

INSIGHT

APRIL 2018 | EN

FISH PROCESSING

Filleting solutions
to face the future

State-of-the-art
tilapia facility

Smarter software
for smarter production control

Top service delivers
high efficiency

Customer stories, new products,
interviews with specialists &
upcoming showhow events

**SMARTER
PROCESSING
ARE YOU READY?**

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FISH

INSIGHT

FISH PROCESSING

A NEW ERA IN FISH PROCESSING



The current growth rate and global spread of automation amounts to a revolution in the fish processing industry. Companies are increasingly prepared to invest in technology to compensate for a diminishing supply of labor, while consumer demand is driving product quality and diversity to new heights.

All of Marel's core markets – salmon, cod and tilapia – have enjoyed ground-breaking advances in processing technology in the past year, with more expected in the year ahead. In this edition of Insight Fish, we bring you recent examples of how fish processors of all sizes are driving and embracing smarter processing solutions with Marel.

From China's first fully automatic salmon processing line to automatic pinbone removal in the cod industry on both land and sea, these are exciting times for anyone involved in fish processing.

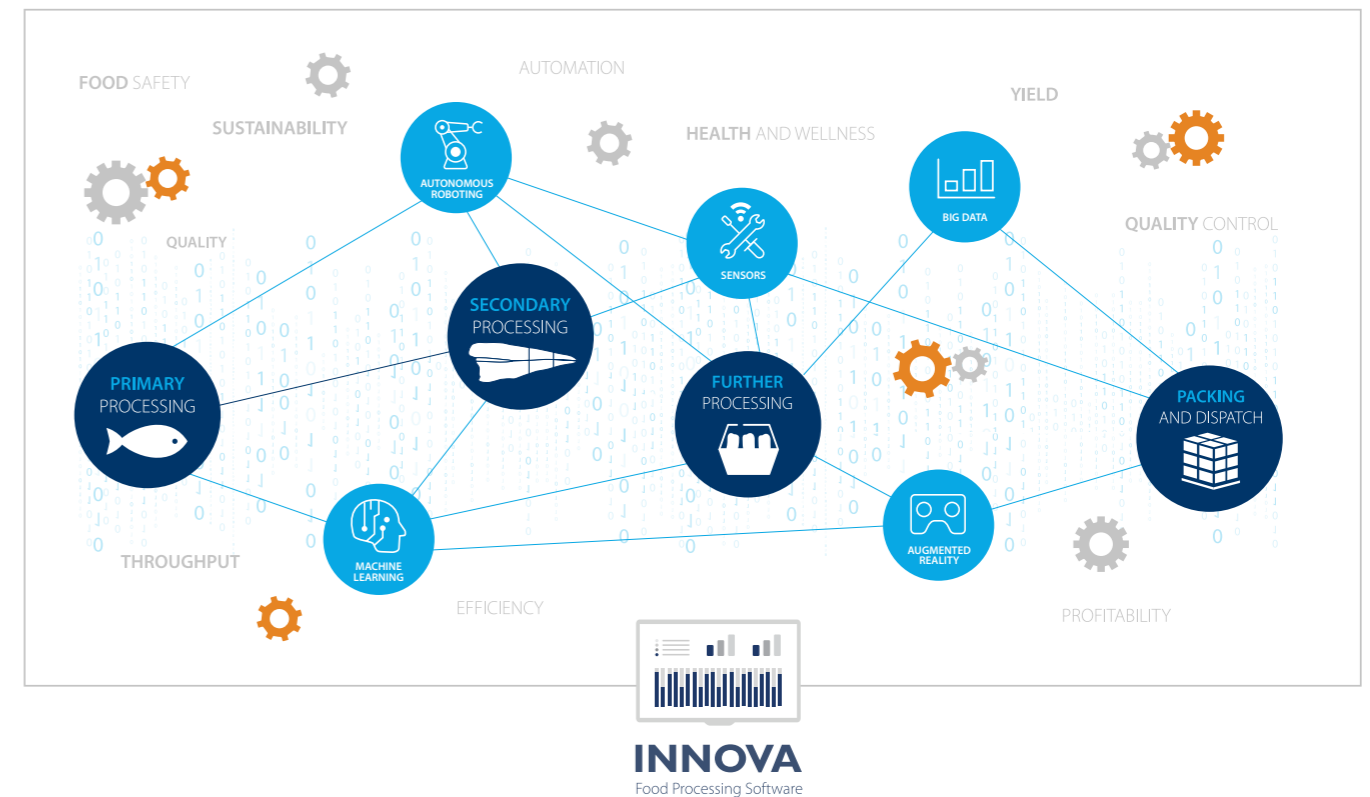
We welcome this era as we are committed to continuing our role as a pioneer in creating smarter systems and solutions for processing food affordably and sustainably.

SIGURDUR OLASON
MANAGING DIRECTOR,
MAREL FISH

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SMARTER PROCESSING



SMARTER PROCESSING

AUTOMATION, ROBOTIZATION AND DATA MANAGEMENT

Top fish processors are entering the fourth industrial revolution armed with interconnected software and technological advances that are rapidly elevating levels of automation.

TECHNOLOGY AND INNOVATION

"The main driver for higher levels of automation is the reduction in manpower available, particularly in Europe and North America," explains Sigurdur Olason, managing director of Marel Fish, "But it's the technology and innovation that delivers practical solutions to this challenge."

Innovative solutions in both salmon and whitefish will set new industry standards within the next couple of years, with watershed installations already underway.

CORE MARKET MILESTONES

A recent example of increased automation in the salmon industry is the installation of China's first fully automatic processing line (see p.13). "Chinese processors have traditionally been known for a heavily hands-on approach to fish processing," says Sigurdur. "So this installation in China highlights the widespread significance of automation in the global salmon industry."

As the cod industry looks to innovate and optimize the value chain, pinbone removal has been automated both on

land and on sea (see p.8) and the first Flexicut automatic pinbone removal and portioning systems have now been installed on freezing trawlers as part of a complete modernization of onboard processing.

Marel's most recent contribution to the revolution of cod processing is the addition of a new pre-trim solution and packing robots to the Flexicut system. This means that pre-trim can be the last place the fish is touched by human hands. ▶

► Companies are, to a greater and greater extent, prepared to invest in technology to compensate for a diminishing supply of labor. "In the South American tilapia industry, the desire to process larger volumes is also pushing automation," says Sigurdur (see p.18). "In Brazil, for example, large Marel poultry customers have started investing heavily in tilapia processing and volumes are expected to rise exponentially in the coming years."

THE POWER OF SOFTWARE

Advances in software contribute greatly to automation in food processing, and factories are becoming smarter as software becomes an even bigger part of the production process.

"Interconnected software solutions now control and monitor the whole journey of

fish from the sea to the supermarket," Sigurdur says.

"As we enter the next industrial revolution, Big Data and deep-learning are becoming an integral part of state-of-the-art, hi-tech production systems."

Cutting-edge technology has been in focus at Marel from the day the company was founded, so it's no surprise that the core of Industry 4.0 and Big Data is already a part of Marel's DNA.

"There will always be a strong focus on quality, yield and throughput, but we are seeing an ever increasing focus on automation," Sigurdur says. "Artificial intelligence is an important factor and we also see that new product

development moves at a much faster pace than before."

DATA MANAGEMENT

With the global community's demand for traceability to the source, data management is an increasingly important part of food production. Marel ensures its customers can keep track of all this data and makes it easier for businesses to report on their produce. Seafood processors are taking part in the fourth industrial revolution by incorporating this technology and embracing the automation process in order to ensure they are future-ready.

GO TO: marel.com/fish



SMARTER software for SMARTER production control

Advances in software contribute greatly to automation in food processing, and factories are becoming smarter as software becomes an even bigger part of the production process.

Data is increasingly valuable in today's hi-tech processing environment, and the ability to track and analyze data is key to fish processors being competitive. Using the data generated by machines in real time is key to gaining full production control.

There has always been a strong focus at Marel on making products that raise quality, yield and throughput, and there is an ever growing focus on helping fish processors achieve these results with greater automation. Innova Food Processing Software now controls and monitors the whole journey of fish from the sea to the supermarket, and gives fish processors peace of mind that they are equipped to deal with future challenges.

GO TO: marel.com/innova

INNOVA is part of the DNA

At Australis Seafoods, they can't imagine running a plant without using Innova dashboards to monitor production. "Everything passes through the software – from when the raw material enters the processing plant until when it leaves as a final product," explains Gerardo Crot, Processing Manager at the plant. "The system does everything, even the labels tailored to each product."

"With Innova, we have achieved greater yield and throughput, better quality and higher productivity," says Gerardo. Since installing Innova in mid 2015, the company has significantly raised its level of compliance too. "Now we have 99.5% compliance, because with Innova, we have much greater production control and can plan everything in advance. This is a big step forward and makes us more competitive."

"Innova is now a part of the DNA of our operations," explains Gerardo. "Before implementing the Innova solution, it could take 36-40 hours for a fish to be processed. Now we can ensure it takes no more than 20 hours by having the Innova system set alarms that enable us to better organize production, make quick decisions and avoid delays."

TRACEABLE QUALITY

With Innova, Australis gained complete control of the value chain and the ability to demonstrate the efficiency and traceability of the process. Before using Innova, their record-keeping was manual, which was both difficult and prone to errors. "With Innova we can ensure that every dispatch from the plant goes with an Innova report for our customers, detailing the traceability of the process for every product."

"The reputation of our company is important," Gerardo adds, "so having Innova allow us to be a highly competitive plant, as well as improve our image to our customers and be known in the market for doing things right, such as demonstrating product traceability with Innova reports. Our customers are happy because they can see ►

VR IN PRODUCT DEVELOPMENT

Haukur Hafsteinsson, embedded software engineer at Marel, explains how the road to making food processing equipment is now a whole lot smarter.

FAST-TRACK INNOVATION

In product development, simulations save both time and materials, and allow innovation teams to be much more creative, taking greater risks that aim very high in terms of coming up with novel solutions to food processing challenges. Virtual reality makes simulations even more valuable, giving product developers lifelike feedback and enabling realistic interaction without having to wait weeks or months to trial a new concept.

"Computer simulations are a great example of how we make product development more effective," says Haukur. "Running simulations to test out new ideas – or to test proven solutions in a specific layout – can cut

a months-long process down to a few days or even less."

ACCELERATED FEEDBACK

Rapid prototyping can be achieved by running a new idea in a simulated and virtual world and getting the feedback right away. "So we can improve the hardware design, fix software bugs and correct any process issues before building the system."

"When we wanted to flip the fish around from tail first to head first in between processes, for instance, we had the luxury of using simulations to test out many ideas in a variety of simulated production settings before taking any to the next stage of actual production in the real world," Haukur explains.

BETTER TRAINED EMPLOYEES

Marel also invites customers to trial their new equipment using simulations, long before delivery. The two key benefits of this exercise are

staff training and data optimization: training employees in how to run and maintain the equipment, especially when it will differ greatly from existing procedures, and on how to make the best use of the data generated.

"This applies both to the software embedded in the equipment itself and also the Innova Food Processing Software that enables them to use the data to improve processing results – yield, productivity, individual operator performance and so forth."

SMOOTHER INSTALLATION

"After the actual installation, when we press the start button, the system works as expected because we have already simulated almost everything," Haukur says. "Everyone knows how the system works because they've had training using the simulation weeks or months beforehand. This includes Marel service, customer maintenance and production."



Australis Seafoods is a Chilean company based in Calbuco in Chile's Xth region, specializing in trout and salmon production. Australis prides itself on the high quality of its products. The company abides by the highest standards in quality, sustainability and care for the environment. Australis integrates all production stages and its production sites have highly efficient, highly trained staff. The company's Fitz Roy plant has been operating in Calbuco since early in 2013, handling whole fish processing as well as fillet processing and portioning, and was designed to allow future expansion in production and storage capacity.

GO TO:
australis-seafoods.com



AUTOMATED production management

For fish processors who place a high value on the quality of their end products, it is important to own and control all the steps from farm through to sales. Innova Food Processing Software provides traceability from farm to pack at Mt Cook Alpine Salmon and ensures that critical information is always on hand in real time.

A BEST-IN-CLASS SOLUTION

Mt. Cook Alpine Salmon use Innova for receiving fish from farms to the factory and into production. The company operates a range of Marel advanced processing equipment in conjunction with Innova for their grading, portioning and slicing operations.

"It's a robust system and provides us real-time production management and a powerful tool for maintaining traceability

from our salmon farms to dispatch orders," says Brent Keelty, Plant Manager at Mt Cook Alpine Salmon. "We can monitor production performance in real time and make any changes on the go. It helps us improve throughput and reduce giveaway, and it gives us live production control."

"We looked at various systems and approaches for managing our production. We're glad we decided to go with Innova from Marel; it's a best-in-class solution for fish processing," says Keelty.

FAST RETURN ON INVESTMENT

Keelty explains that the value of having the automated production system was quickly apparent. "We've noticed there is a significant value in having Innova as opposed to the conventional paper-based systems in production." Relying on a paper-based system, "creates more work and there is much greater chance of errors," he adds.

Mt Cook Alpine Salmon use Innova for order management, yield control and performance analysis across the plant. They use it for labeling, palletizing, inventory control and dispatch. The overall gains in efficiency are valuable and, in particular, being able to produce to order adds a lot of value: "Innova helps us maintain optimum inventories and produce exactly to the orders," says Keelty. "As a result, we minimize over- and under-production, and our products are always consistent and reliable."



▶ INTERVIEW WITH BRENT KEELTY

▶▶ Read the full Australis and Mt Cook Alpine Salmon customer stories on marel.com/fish-news

▶ we offer a differentiating element that others don't – or can't – offer."

THE POWER OF INFORMATION

The accessibility of information benefits employees as well as customers, and Australis took the ingenious step of making their Innova dashboards visible to everyone in the plant. "We implemented some dashboards to show what's happening in the plant and we now have eight screens that show the performance of every employee for every line," Gerardo says.

"The power of the information that we have now has put us at the forefront," says Gerardo. "We have gained a lot in labor savings and now aim to boost productivity even further."

"Innova has helped us improve our performance across the board, including a significant increase in throughput. Having all the information online also helps us make decisions right away in real time and means that now we can measure the performance of every employee, ensuring

a fair bonus system and better control of every processing line."

BETTER DECISION-MAKING RAISES QUALITY

One of the reasons Australis decided to invest in Innova is because they wanted to access information in real time and be able to react quickly to production challenges. "Faster response times lead to the production of fresher products, so Innova has enabled us to deliver higher quality products to our customers," Gerardo says.

Innova also improves decision-making by providing the real-time information in a variety of ways. As well as having screens visible throughout the plant for employees, managers at Australis can access the information on site or remotely, and alarms can be set and monitored this way too.

"The big advantages are both for us, in terms of efficiency, and for our customers, in terms of quality," he says. "Plus we don't have any product delays." Quality is a key

differentiator with competitors too and drives Australis to be more efficient.

Innova makes it much easier to achieve higher efficiency by giving processors better control of production. "The competition is tough," Gerardo explains, "but Innova has allowed us to be competitive and you can see this in the market."

FUTURE READY

"Innova software adds a layer of technology that takes the processing equipment, and so the whole production, to another level," Gerardo explains. "It opens your mind and prepares the organization to step up to another level. Of course it helps to have control and have better results, but with Innova you also have a range of possibilities. Innova helps to make the best use of equipment with another mentality and put everything in line." ▶



The **Mt Cook Alpine Salmon** processing facility at Timaru in New Zealand opened in late 2013 and processes very high-grade salmon. The dynamic company is a fully integrated operation with its own supply chain, and exports most of its salmon to discerning markets around the world.

GO TO:
alpinesalmon.co.nz



OPTIMIZING THE FILLET AUTOMATICALLY

Just four years ago, Marel introduced automatic pinbone removal and portioning for whitefish with FleXicut, and the nature of whitefish processing changed forever. The automation of bone removal with FleXicut raises productivity and greatly improves product handling and yield. A new trimming line, updated product distribution system and new packing robots automate this process even further.

MAXIMIZE THE VALUE

The FleXicut water-jet cutter is a proven solution that automatically cuts fillets in the most profitable way. It increases the high-value product ratio, automatically adjusting cutting to deliver the best possible combination of products from each and every fillet.

In addition, processors with FleXicut are now using cutting patterns that were not possible before, enabling them to further maximize the value of the entire fillet.

SOFTWARE-DRIVEN INNOVATION

With Industry 4.0 already underway, fish processors need to think smarter in order to stay in the game. Automation in fish processing is constantly rising and developments in software contribute greatly to this trend.

FleXicut is a case in point, as the software that drives it is one of the system's most important elements, and is the element that has evolved the most since the machine was first introduced.

Put simply, Innova Food Processing Software offers unprecedented connectivity to the total processing system and enables additional benefits such as order-led processing and traceability of every fillet or portion to individual operators.

CONSTANT EVOLUTION

From the beginning, FleXicut has constantly been developed in close cooperation with whitefish processors – and now the machine is being tested in the salmon processing industry as well.

The introduction of the FleXitrim trimming line, for example, makes the system even more automatic and effective. It evens out the flow of fillets being fed automatically into the FleXicut, and has an inbuilt automated quality check.

Gaining better control of the flow is valuable for fish processors, as it means they can set the pace based on the speed of other machinery or processes and avoid the build-up of fish in buffers.

Continuous improvements to the system mean that now Marel offers processors a virtually hands-free line – from pre-trim all the way through processing, including final packing, with automated robot packing for the system demonstrated at Marel's 2017 Whitefish ShowHow.

With a well-earned reputation for reliability and continuity, dozens of FleXicut systems are now operating across Europe and North America, as well as aboard freezer trawlers.

GO TO: marel.com/fleXicut

Bone detection IN FISH PROCESSING

Two minutes with a product expert: "SensorX is making a real impact in the fish industry", as Einar Sigurdsson, a Marel Product Manager for x-ray solutions, explains.

"After years of success in the poultry processing industry, SensorX is starting to shape bone detection standards in the fish industry too. Detecting bones in fish is more challenging than in poultry or beef since the bones are often much thinner and less calcified, but the value lies in detecting and removing the critical bones – those that pose a threat to consumers.

"The bone detection performance of SensorX Fish has been increasing in recent years with continuous software improvements, and for some time now it has consistently been performing at such a level that it has proven it can detect most if not all critical bones.

"SensorX has a significant impact on fish processing results and product quality. It has increased the value of our customers' products and decreased bone

complaints significantly, sometimes managing to eliminate bones altogether.

CONSISTENCY IS KEY AT ESPERSEN

"European fish producer Espersen is one of the world's leading cod producers, supplying many large retail customers such as McDonalds, and the high quality of its products is internationally recognized.

"Once they'd installed SensorX, the management at Espersen reached the same conclusion we had: that good bone detection is about detecting the critical bones consistently, even more than it is about finding all the bones. As more and more fish producers make this realization, I think we can expect an increased growth for bone detection in fish in coming years."

GO TO: marel.com/sensorxfish

 **BONE DETECTION IN FISH PROCESSING**

 OPTIMIZING THE FILLET AUTOMATICALLY

FleXicut cuts out the pinbones as well as the PCL (postcleithrum) bone, sometimes called the 'walking stick bone'. The machine can be precisely calibrated to divide the loin, cut the belly flap and tail, and portion the fish to customer specifications. The FleXicut system produces an even flow of uniform, precision-cut products that can then be distributed to different product streams.

Filleting solutions TO FACE THE FUTURE

Salmones Camanchaca is a salmon producer based in the Bio Bio region of Los Lagos Aysén. In 2016 they installed their first Marel Filleting Machine (MS 2730) with excellent results, and they are installing a second Marel filleting line in 2018.

BETTER PROCESSING RESULTS

It was when Camanchaca was looking to increase yield, throughput and quality, as well as simplify the filleting process, that they made the decision to invest in Marel equipment.

“We invested in a Marel filleting line to improve our processing results. We have experienced an improvement of around 30% in productivity since the installation, with at least a 1% gain in yield,” explains Jorge Fernández, CEO at Camanchaca. “In the beginning, we hadn’t planned on upgrading our filleting equipment, but when we got to know the MS 2730 Filleting Machine from, with greater

automation and the most interesting solutions to face the future, we decided in 2015 to change the process and made Marel our main supplier for plant equipment.”

Jorge says that the company recognizes the value of investing in a whole filleting line, rather than buying individual standalone units. “In this way, we keep waste to a minimum and we gain the most in yield. We like it so much that our idea now is to equip two more of our plants with Marel equipment.”

They now use Marel equipment for all their processes from deheading to fillet

distribution, and enjoy greater efficiency and easy cleaning in addition to better control of the performance.

HIGH QUALITY SALMON

In addition to obtaining greater yield and throughput, benefits of the new lines include more advanced trimming, greater precision and less handling – which adds up to better quality end products.

Camanchaca has always had a strong reputation for producing high quality salmon and other products. With the Marel filleting line, Camanchaca has further enhanced the quality of its salmon products by reducing handling and

improving trimming. “The quality of the product is much better, because the Marel solution with its automatic MS 2730 Filleting Machine ensures gentler treatment of the product,” says Jorge.

READY FOR THE FUTURE

With the filleting line from Marel – the first of its kind in Chile – Camanchaca has raised the bar for excellence in salmon processing in Chile and is recognized as operating with the very latest technology.

The equipment has helped them capitalize even more on their existing strengths as well as streamline the process and increase daily production. In keeping with the company’s hi-tech approach, Camanchaca has also invested in Innova Food Processing Software that will be installed later in 2018. The software appealed to them as an integral solution that will provide everything needed in just one unit – including all the information for products, batches, yield

and traceability. The software was also appealing as part of a solution that would put them in the best position for the future.

As Jorge explains, “The Innova concept, with the ability to control and monitor the processing in real time, was a key factor in our decision to choose Marel as our supplier”.

THE VALUE OF SERVICE AND TRAINING

Better processing results were not the only reason Camanchaca went with Marel. As Jorge explains, “It was also because of the service, and the commitment from Marel.”

This commitment is very important to the company. “We need to know that the equipment is very reliable, but also that

Camanchaca has offices and processing facilities in Chile, as well as offices in the USA, Mexico, Europe and Asia. They have been working sustainably for more than 30 years and are recognized as one of Chile’s top salmon producers. Camanchaca is known for its excellent processing standard and is the first Chilean salmon processor to operate the latest Marel salmon processing technology. The company is involved in the entire process, including their own primary and secondary plants. Camanchaca also process mussels, abalones, frozen mackerel, sardines and prawns, with 75% of their production geared towards value-added products, fillets, portions etc. They also produce fish meal and oil.

Marel will respond quickly and efficiently in case of any problem,” says Jorge.

The high quality of training is especially important during installation, both to ensure the equipment is performing as well as it can, and to ensure employees adapt to the new processes and recognize their value. “As expected, the installation took time and presented some challenges, but it was well programmed and the technical assistance from Marel was good,” says Jorge.

Perhaps the biggest challenge has been their people’s resistance to change, given the high level of technology of the Marel equipment. “It’s a big change for our people,” Jorge explains, “but Marel has provided very good training and we sent two of our technicians to Europe for further training as well.” ▶



"Our contract with Marel serves as a master plan for all our processing needs with training".

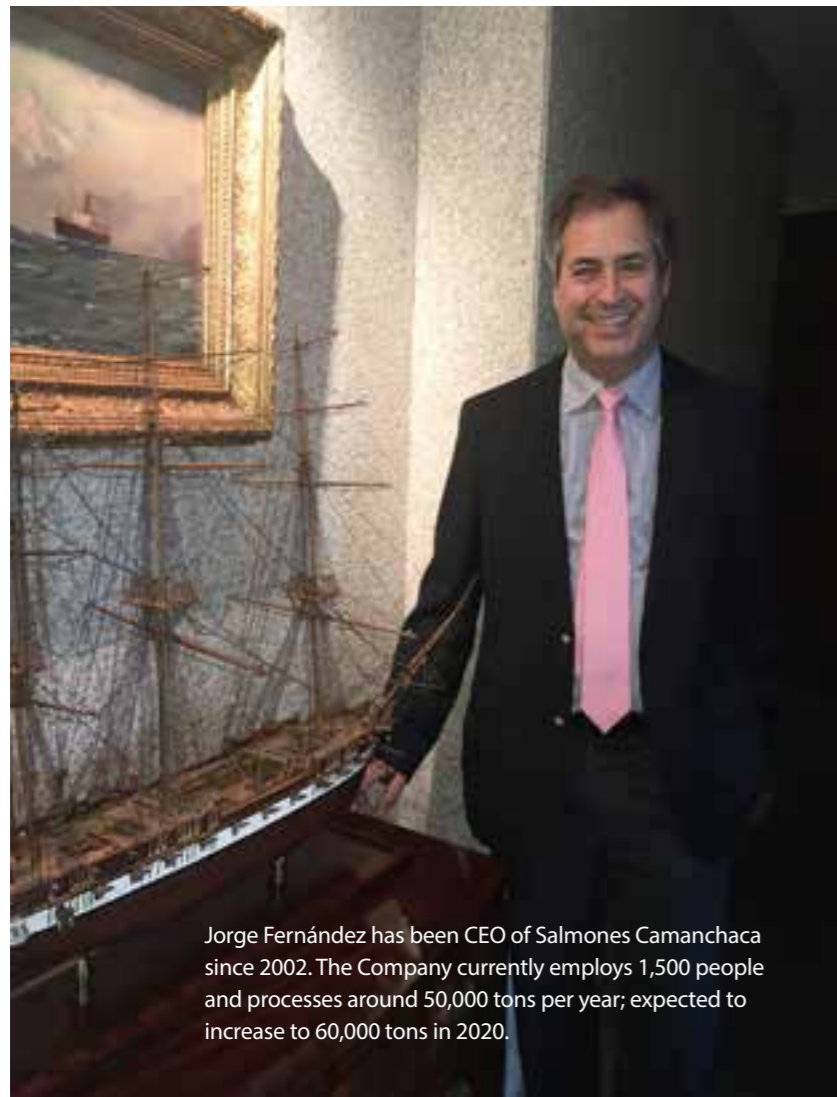
► **THE PARTNERSHIP WITH MAREL**

Marel has two offices in Chile and supplies many Chilean fish processors with equipment and software. Camanchaca was also familiar with the company from attending Marel's Salmon ShowHow in Copenhagen and other industry exhibitions such as the Brussels Expo. Once they had decided to invest in Marel, they also visited European processing facilities to see various configurations of

benefit was the commitment that Marel offered in the whole process. It was a strategic choice to have Marel as our partner to ensure better solutions for our fish processing plants. Actually our contract with Marel serves as a master plan for all our processing needs with training," Jorge concludes.



Marel equipment in action. The commitment from Marel was important to Camanchaca. "A key



Jorge Fernández has been CEO of Salmenes Camanchaca since 2002. The Company currently employs 1,500 people and processes around 50,000 tons per year; expected to increase to 60,000 tons in 2020.

FILLETING MACHINE MS2730

CHINA'S FIRST FULLY AUTOMATIC SALMON PROCESSING LINE

A new Marel processing line has been installed at Shanghai Hi-Chain Foods' salmon processing facility in Hengsha International Port near Shanghai. It is a watershed installation for Marel in China, as it is the country's first automatic processing line for salmon.

The plant produces up to 30 metric tons of salmon products per day and the Marel installation includes filleting, trimming, pinbone removal, skinning, portioning and slicing equipment. Shanghai Hi-Chain Foods also processes tuna, king crab and other seafood.

In recent years, Chinese salmon processors have increasingly sought out hi-tech processing equipment in order to improve performance and food safety, raise yield and reduce costs. This project began after Mr.Li, General Manager of Hi-Chain, attended the 2016 Salmon ShowHow in order to find out more about what Marel could offer in terms of advanced salmon processing technology. The showhow is held in

Copenhagen each year and invites salmon processors to experience Marel's equipment and software first hand in a simulated processing plant environment.

Mr.Li was especially interested in Marel's filleting lines, which he saw for the first time at the showhow, and he left the event convinced that Marel could help Hi-Chain produce superior quality salmon products for its customers, whose demand for quality keeps growing.

A deal was made and the equipment was installed in August 2017. During the start-up phase, Marel provided training to Hi-Chain employees. Training is an integral part of Marel's service, especially when a facility is

taking such a big step in terms of automation, and both Hi-Chain and Marel made every effort to ensure that both the factory and employees were prepared for the installation.

The installation marked a shift in the nature of many of the jobs at the factory and Marel's local service engineer in China, along with its service engineers from Denmark, were in close contact Hi-Chain from the start, to answer questions and assist with troubleshooting.

The Hi-Chain plant has been fully operational since the end of August 2017.

GO TO: marel.com/salmon



UNIQUE CUTTING PRINCIPLES

The automatic Deheading Machine was released for sale in January 2018 and its unique cutting principles were first demonstrated at the 2017 Salmon ShowHow.

Salmon processors are constantly looking for ways to improve yield and achieve a better flow. The new Deheading Machine helps achieve this by performing high-precision cutting for optimum yield on every fish and by enabling the automatic transfer of deheaded fish into our Filleting Machine.

When Leroy Seafood Group begins operating one of the most advanced salmon processing plants in the world later in 2018, the new site's high-tech processing systems will include the Deheading Machine.

With precise, uniform cutting and gentle handling throughout, the machine helps ensure very high quality fillets.

The deheader can also help raise productivity and is very easy to operate, with all settings and operations made on a touchscreen panel next to the operator platform at the machine's infeed.

- **Automatic size adjustment between 2 and 10 kg**
- **Optimum yield on every fish**
- **Superb performance using latest servo technology**
- **Integrable with Filleting Machine MS 2730**
- **Improves fillet quality**

GO TO: marel.com/salmon

 UNIQUE CUTTING PRINCIPLES



Top service delivers high efficiency at Vega Salmon

Marel's Service Level Agreement (SLA) with Vega Salmon provides the salmon producer with a system for equipment maintenance, including a plan that outlines the service for every unit, the spare parts needed for stock supply, and the support Marel will provide. This proactive approach reduces the risk of breakdowns and the consequent loss of valuable production time.

Vega Salmon has been a Marel customer for many years, investing in secondary processing machinery for filleting and portioning, as well as slicing equipment for the value-added section. In order to meet the increasing demand for salmon products from their customers, they have continually enlarged the capacity at their factory in Handewitt, Germany.

Vega Salmon and Marel have always worked together to maintain the

equipment but, until recently, without any formalized service support agreement. That changed in 2016, when Marel offered to make a Service Level Agreement (SLA) with Vega Salmon that would strengthen the relationship and include a fully planned service schedule of all Marel equipment.

Entering the SLA was vital for Vega Salmon to achieve its targets for efficiency, flow, yield and volume. As

Head of Operation, Rasmus Graversen, explains, "We are now working within a narrower margin, and we can't afford for a machine to just be standing still." After the recent major service check on the filleting lines by Marel, Vega Salmon achieved a record high throughput on the lines for the following month.

CLOSER RELATIONSHIP

The Marel service team's combination of knowledge and special competences is important to the smooth running of Vega Salmon's production and it's essential for the two companies to have a good relationship. By making it very clear what service will be provided and formalizing the common understanding of the factory's daily operations, the agreement brings Vega Salmon and Marel closer together.

"When people from Marel are on site, they get familiar with the day-to-day ▶

of production, which helps them understand and helps ensure close cooperation between us," production manager Hauke Schick says.

LEARNING AND ALIGNMENT

The SLA is a fluid agreement that develops over time and is regularly updated to include new machinery and to adjust to changes that occur or other needs that arise. "It's not just one fixed piece of paper, it's alive," Rasmus explains. Vega Salmon employees are also learning and making improvements over time, so service is adapted to suit the flow and production hours, as well as variations in the amount of fish being processed.

The company constantly strives to do things more efficiently and adapt to the changing conditions from day to day. Rasmus points out that one of the benefits of working together with Marel is that their employees take part in training provided by Marel to learn how to best utilize the machinery.

Since the SLA was implemented, daily operations at Vega Salmon have improved with fewer breakdowns and a more consistent quality. With the use of quality guides based on pictures, rather than text, the multinational production team knows how the fish must be processed in order to deliver the right

quality. The quality is monitored closely and supported with training individual operators if deviations in the quality occur.

TRAINING IS KEY

With the SLA, the training of how to operate and adjust the advanced machinery on a daily basis is included.



Selected employees receive training at Marel in Denmark that includes how to carry out preventive maintenance, how to change parts, how to respond to error messages that might appear on the touchscreen and how to locate errors. But staff also learn a lot about the machines from the Marel service technicians during their regular service visits.

"Marel has a great deal of knowledge and special competences about the machines," says Rasmus. "The more in-house knowledge we can gain, the better we can handle the machines."

HIGH-YIELD SERVICE

Vega Salmon closely monitors yield, and is well aware that yield would decrease if the machinery was not being properly serviced according to the plan, because



the reliability of the machines is vital to achieving the highest possible yield.

Marel has implemented a yield test to evaluate and document the result of a service check on a machine by measuring yield before and after a machine is serviced for comparison.

CONSTANT IMPROVEMENT

The Marel customer care manager is in regular close contact with Vega Salmon to follow up on any issues or to discuss improvement points. Rasmus foresees that the SLA can be developed even further by focusing on sharing of

knowledge in salmon processing and, in particular, how to optimize maintenance. He expects this will lead to even better operation and so contribute to further reducing Vega Salmon's operational costs in the future.

Now that Vega Salmon has the SLA with Marel, it's already hard to imagine running production without it. "We need to have this contract between us – there is no other way!" says Rasmus.

▶▶ [Read the full story on marel.com/vegasalmon](https://marel.com/vegasalmon)

SMARTER SERVICE



The nature of service for the fish processing industry has evolved over the years as processing volumes have grown, consumer demand for quality has increased, food processing across the board has become more hi-tech and there is greater and greater pressure on processors to keep all their machinery running smoothly all the time.

Machinery uptime is key. From keeping cutting blades sharp in order to ensure fast, accurate cutting, to correctly programming software in order to ensure traceability and reliable quality monitoring; by maximizing uptime processors can ensure optimal yield, throughput and quality.

PROACTIVE SERVICE

When we talk about service today, we mean more than a visit from one of our service technicians. Marel service focuses on preventative maintenance and aims to avoid downtime whenever possible. Our service team works with fish processors to optimize their

"When it comes to service, proactivity improves the bottom line."

production processes; provide remote support, emergency support, spare parts and scheduled maintenance checks; and share its expertise by training employees on site for daily maintenance and to make the most of the Marel systems and solutions.

COST-EFFECTIVE SLAS

When it comes to service, proactivity improves the bottom line. A Marel Service Level Agreement (SLA) – such as the SLA with Vega Salmon (see above) – provides processors with a systematic, comprehensive service plan that proactively helps maximize uptime. And by maximizing uptime, Marel SLAs improve profits.

SPARE PARTS WEB SHOP

Marel is also making its service more convenient by offering customers online ordering of spare parts. So far, the new web shop has all spare parts for the FleXicut – including FleXisort and the system's high-pressure pump – as well as for the MS 2730 Filleting Machine. This means spare parts information is easier to access and ordering can be done by browsing manuals and drawings, which helps ensure an accurate, secure order process. All web shop orders for spare parts are given top priority with a convenient track-and-trace delivery service.

SERVICE EXPERTISE

Our service team members are highly trained specialists in Marel equipment and many come from a background as technicians in the fish or other food processing industries, which further helps them understand your needs. Our Innova Food Processing Software service technicians focus on ensuring you get the most use of the software, utilizing all its best features. They know that if you are generating and reviewing the right reports, getting all the relevant information, you'll be able to run the site to maximum profit.

GO TO: marel.com/fish-service

“Working in partnership with Marel, we looked for the best alternatives: number of employees and stations, lines and operations flow. So together we formed a proposal that meets the current needs and also allows for an expansion of the productive capacity over the coming years.”

– Andre Luis Bertoldo, Supervisor of Maintenance and Projects at C.Vale

STATE-OF-THE-ART TILAPIA FACILITY

In 2017, Brazilian processor C.Vale opened the country’s largest and most modern fish processing facility to date, supplied with processing equipment and systems from Marel.

The new factory is just over 10,000 m2 and has an initial processing capacity of 75,000 tilapia per day. It is located in C.

Vale’s industrial park in Palotina, western Parana.

According to the president of C.Vale, Alfredo Lang, the plant will be the largest in Brazil and the most modern in Latin America. “Once we’re processing 75,000 tilapia per day, our next goal will be to reach 300,000 per day. We have a consolidated customer base who are waiting for our fish products both in the domestic and foreign market,” he says.

IN PARTNERSHIP

The long-time partnership between

Marel and C.Vale was influential in the development of this new project, though it began outside the fish processing industry in the areas of poultry and further processing.

“In Brazil, C.Vale and Marel have shared a story together for more than two decades. C.Vale was one of the first cooperatives to install a Nuova evisceration line from Marel and they continue to rely on Marel solutions for their business,” says Francisco Leandro, General Manager of Marel in Brazil. “This new project is not just a watershed in the fish industry in Brazil, it also reiterates and strengthens the partnership between the companies.”

FILLETING AND TRIMMING

The filleting and trimming flowlines are at the heart of the new facility, with a Marel Hopper Scale and SmartLine Grader in front of the two flowlines. The Hopper Scale weighs the continuous product flow and is connected to Innova Food Processing Software for real-time monitoring of the production. The SmartLine Grader then sorts the fish into two weight ranges, ready for the flowlines. Each flowline uses a single conveyor for both input and output, with left and right fillets processed separately and a bin for untrimmed fillets.

The flowlines increase efficiency by shortening the processing time,

improving utilization and ensuring full traceability. They provide the plant manager with real-time data of the entire processing operation and help maximize quality control.

PRODUCTION CONTROL SOFTWARE

The Innova filleting and trimming solution enables C. Vale to monitor and control their trimming and filleting process such that managers can identify precisely which products are being processed, which employee is working at which station, and which lot is active, as well as trace the raw material to its original purchase order.

Innova makes detailed information available on all key data such as throughput, yield and individual employee performance, thereby enabling targets and criteria to be established and measured. The solution provides both real-time and historical data on a live display and in reports to evaluate system performance.

C.Vale is an agroindustrial cooperative operating in Paraná, Santa Catarina, Mato Grosso, Mato Grosso do Sul, Rio Grande do Sul and Paraguay. It has 148 business units, over 20,000 associates and 9,000 employees. As well as fish, it produces soy, corn, wheat, manioc, milk, chickens and pigs and also maintains a network of supermarkets. The inauguration of the C.Vale tilapia plant on 20 October 2017 was attended by thousands of people and reinforced the importance of agribusiness for the Brazilian economy, with the cooperative also commemorating 20 years of operating its agro industrial complex.

ROOM TO GROW

From the start, it was important to C.Vale that the processing facility would allow for future development and expansion. In addition to the new processing technologies, the project employs an exciting new intensive fish farming model and the future gains in production scale are expected to be extraordinary.

Andre Luis Bertoldo, Supervisor of Maintenance and Projects at C.Vale, recalls the early stages of the project: “Working in partnership with Marel, we

looked for the best alternatives: number of employees and stations, lines and operations flow. So together we formed a proposal that meets the current needs and also allows for an expansion of the productive capacity over the coming years.”



(L-R) Andre Luis Bertoldo – C.Vale Maintenance and Project Engineer; Marcelo Serpa – Marel Sales Manager; Edson Antonio Cole – Industrial Manager of the factory; and Diego Lages – Marel Regional Sales Manager.



EXPERIENCE SMARTER PROCESSING

Twice a year, Marel opens its doors to salmon and whitefish processors from all around the world.

EXPERIENCE the latest and best in fish processing equipment and software in a hands-on environment at Marel's demonstration and training center in Copenhagen.

EXPERIENCE live demonstrations and virtual reality factory tours throughout the day.

EXPERIENCE how Innova Food Processing Software can further add value to your production by keeping track of all the data in real time as it is generated by the machines on display.

EXPERIENCE new technologies in fish processing under the guidance of our specialists and guest speakers.

GO TO: marel.com/events

WHITEFISH SHOWHOW

26 SEPTEMBER 2018



EXPERIENCE SMARTER PROCESSING

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