellent environmental track record, Marel launched a new propane range running with the eco-friendly refrigerant R290 in summer 2021.

### Innovating ice

For many years, Marel has invested heavily in developing technology to improve ice production. Marel is focused on ease, automation, digitization and sustainability to create a range of methods and features that ensure customers can meet and exceed food safety standards with minimal effort qualities that set us apart from the rest of the market. Whether you use ice as a critical component in your production process or as a way to preserve perishable goods at a retail level, a Marel ice machine will ensure your ice meets the highest standards.

### Presentation is everything

Wherever fresh fish is cooled, displayed and sold, MAJA ice is the first choice. Leading supermarket chains and retailers across the globe rely on MAJA's ice technology when it comes to the display and retail of fresh fish for a good reason.

Dry frozen at  $-7^{\circ}\text{C}$ , the ice from the MAJA Flake Ice machine keeps for prolonged periods without compromising quality. Flake ice is easy to pour for an even distribution that gently surrounds fish and seafood without risking damage or bruising. The matte white layer of MAJA flake ice is appealing to the eye and enhances creative

possibilities for sales promotions.

Because flake ice is extensively used in the food sector, hygiene is a top priority. Every machine is labeled "HY-GEN protected". This label stands for the clean production of ice and convenient hygiene options, enabling flake ice production under particularly hygienic conditions. Therefore it goes without saying that the core piece of the flake ice machine, the water tank that is constantly filled with water, can be taken out with a few simple steps for cleaning purposes.

The innovative tank in the MAJA flake ice machines, made entirely from plastic, can be removed for manual cleaning more easily than any other available on the market. Besides that, the evaporator is accessible from all sides and the machine's water tank is free from integral built-in parts, avoiding hygiene-critical angles and edges and making systematic cleaning easier than ever before.

As especially larger machines are placed on a false ceiling above the flake ice display or on a storage silo, the cleaning by hand is very time-consuming. Therefore, MAJA-SCS cleans decalcifies the flake ice machine in the desired intervals and automatically counteracts the possibility of microbial impurity. Options like ozone disinfection devices in the supply water also help to create excellent hygienic conditions for the production of ice for food applications.

The Marel ice machine portfolio also includes the MAJA Nugget Ice machine—an easy-to-operate and convenient solution designed to supply fresh ice for retailers and processors of all sizes. Consisting of granular ice nuggets that are  $-0.5^{\circ}\text{C}$  and formed by a matrice system, the MAJA Nugget Ice machine offers an ice output ranging from 175 kg to 970 kg in 24 hours. Nugget ice is an ideal alternative to flake ice that is long-lasting and does not lump together. Featuring the same qualities as flake ice, the choice between the two is a matter of looks—dependent on whether a customer prefers the look of their fish laying on matte-white flakes or shiny nuggets.

### The right amount of ice is key

The Marel IceDoser is an innovative machine that dispenses continuous and precise quantities of MAJA Flake Ice into various sizes of fresh fish boxes and provides 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. Boxes with fresh fish are labeled with box weight and shipping information and scanned to determine the exact amount of ice to be dispatched into the box. Featuring a dual lane, the IceDoser has the capacity to prepare two batches simultaneously. The

result is always accurate and automatic ice dosing, even for smaller ice batches.

### High reliability - low maintenance

Marel's ice machines reduce operating and maintenance costs and require no additional water treatments. Since a high level of operational reliability must be ensured when refrigerating fresh food, Marel relies on a worldwide network of trained service partners to provide individual customer support. By concluding maintenance and cleaning contracts, Marel's customers have the security of knowing that their ice maker will be professionally inspected on a regular basis. This saves operating and maintenance costs and offers hygiene safety.

Marel thrives on innovation, ingenuity and its strong partnerships within the industry. Our cutting-edge equipment, which now includes the proven MAJA Ice producing technology, and software components, help customers operate at peak productivity in all markets, irrespective of the operation's size. Marel's products positively and directly enhance the overall quality and value of seafood.

# Grupo Iberconsa increases production with automation and digitalization

## With Multihead Weighers and Innova, Grupo Iberconsa has increased their frozen whitefish production speed and precision

Leading Spanish whitefish processor Grupo Iberconsa recently installed four Multihead Weighers (MHW) and have seen a significant increase in their throughput. Working 16 hours a day at high speeds and very high levels of precision, the Multihead Weighers are accurately weighing and batching 60 tonnes of hake fillets per day. The plant's daily capacity is about 90 tons per day, with 500gr to 1 kg fillets and slices being bagged in the MHW, and an annual target of about 15,000 tons/year of fillets, slices and shrimp. The automated weighing and batching solutions stand out for their robustness and reliability in working for such long periods. The flow control system in the product infeed is a particular plus for working with frozen fish fillets.

*"I have been working with Marel for years, and I am very satisfied with the quality of their equipment, being a reference for me in terms of weighing, batching and labeling systems," says Javier Aran Echabe, Group R&D Director at Grupo Iberconsa. "Marel's technical service staff are highly qualified and have helped us optimize the operation of the weigher, in addition to their prompt responses to our requests."*

He also highlights how Innova's software intuitively and practically delivers quality data and real-time production management. An international group with its origins in Galicia and a presence in five continents, Grupo Iberconsa has become a benchmark in fishing, processing, and distributing frozen sea products. Founded in 1981 by four Galician partners with deep roots in the fishing industry, Grupo Iberconsa has enjoyed spectacular growth both in its commercial and shipowning activity. Grupo Iberconsa is a vertically integrated company in the frozen fish industry with high expertise in each phase of the value chain: from capturing and processing of its sea products to their distribution and marketing.

*Multihead Weighers and Innova are delivering high levels of batching precision and speed*

# New and improved Salmon Deheader

**We are proud to introduce the MS 2721 V, a new version of the Salmon Deheader with strong enhancements. Significant changes result in a higher yield, increased capacity, improved ease of use and a more hygienic design.**

## **Deheading with vision technology**

The deheading result depended a lot on the operator's performance at the infeed station on the original version. This concern has been addressed by installing a vision camera that detects the fish's position before the v-cut is made. The knives are automatically positioned at the appropriate distance from the fish for an optimal cut along the collarbone.

## **Easier infeed with on-screen support**

A screen at the infeed station with a real-time position indicator guides the operator to the fish's optimal placement on the preloader, making the infeed easier. The operator can easily slide the fish into the preloader with one hand and the fish drops into the carrier, enabling an increased capacity of up to 25 fish per minute.

## **Easy-to-clean components**

Several of the key components inside the machine exposed to water and fish parts have been redesigned to improve the machine's cleaning, for example, shafts made as whole parts instead of multiple parts. The design of the MS 2721 V ensures good ergonomics, easy and safe operation.

## **Automated solution with deheading and filleting**

The Salmon Deheader can be integrated with our Filleting Machine MS 2730 to direct the fish from the deheader to the filleting machine without manual handling, ensuring a more consistent infeed and improving the line flow.

**Find out more about the new Salmon Deheader**  
[marel.com/ms2721v](https://marel.com/ms2721v)