

# ADVANTAGE

FISH PROCESSING

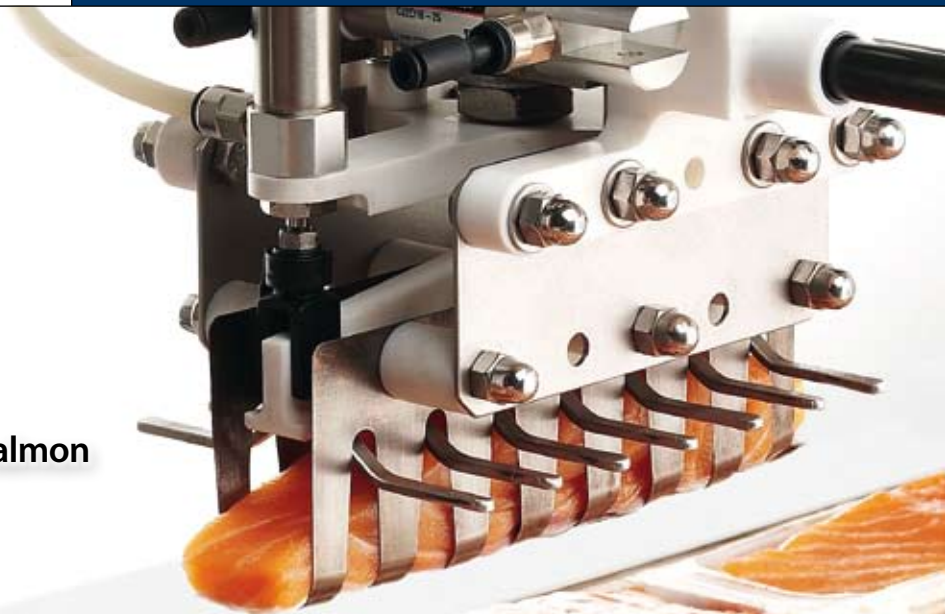


2008 – Volume 1

Cutting bacalhau the smart way

A new concept in IQF freezing

Intelligent further processing of salmon



## Hands-free batching Hands-on profit

Automatic batching and loading of fish portions directly into trays or thermoformers

MEMBERS OF MAREL FOOD SYSTEMS



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# Intellig at Ma



**Carnitech's IPS 3000 slicing system is steadily gaining a foothold in the production of value-added salmon in Europe. Marine Harvest VAP is one prescient enterprise that has put its money into the intelligent laser detection technology as a flexible approach to individual customer requirements.**

Close to its main market, one of the units of Marine Harvest VAP Europe in Belgium focuses on fresh value-added products produced to order. The enterprise has recently broadened its range of private label retail products to include packs of sliced smoked salmon with a fixed weight and a fixed number of slices.

### Production flow far more stable

The standard line of three IPS 3000 slicers currently running in Ostend, Belgium has an average capacity of 80 kilos of fully trimmed, ready-to-slice salmon fillets per hour. Each slicer features automatic registration of infeed weight, and the laser vision system measures fillet size and volume. A combination of the data on weight and volume is used to determine the optimal cutting profile, according to the product parameters defined in advance. The slices are automatically arranged on retail boards, ready for inspection and packing.

# ent slicing rine Harvest VAP



## Adaptability is everything

Plant director Yves Jansens reports, "The fixed weight, fixed number of slices concept is new to the Belgian market. Only one customer has made inquiries about it so far, but sometimes one inquiry is all it takes. The push to do things differently always comes from the largest retailers, and to us it makes perfect sense to pursue a strategy of flexibility in the manufacture of this product line. When producing to order, adaptability is everything."

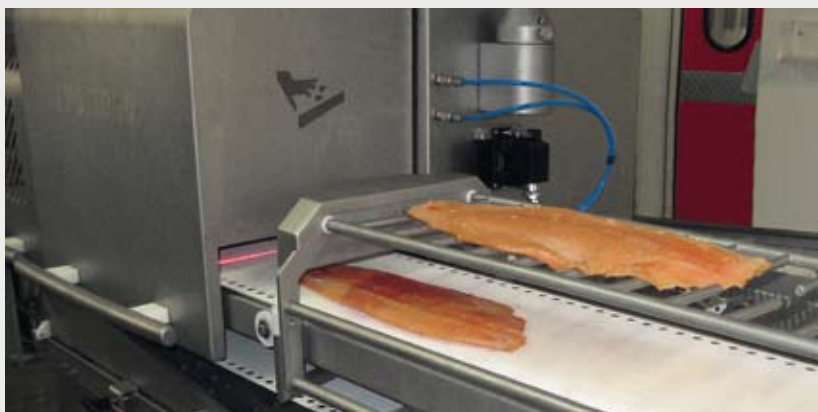
Engineering director Jan De Keersgieter elaborates, "The intelligence of the system allows for a variety of slicing options and it is flexible and cost-effective. We have a less labour intensive process, and because of better planning the production flow is far more stable. We know exactly how many people we need on the line for a given specification, and that is crucial to our competitive performance."

## Beneficial exchange of knowledge

Yves Jansens explains, "Each board that is under or above weight is manually adjusted on a separate conveyor. We make party packs from two to eight slices, and the more slices on the board, the easier it is to achieve a sustainable yield. Having the right technology is crucial, but in the final analysis it's the interaction of technology, product and operator skills that governs the profit."



*Each slicer features automatic registration of infeed weight and a laser vision system that measures fillet size and volume.*



*A combination of the data on weight and volume is used to determine the optimal cutting profile.*



*Each board that is under or above weight is manually adjusted on a separate conveyor.*

# Cut 'n Pack

## – Fully automated cutting, batching and packing

**Cut 'n Pack is a fully automated cutting, batching and packing salmon system featuring the combined advantages of the ScanPortioner B36 and the Intelligent Portion Loading Robot (IPL Robot) and is capable of loading as many as 160 salmon portions per minute directly into thermoformers.**

A ScanPortioner B36 portion cutter controls the line by first scanning the product to determine where the cuts are to be made to produce the fixed-weight portions.

A vision system feeds the location of the portions to the IPL Robot which then gently picks them up and loads them directly into packing machines – all done without manual handling.

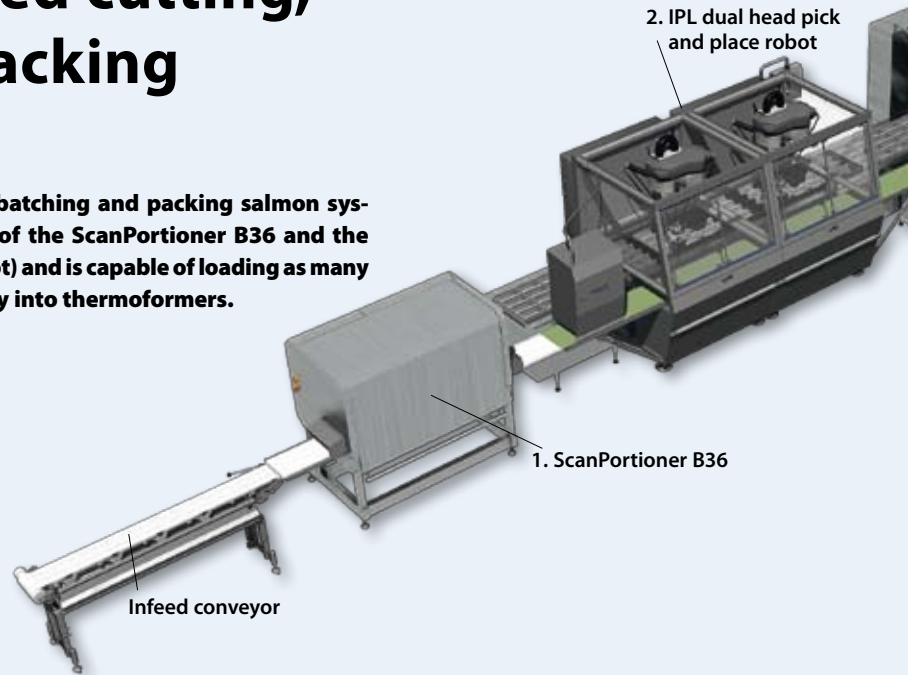
- Lower labour costs
- Higher accuracy on portions
- Possibility for 45 degree angled cuts
- Gentle product handling
- Improved product presentation

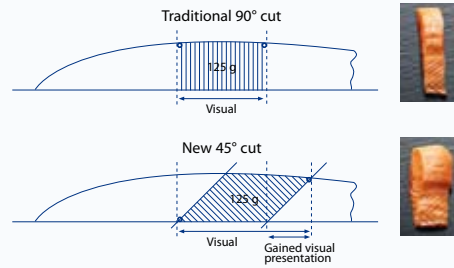
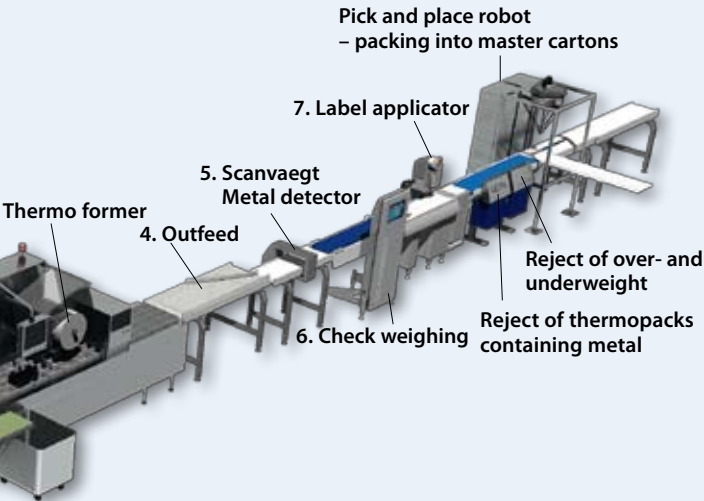
### Robots replacing operators

"The Cut 'n Pack line has received very positive attention from salmon processors worldwide since its introduction earlier this year. Especially, the high accuracy of the finished fixed-weight portions combined with the potential of replacing several operators with a robot

has been appealing to the fish processors – labour is becoming a scarce resource".  
Chris Bjerregaard, Business Manager, Fish Solutions.

For more information please contact your local Marel Food Systems office or visit [www.scanvaegt.com](http://www.scanvaegt.com)





**45 degree angle feature**

*ScanPortioner B36 makes it possible to cut the salmon fillets on a 45 degree angle to make the portions look larger and more tempting.*

# Hands-free batching and loading



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**AEW Delford Systems Intelligent Portion Loading Robot (IPL Robot) picks up portions and places them into trays or a thermoformer.**

The new AEW Delford IPL Batcher automatically loads pre-formed trays or thermoformers with individual product portions to produce fixed weight packs. More than one nominal pack weight in different tray sizes can be produced at the same time, depending on production

needs and product size. A wide variety of product can be handled, thanks to a unique range of patented grippers.

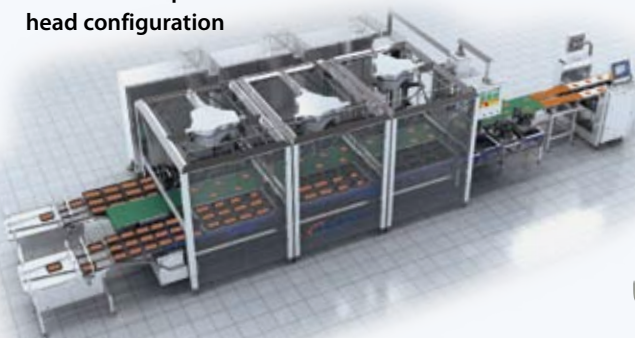
Huge reductions in labour costs, easy hygiene and reliable, consistent, high output production are just some of the many benefits these machines deliver to processors.

An advanced vision system determines product position and orientation and then, at the appropriate point, the relevant robot head

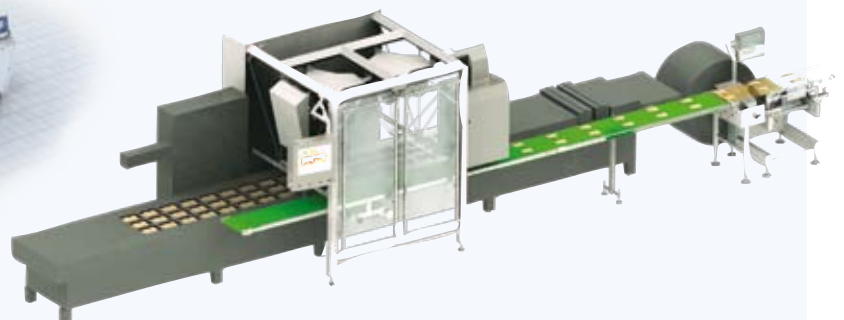
transfers it to the final pack in the required style and the correct orientation.

The vision system can also identify the 'foot-print' of a portion in order to reject, for example, a broken piece or to pack whole fish or fillets head to tail.

**IPL Batcher triple head configuration**



**Twin head IPL Robot loading**



# The world's most

# SAL

With a throughput of 16 tons per hour at peak production Lerøy Aurora in Norway has set a new standard for salmon processing. Extensive automation, full management overview and use of robotics are key elements in what is one of the world's most efficient salmon processing plants.

"It has taken time and effort to fine-tune the entire processing system but looking at the end result it has been worth every single step." This is the clear statement from Factory Manager of Lerøy Aurora Kurt-Einar Karlsen when asked about Lerøy's latest salmon processing plant in Skjervøy in the very northern part of Norway.

When Lerøy Aurora in 2007 decided to turn a former shrimp processing facility in the small town into their most advanced salmon processing plant the search for the most efficient processing system began. In the end the choice fell on the Superior Salmon Solution from Scanvaegt.

### Higher production capacity needed

"The main driver for investing in a complete new plant was the need for a production increase," Kurt-Einar Karlsen explains. "But we also had other requirements to the processing system. Amongst other things it needed to be capable of handling four different quality categories of fish in up to nine different weight categories which are subsequently packed in four different types of boxes. We also wanted a system that was very flexible with regards to changing orders rapidly."

### A unique grading system

From the big holding cages in the fjord just outside the factory the salmon is pumped

directly into the plant. After the fish has been slaughtered the salmon is degutted and sent further down the processing line for manual quality grading into either Superior, Ordinary, Production A or Production B quality.

The fish is graded into batches on a 21 channel, dual-lane ScanBatcher 4700. But the real breakthrough development in the grading system lies elsewhere. Kurt-Einar Karlsen explains: "The most unique feature for the new grader is that we are able to order exact qualities and sizes of fish for further processing – maturing, filleting or freezing – in the system based on our incoming orders. The

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### The Sushi King

Lerøy Aurora was recently portrayed on Japanese television because of their superior quality salmon. One of Japan's most famous sushi-chefs – the so-called Sushi King Izumi Sakai – has been working with Lerøy Aurora for the past two years and considers the salmon from here to be the best in the world for making sushi. This is primarily because of the cold waters in the Norwegian fjords this far north, which allows the salmon to grow at a much slower rate than anywhere else – giving an outstanding quality.



# Advanced LIMON PLANT

grader system will then automatically distribute these orders."

Less than two per cent of the fish is not graded which paves the way for the very high throughput and yield of the system.

## A box is packed, labelled and palletized every 6 seconds

The batches of salmon are automatically loaded into different types of boxes depending on how the actual order is to be transported to the customer.

The individual boxes are then checkweighed, labeled, iced and checkweighed again before they are sealed and conveyed to the fully automated palletizing section. Here, at peak produc-

tion, two packing robots with great accuracy lift 20 boxes of salmon onto a total of 16 possible positions every single minute.

## Full management overview

From the production management office the daily works manager receives real time information about every part of the entire process.

"Being able to monitor performance in real time enables us to constantly optimize the production. Not only do we have the necessary order information, actual status and throughput but we can also determine which of our employees are performing well on the different work stations," Production Manager Tore Pedersen explains.

## Coffee anyone?

Lerøy Aurora has a very clear philosophy when it comes to the working environment. The production runs in two shifts from 7am to midnight. Each employee on the production floor works for 1½ hours and then has ½ hour off. This ensures high performance and means that you can always catch employees sitting down for a cup of coffee.

"One of the challenging tasks has been to train our staff in using the new system. However, we are fortunate to have a very stable and loyal workforce and with the help of the processing experts from Scanvaegt we have been able to achieve the goals we were aiming for," Kurt-Einar Karlsen concludes.



# Innovation in action!



**Searching for a system that would provide them with a better business planning and production overview Visir hf found the new intelligent production control software, Innova from Marel Food Systems. Since then Innova has been installed in an additional two plants in Iceland.**

## Key information for efficient management

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It is now possible to monitor key attributes such as throughput and yield at every stage of the process and complete stock management. All this data is automatically collected from the three factories into a central ERP system, giving the management and sales team access to real-time information at all times.

Having all this information at their fingertips, the managers at the Djúþívogur factory have gained valuable time which they can now dedicate to other aspects of the process, whereas before they had to spend their time on data gathering and analysis.

"We are very pleased with the new software and the service we have been receiving," says Omar Enokson, factory manager. "It is also extremely convenient for us to have traceability information readily available at any given time."

Vísir hf. is a leading fish processor in Iceland, supplying approximately 4000 tonnes of fish annually to countries including Spain, Portugal, Italy and Greece.



## Designed for flexibility

One of the main objectives of Vísir hf (headquarters) at Djúþívogur was uniting the three factories in terms of data collection and management, as well as decreasing the complexity levels within the companies.

Björn Þorvaldsson, software product manager for Marel ehf, says "We have tried to take all existing and emerging needs into consideration and designed Innova in a modular fashion which makes it flexible and easy to use. The software provides processors

with real-time information on all aspects of processing and connects easily to existing ERP systems, bringing direct control into the hands of management."

Please contact your local Marel Food Systems office for further information on how Innova can improve your business, or visit our website [www.marelfoodsystems.com](http://www.marelfoodsystems.com)



# Rui Costa cuts bacalhau the smart way



**In 2007, the Portuguese company Rui Costa, invested in a Scanvaegt StripCutter for a new value-added product they wanted to introduce. The company is now producing a steady stream of quick-frozen desalted dried cod – bacalhau - in ready-to-cook portions.**

“When introducing the desalted ready-to-cook portions of bacalhau on the Portuguese market, we needed the best equipment for cutting this particular product,” says Gonçalo Guedes Vaz, Managing Director at Rui Costa. “The StripCutter is by far the most suitable equipment for our job – for many reasons. We have better control of the production and production time has been made a lot shorter. Most importantly, though, it gives us a higher yield, our cutting precision has increased compared with our

traditional sawing systems, and the StripCutter limits the risk of worker injury, because of the covered cutting area.”

## Rising demand for portioned bacalhau

The portion-sized “ready-to-cook” bacalhau has been in great demand ever since it was first introduced in 2007, and demand is rising. At present, Rui Costa produces 5–6000 tons of the frozen bacalhau annually – primarily for Portuguese restaurants and retail super-market chains.

The company has two production facilities in Portugal and two in Brazil, with an overall turnover of Euro 59 million and a target of Euro 100 million by 2010. The primary markets are Portugal and Brazil, which account for 60% and 30% of turnover, respectively.



*Rui Costa has recently launched ready-to-cook fixed-size portions of bacalhau for the Portuguese market.*



*Gonçalo Guedes Vaz,  
Managing Director  
at Rui Costa.*

## StripCutter for fixed-size portions

**The StripCutter is ideal for continuous cutting of both fresh and frozen products, such as salmon fillets lengthwise into strips, dried cod and herring fillets into portions and whole fish into “steaks”.**

The cutting is carried out by a series of circular blades mounted on a rotating shaft where the distance between the blades equals the portion size. On 600 and 1000 mm belt models, this distance is variable, with a minimum of 50 mm.

On the 300 mm belt model, the minimum distance between the blades is 10 mm.

- Continuous product flow – belt speed up to 30 m per minute
- Multiple products can be cut using the same StripCutter configuration
- Fixed pointers for accurate product infeed positioning – laser or pointers
- Product holder and moving cutting roller prevents the product from moving during cutting
- High operator safety – no open cutting areas
- Maximum product height is 76.2 mm





Dantech Food Systems Pte Ltd. is the freezing expert among Marel Food Systems' brands – a fact that has earned them the nickname 'The Spiral People'. Dantech offers a wide selection of freezers ranging from small package units to very large tailor-made solutions.

**The range of freezers includes:**

- Spiral Freezers
- Belt Freezers
- Blast Freezers



*Super Flow Easy Clean reduces the overall freezing costs with up to 20% and is designed for extremely long production runs.*

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# A new concept in IQF freezing

**Pro-environmental and governed by a new efficient and energy-saving freezing technique, the Super Flow Easy Clean tunnel freezer from Dantech embodies a fresh approach to IQF freezing.**

Forget about excessive running costs, high energy consumption and costly cleaning procedures. Super Flow Easy Clean runs by means of a combination of impingement airflow technology and the much more energy-efficient turbulent airflow, which reduces the overall freezing costs with up to 20%.

**Changing the fundamentals**

The new freezer features a number of globally patented key elements. Dantech CEO Henrik

Ziegler explains, "For years, the industry has developed by slightly improving or upgrading existing equipment. Our approach has been to change the fundamentals in line with new technologies and new political, cultural and financial realities – with environmental concerns as high priority."

**Clean in ten minutes**

The freezing chamber can be raised mechanically and cleaning completed in ten minutes. This is extremely fast and reduces excessive water consumption. Henrik Ziegler explains, "The easy-to-clean aspect adds directly to the bottom line, since water consumption and working hours for cleaning constitute substantial expenses in an industry where the cost of processing defines success or failure."

**Flexible incorporation into plant layout**

Most freezers are built into the factory floor, but Super Flow Easy Clean is movable and accordingly offers flexibility in terms of installation, change of location and expansion of production line setup.

**"In the design of the freezer we have changed the fundamentals in line with new technologies and new political, cultural and financial realities."**

*Dantech CEO Henrik Ziegler*



The multihead weigher, ScanCombinator 5414 is capable of making 40 bags (565 g) of bacalhau per minute.

# Designing a flexible production floor

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**In addition to the cutting of fixed size bacalhau portions, Rui Costa in Portugal produces various other frozen fish products, for example bags of dried cod snippets.**

The importance of being able to match the customers' needs was a big issue in the 2007 plant refurbishment at Rui Costa. "Our objective was to get as much flexibility into our production facility as possible. The main idea is to have a production system – capable of processing 2-3 different items in the same system with just a few changes to the program", Gonçalo Guedes Vaz, Managing Director at Rui Costa and explains, "so we designed the total plant layout in corporation with Marel Food Systems to get the right flow in the processes. The result is control of production, shortened production time and a better quality product."

## Online real-time reporting

In the design of the production floor automatic reporting was a key feature.

"We now have various automatic report possibilities – amongst other from the multihead weigher and the checkweigher. There is no more paper reporting in the production. The multihead weigher for example is running most of the day and is performing extremely well. And I can see everything online on my computer." Gonçalo Guedes Vaz enthuses.

## Scanvaegt multihead weigher

The ScanCombinator 5414 deals with all infeed, mixing and weighing requirements and then portions and packs food items into virtually any kind of tray, thermo pack, bag, can, etc.

### Features

- easy cleaning and excellent hygiene with a sturdy structure made entirely of stainless steel
- easy-to-use interface with large 12-inch colour touch screen
- possibility of comprehensive statistical data
- possibility of mixing different products, each product with individual portion weight.



Producing fixed weight bags of bacalhau at Rui Costa in Portugal.

# Turkish frozen fish delight



**The export of IQF frozen sea bass and sea bream is a growing trend in Turkey. Uğurlu Seafood Ltd., the first fish farming and fish processing company in the country to act upon this change in market demand, exports IQF frozen products to European retailers on a large scale. Dantech freezing and glazing technology is one of the secrets behind its success.**

Most Turkish aquaculture products are still marketed as whole fresh fish, but given the keen interest that European countries like France, Italy, Holland and Germany are showing in IQF frozen fish, this is likely to change in a couple of years. This is the opinion of Nihat Kurtulus, General Manager at Uğurlu Seafood Ltd., who makes no secret of the fact that other companies are planning to follow their example.

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“Those who have seen our freezing and glazing equipment are very impressed. Our product quality has been appreciated by customers in several EU countries who are now placing more and more orders for IQF frozen sea bream and sea bass,” he states.

## Short freezing times

Uğurlu Seafood Ltd. exports fillets as well as whole, gutted fish. Quick-frozen, these products preserve the quality, taste and appearance of the freshly harvested fish as closely as possible. Clearly there is a growing consumer demand for this type of product which, in contrast to chilled fresh food, is not affected by lengthy transportation times. Sales and Marketing Manager Ismail Aksoy explains, “IQF technology is a great asset to our production, not only in terms of more delicate and nutritional end products but also in terms of production efficiency.”

**The average freezing time for fillets is only thirty minutes, meaning that processing, freezing and packing is generally managed in less than an hour.”**

*Ismail Aksoy, Sales and Marketing Manager*

## Cost-effective method

The principle of horizontal airflow produces a highly efficient freezing process. “With this type of freezer we are even able to run the small fish *Atherina*,” says Ismail Aksoy. With this particular type of fish the system has been running for up to 60 hours before defrosting, and soon, with ‘night mode’ installed, running

times will be extended to one week, thereby minimising downtime and water consumption. “Another factor in the cost-efficiency of the freezer is its large evaporator capacity. We often run the freezer at  $-38^{\circ}\text{C}$  rather than  $-40^{\circ}\text{C}$ , which requires approximately 5% less power consumption.” Aksoy reports.



*The freezing system is part of a complete Marel Food Systems wholefish and filleting plant.*



*The IQF spiral freezer provides a highly efficient freezing process and average freezing time for fillets is only thirty minutes.*



### Pinneys of Scotland

Pinneys of Scotland is a part of Uniq Foods. The Pinneys of Scotland operation based in Annan is the largest processor of Scottish salmon in the UK.

In addition to its traditional smoked salmon and salmon fillets, they also supply a growing range of value added seafood based products including patés and mousses, fresh salmon and seafood dishes. Pinneys has a growing business in the fish ready meals sector with products such as Thai Prawn Curry and Smoked Salmon Risotto.

# Replacing water jet cutter with ScanPortioner B36



**Replacing an old water jet cutter with two ScanPortioner B36s, from Scanvaegt has allowed Scottish salmon producer Pinneys to produce more efficiently, more flexibly and environmentally better.**

Having used a DSI water jet cutter for many years the initial plan was to change like for like. But with a price tag over EUR 600,000 the management team at Pinneys decided to look for alternatives.

"We have been buying equipment of Scanvaegt for years and years and with the merger of all the companies now in Marel Food Systems we could think of no one better to ask for an alter-

native to the old machine," Facilities Manager Mick Craig says and adds, "Their suggestion was to test the ScanPortioner B36 and after seeing the result there was no doubt that this was the replacement we were looking for."

### Superb versatility and flexibility

With a throughput of approximately 22 tons per day the equipment at Pinneys stand trial every single day. After installing the first machine it soon became clear that the benefits were so plentiful that it was well worth investing in a second one. Now Pinneys have one portion cutter doing standard vertical cuts and another doing 45 degree angled cuts for different presentation of the salmon.

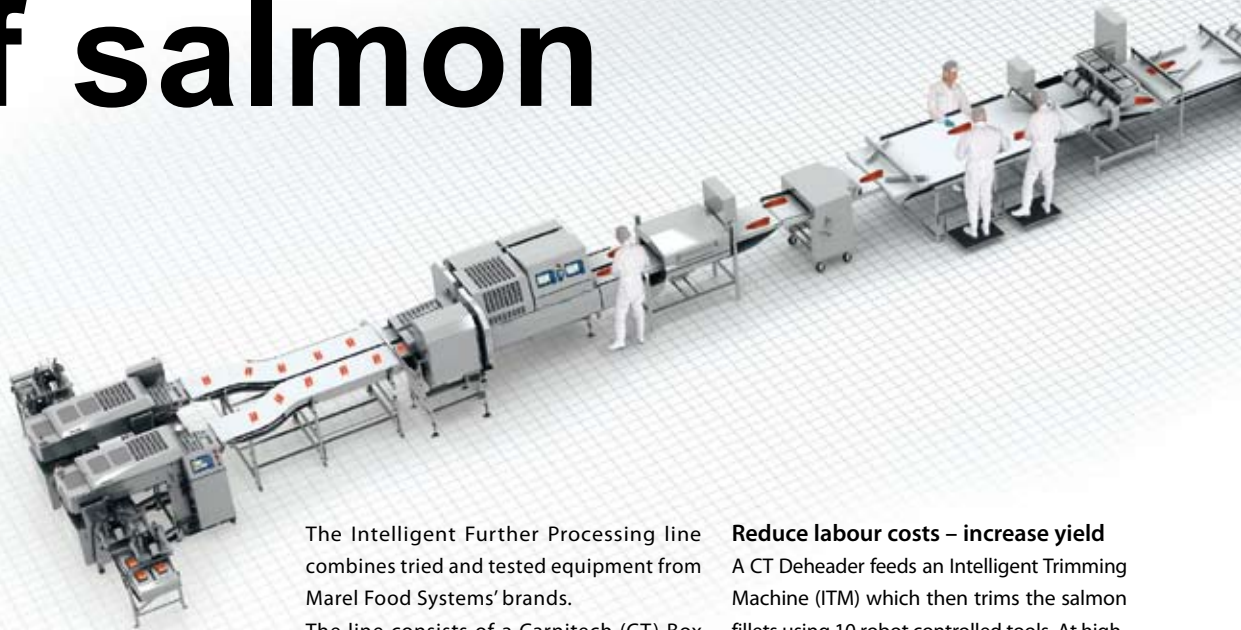
"The two Scanvaegt portion cutters certainly live up to our expectations. We are getting extremely accurate portions in a consistent and hassle-free manner. The machine is well constructed and easy to operate which is very handy as we change products quite frequently during an average day," Factory Manager Ally Scaife states.

### Environmental benefits

The ScanPortioner B36 operates totally without water. As a result the change from the water jet cutter to the ScanPortioner has given a considerable saving.



# Intelligent further processing of salmon



1 4

**The Intelligent Further Processing line from Marel Food Systems will transform the way salmon processors monitor and ensure the safety of their products, as well as help them increase yield and reduce labour costs.**

The Intelligent Further Processing line combines tried and tested equipment from Marel Food Systems' brands.

The line consists of a Carnitech (CT) Box Loader for ergonomic unloading of salmon boxes. A CT Deslimer is used for rinsing off slime, blood and bacteria from the salmon before processing in order to avoid potential bacterial risk during the process. Using high water pressure the fish are thoroughly rinsed on both sides as well as on the inside.

## **Reduce labour costs – increase yield**

A CT Deheader feeds an Intelligent Trimming Machine (ITM) which then trims the salmon fillets using 10 robot controlled tools. At highest capacity, it replaces 8 skilled operators with up to 2% higher yield and improved uniform trimming.

**The system gives a rapid payback and in some cases the entire payback can be expected within a year.**



*The CT Deheader is the first to combine head and tail cutting with automatic infeed to a filleting machine.*



# A service partner that focuses on your results

**Marel Food Systems' mission is to be the best-in-class organisation that expands and adapts in step with our customers' changing requirements. This mission is based on the strength of our product range and a continual dialogue with our customers to make sure we really do understand their changing needs.**

Our organisation provides professional service solutions to the food processing industry worldwide. We have more than 300 trained and certified field service engineers, directly employed in over 30 countries across six continents.

With more than 1,000 on-site interactions with customers every day, we have built up a unique

insight into our customers' different production environments and processes, and have compiled unparalleled practical know-how about how best to tackle the demands and challenges our customers face.

Our service products are arranged in a modular structure that gives you maximum flexibility in putting together a customer service and support package tailored to your exact requirements.



## Did you know?

More than 75% of all unscheduled interruptions to food processing operations can be directly attributed to human error in the form of lack of familiarity with the processing equipment, incorrect operation, poor maintenance and carelessness.

## Local knowledge, global reach

- A service organisation with global reach, combined with local focus
- A customer-oriented organisation with 24/7 access to expert help
- Spare parts inventory and an efficient supply chain that spans six continents
- Knowledge of different production environments and processes
- Clear framework that assigns unambiguous roles and responsibilities
- Fast resolution of problems and greater management awareness
- Highly trained field service personnel whose skill sets are constantly updated

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