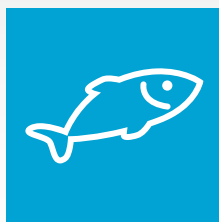


May // 2014

atlantic

Icelandic Seafood and Fishing Industry Innovation

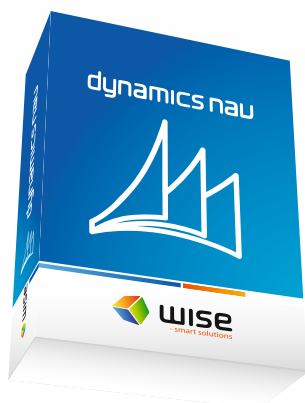




seafood
processing
global



wise
- smart solutions

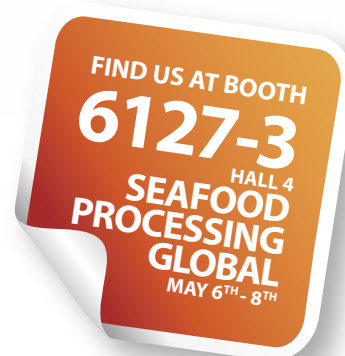


dynamics nav

Wise, founded in 1995, has become one of the largest resellers of Dynamics NAV in Iceland as well as offering a wide range of seafood industry-focused packages, business intelligence solutions and analytical tools for the international markets.

Wise solutions combine the best standard Microsoft Dynamics NAV with specialty add-on solutions.

Wise is an Independent Software Vendor (ISV) for Microsoft Dynamics NAV and a Microsoft Gold Partner.



wise bi

Wise BI gives you enhanced capability to monitor and analyze management information in real time. This business analysis environment is specially designed for working with data and distributing valuable information.

Wise Analyzer processes data in real time and can use functionality such as OLAP cubes for multicompany and multidimensional views as well as SSRS reporting package to easily create and view your own reports.

Wise BI solutions simplify decision making, giving managers an improved overview of their operation.



wisefish

WiseFish is a tailored ERP solution, developed to meet the needs of the seafood industry. WiseFish covers the whole seafood value chain from fishing and aquaculture through production to sales and distribution.

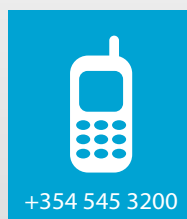
Whether your company is involved at every step of the seafood value chain or specialized in particular steps, WiseFish is suitable for all types and sizes of seafood businesses.



WiseFish is a certified Microsoft Dynamics solution and has been sold for over 20 years worldwide.



Borgartún 26, 105 Reykjavík
Hafnarstræti 93-95, 600 Akureyri
tel: +354 545 3200 » wise@wise.is
www.wise.is



Statement on responsible fisheries

'Fisheries management in Iceland has a long history and the fisheries management system has been under development for decades with a focus on the fisheries being both economical and sustainable with respect to the natural resources' utilisation and renewal.

In recent years, measures have been taken in strengthening an ecosystem approach to the fisheries management in Iceland. Increasing emphasis is placed on research and development of methods in this field, and on fisheries advice that takes into account various interrelated factors in the ecosystem, such as the interaction of the species, environmental change and multi-species impacts.'

(Statement on responsible fisheries in Iceland, signed and presented in 2007 by several responsible parties in the Icelandic fishing industry, the minister of fisheries, the Marine Research Institute, the Directorate of Fisheries and the Fisheries Association of Iceland.)

3



Optim-Ice® Your Catch!





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The quick downcooling is what this Optim-Ice® is all about

It is important to cool the catch rapidly in the first hours after it is caught, as this can lengthen the shelf life dramatically.

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Time (hours)	Pumpable Ice Temp (°C)	Flake Ice Temp (°C)
0	16	16
1	0	10
2	0	8
3	0	6
4	0	5
5	0	4
6	0	4

optimar 
Iceland

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Never mind the width, feel the quality

Fish skin used to be waste. Not that many years ago it went for meal or maybe pet food, or worse still, waste that was just discarded. That's all changed as Iceland's fishing business has re-invented itself and the skin is one example of many demonstrating how Iceland has gone from the old pile-'em-high-sell-'em-cheap mentality thirty years ago to being a value producer today.

Iceland has a fishing industry that has changed dramatically as it has modernised. It hasn't been an entirely painless process and nobody would say that it has been an easy ride. But when your industry gets no state subsidies and there's no safety net to fall back on, you have to push hard, break with convention, sometimes forget what tradition tells you is right, and break new ground.

Volumes replaced by values

Fishing isn't just important to Iceland, it underpins the whole economy – hence the pace and urgency to modernise with a change in thinking that replaced volumes with values. This is where the drive for quality has its origins, and this is where the thrust comes from for Iceland's homegrown IRF label that is based on some of the strictest criteria anywhere.

Fisheries have become streamlined and integrated, as catching, processing, export and marketing have learned to work closely together in a way that can be seen as an example worth following.

Two tonnes of powdered collagen from twenty tonnes of cod skin that would otherwise have become fishmeal is good business, and it's just the tip of an iceberg. The potential is there for emerging company Codland to process 3000 tonnes of cod skin annually, providing a couple of hundred jobs along the way.

Off the beaten track

Medical/biotech company Kerecis is also using fish skin to produce high-tech medical products, and has even been granted a licence to market its products in the US, and then there's leather manufacturer Sjávarleður that has been quietly producing fish skin leather for a good few years and supplying some top-rank names with its production. It's also remarkable that all three of these examples are

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atlantic

Distributed free at the European Seafood Exposition and Seafood Processing Europe in Brussels in May 2014.

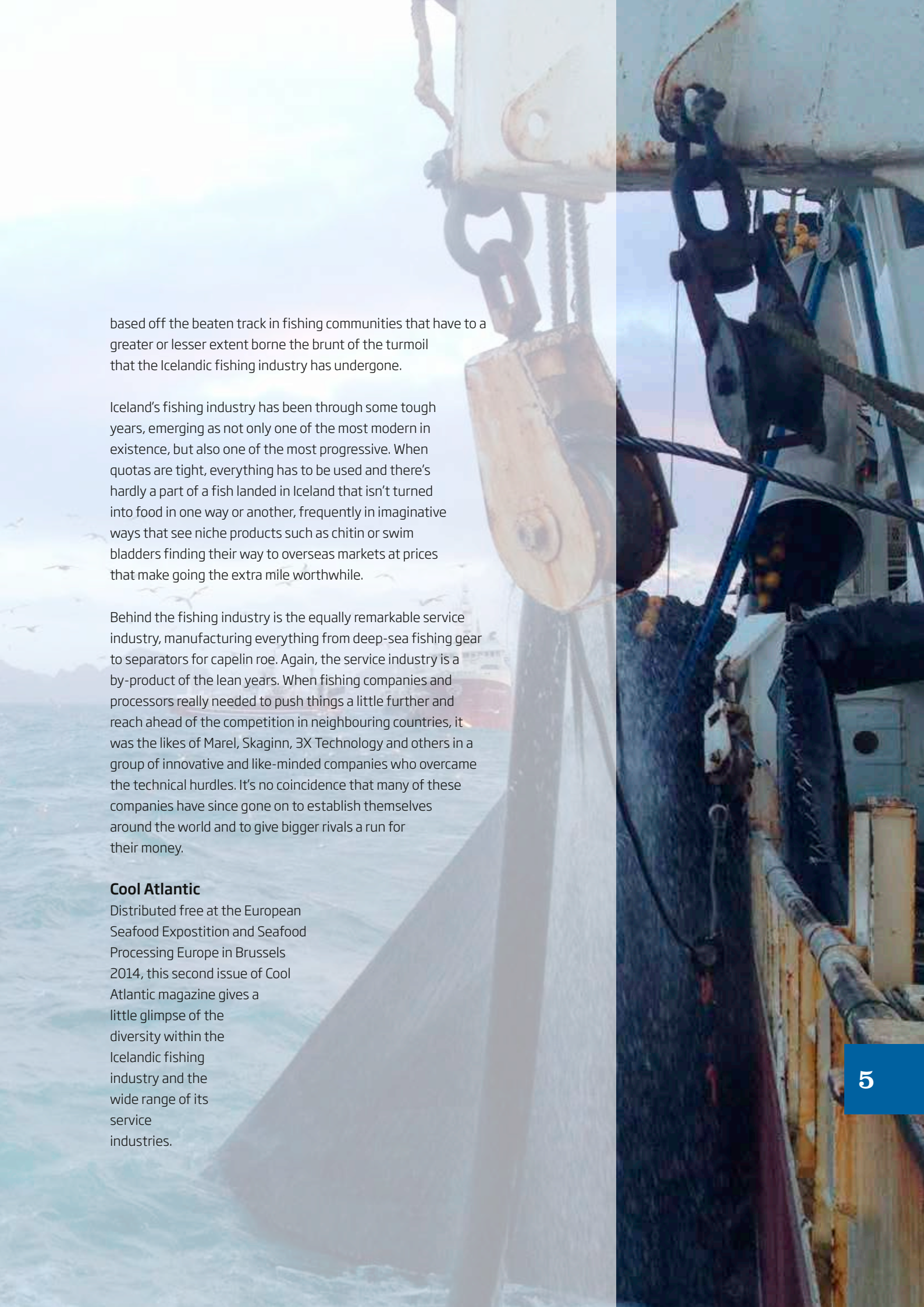
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Pelagic trawler Huginn from the Westman Islands, fishing for capelin just off the Southeast coast of Iceland. Photo: Viðar Sigurðsson
Photos:
Anton Brink, Ágúst Halldórsson, Bergþór Gunnlaugsson, Kristján Maack, Promote Iceland
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The background image is a composite. The left side shows a wide shot of a large fishing vessel on the ocean, with many seagulls flying in the sky. The right side is a close-up of the ship's deck, focusing on a complex pulley and rope system used for hauling gear. The pulley is made of light-colored wood or plastic, and the ropes are thick and dark. The ship's hull is white, and there are various pieces of equipment and pipes visible on the deck.

based off the beaten track in fishing communities that have to a greater or lesser extent borne the brunt of the turmoil that the Icelandic fishing industry has undergone.

Iceland's fishing industry has been through some tough years, emerging as not only one of the most modern in existence, but also one of the most progressive. When quotas are tight, everything has to be used and there's hardly a part of a fish landed in Iceland that isn't turned into food in one way or another, frequently in imaginative ways that see niche products such as chitin or swim bladders finding their way to overseas markets at prices that make going the extra mile worthwhile.

Behind the fishing industry is the equally remarkable service industry, manufacturing everything from deep-sea fishing gear to separators for capelin roe. Again, the service industry is a by-product of the lean years. When fishing companies and processors really needed to push things a little further and reach ahead of the competition in neighbouring countries, it was the likes of Marel, Skaginn, 3X Technology and others in a group of innovative and like-minded companies who overcame the technical hurdles. It's no coincidence that many of these companies have since gone on to establish themselves around the world and to give bigger rivals a run for their money.

Cool Atlantic

Distributed free at the European Seafood Exposition and Seafood Processing Europe in Brussels 2014, this second issue of Cool Atlantic magazine gives a little glimpse of the diversity within the Icelandic fishing industry and the wide range of its service industries.



Gudmundur Hannesson, Manager of sales and marketing (left) and General manager of Kælismidjan Frost, Gunnar Larsen.

Frost excels at cooling systems

Chiller and freezer systems for both shore processing and at sea are just what Akureyri company Kælismidjan Frost excels at. A quick look through the list of customers in which Samherji, Síldarvinnslan, HB Grandi, Ísfélag Vestmannaeyja, Skinney-Thinganes and Vinnslustöðinn are all present and correct is enough to demonstrate that Frost has developed and installed freezer systems for every major seafood company in Iceland.

Kælismidjan Frost has worked with Skaginn and other specialist companies in the seafood service sector over the last two decades to establish an 'Icelandic approach' to pelagic processing. This is the approach that Faroese companies Vardin Pelagic and Pelagos chose when they contracted Skaginn and Frost to commission large factory facilities in 2012 and 2014. This grades fish by size before routing them to be whole frozen, headed, or filleted. Products are passed automatically to the freezers, after which yet another automated system takes over to pack them into cartons, stack the cartons onto pallets and wrap each pallet in plastic.

Fully-automated production line

This Icelandic production line is the only fully-automated system of its kind on the market. This is a high-capacity system,

capable of processing between 600 and 1000 tonnes in a 24-hour working day, which also reduces packaging costs by more than half, freezes faster than conventional factories and minimises raw material degradation, while maintaining a modest power footprint.

Kælismidjan Frost is also deeply involved in the seagoing side of the business with both refits and new installations of chiller and freezer systems for fishing vessels. A recent delivery is for two new freezing vessels with a capacity of 100 tonnes per 24 hours for P&P in the Netherlands.

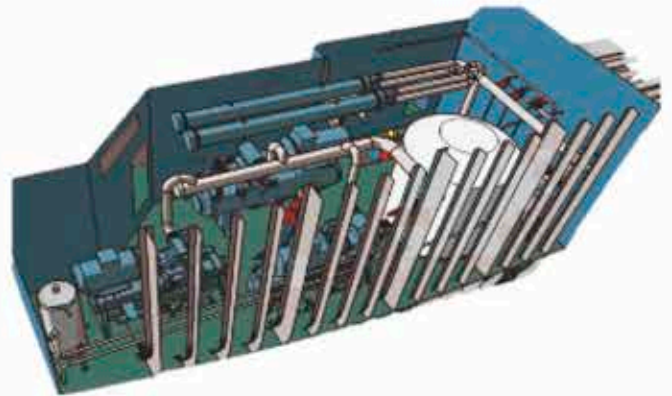
Dozens of vessels refitted

Currently the company is refitting two Canadian vessels in Poland from R22 to NH3. The company has refitted chiller and freezer systems for dozens of fishing vessels. In the last four years alone 15 vessels have been through refits, a number of them having had their elderly freon systems replaced with more environmentally-friendly ammonia-based installations. The vessels are from Iceland, Canada, UK, Netherlands, Germany and Norway to mention a few countries.

Visit our website: www.frost.is



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www.frost.is

Skaginn from Iceland – fantastic growth in a few years



Skaginn has established itself as one of Iceland's leading high-tech companies serving the seafood sector. Its manufacturing facilities have recently been expanded with an extra 1800 square metres of production space and in January the acquisition was announced of an 80% stake in 3X Technology, another leader in its field. The two companies have co-operated for many years on a range of projects, making closer ties between them a logical progression.

'This year looks to be the busiest ever for Skaginn and the completion of our new 1800 square metre premises couldn't have come at a better time. The key to all this lies with the magnificent workforce that we are fortunate to have here,' says managing director Ingólfur Árnason.

The growth in its activities has come from all directions and Skaginn's managers and staff are now burning some midnight oil as the demand grows for its refrigeration-based processing systems.

Two pelagic plants in process

Design and production is well under way for two major pelagic processing facilities. One is for Skinney-Thinganes, one of Iceland's largest producers, and the other is for Faroese company Pelagos with a tight delivery schedule as the factory is due to commence production in August.

This is the second large-scale delivery to customers in the Faroe Islands in two years, and follows the breakneck completion of the Vardinn Pelagic factory in Tvøroyri that Skaginn delivered in 2012. Since then Skaginn has continued its development work based on this experience.

Both Faroese contracts can be traced back to when the Síldarvinnslan plant at Neskaupstaður in eastern Iceland was commissioned. Representatives of both Faroese companies visited the plant to familiarise themselves with advances in pelagic processing technology. Icelandic fishing companies have thus indirectly

IQF Freezer, 3-4,000 kg/hour for tilapia production at Regal Springs in Mexico.



Super chilled haddock loins from Eskja in Iceland.



Plate freezers at Sildarvinnslan in East-Iceland. Each unit with 70-80 tn/24 hour capacity.



supported the development of Icelandic technology and paved the way for companies such as Skaginn to export expertise and strengthen the Icelandic economy.

The pelagic systems that Skaginn has contracted to deliver are developed in close co-operation with Kælismiðjan Frost, and more than twenty smaller companies are involved in these installations as specialist sub-contractors, both in Iceland and elsewhere. This close co-operation, with each company contributing its own expertise, has resulted in solutions that have attracted widespread interest.

Emerging markets

In addition to its pelagic systems, Skaginn has commissioned a large-scale IQF system for Regal Springs in Mexico, one of the world's largest tilapia producers. This freezer is special in that it can be used simultaneously for individual quick freezing as well as for super-chilling. It has a throughput capacity of 3000kg/hour in IQF mode and 4000kg/hour running as a super-chiller. This Super Chiller functionality from Skaginn allows the shelf life of products to be doubled, depending on the temperature of the fillets.

The company has also recently completed an IQF solution for scallops for Seatrade in Boston with a 2000kg/hour capacity. Skaginn is rapidly building an international reputation for its outstanding refrigeration-based systems and solution, not least including an agreement with Friosur in Chile in which Skaginn is working with Friosur staff to improve quality and to examine a potential overhaul of its production procedures.

'Work is coming at us from all directions, from all over the world - which is just the way we like it,' Skaginn managing director Ingólfur Árnason said.

Visit us at stand 4-6127 in Brussels

WiseFish at Brussels

Wise presents the latest version of WiseFish, which utilises all of the latest Microsoft developments. The new version also offers access to WiseFish and Dynamics NAV with access via smartphone, tablet or laptop. All you need is an internet connection.

WiseFish is the leading fishing industry software in Iceland and is increasingly in demand around the world. Wise, which will be at the Brussels ESE with a stand in Hall 4, has seen significant development taking place in the last few years centred around the latest possibilities offered by Microsoft and Dynamics NAV.

Everything on one screen

Wise's sales and marketing director Jón Heidar Pálsson says that the primary aim has been to simplify the system and to make it more user-accessible. For example, seafood salespeople can now manage every normal task from a single screen.

WiseFish is a complete solution across the entire value chain, taking in catching, aquaculture, fish markets, purchasing from a third party, production, quality control, stock management, warehouse logistics, sales, contracting and delivery.

Full traceability overview

WiseFish offers complete product traceability. Vendors and purchasers have the clearest quality and origin information possible at their fingertips at any moment. Using Wise Analyzer, which is Wise's

analytical tool, simplifies the job of digesting data to produce an overview for both management and users.

Eco-labelling is integral to WiseFish. This fulfils EU requirements for electronic communications with regulatory bodies regarding information streams and certification of origin for export. WiseFish makes tracing the whole process straightforward – all the way from catching to the consumer's plate. The system also offers options to include vessel, species and catch date information.

Included in the latest version of WiseFish is a sophisticated set of contracting protocols, simplifying the process of estimating productivity status, offers, orders and future sales contracts including availability to promise (ATP).

Future sales contracts include the capacity to store information on volumes to produce for individual customers, species and scheduling of production. This makes a final set of conclusions available for each contract, including the real and projected margins and estimated costs.

By using data from FishTalk, a WiseFish module, those who are involved with aquaculture will find that estimating potential delivery capacity in terms of volume, quality, grades and other factors is significantly more accessible.





The main advantages that WiseFish offers are:

- » Full traceability from catching through sales and delivery
- » Quality management, HACCP and ISO standards
- » Eco-labelling
- » Costs analysis, both estimated and final
- » Projected earnings, costs and margins, leading up to final sale
- » Aquaculture: includes complete production, contractual sales and distribution management
- » No double entries
- » Links to weighing systems, peripherals, tablet computers, laptops, Innova and other production hardware
- » Electronic communication (XML, EDI) between producers, sales organisations and logistics providers



- » Sophisticated analysis tool – Wise Analyzer provides a complete overview
- » Purchase or lease Dynamics NAV and WiseFish – it's your choice
- » Link to Outlook, One Note, Share Point, Power Pivot and Excel
- » Web hosting to link to third parties, access and send data
- » Hosting: By Wise, cloud (Azure) or hosted externally
- » WiseFish makes full use of the functionalities of the Microsoft Dynamics NAV accounting system, as well as additional modules, tailor-made for the seafood industry
- » Around 100,000 companies and a million users already use Dynamics NAV today



A part of the WiseFish team: Jón Bjarnason, Software Development, Jóhann Ófeigsson, Team Leader of Service and Consultancy, Kristján Gaukur Kristjánsson, Senior architect WiseFish, Jón Heidar Pálsson, VP Sales & Marketing and Hallgerður Jóna Elvarsdóttir, WiseFish sales manager.

Showcasing in Brussels

X-Ray Cutting Machine

Valka will showcase the X-Ray Guided Cutting Machine in Brussels in 6-8 May.

The machine uses combination of an X-ray and 3D image processing system together with robot controlled water jets to locate and cut pin bone and portions with great accuracy.

This gives processors an opportunity to substantially improve throughput and yield using fewer workers when trimming and portioning fish fillets.



Pre-trimming line

With speed controlled filleting machines the system ensures that each trimmer has only few fillets at a time and the first fillet in goes first out.

“ Minimum handling and short processing time returns excellent material quality

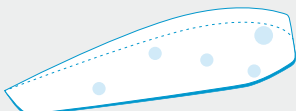
„We use the Valka Cutting machine to cut out pin bones and portions from skin-on and skinless Haddock and Cod fillets. We are very pleased with the performance and the flexibility that the machine gives us.

Gunnar Holm - Sales manager

Andreassen Sales AS Co owner of Gryllefjord Seafood AS

Pre-trim

Remove blood stains & spots, parasites & filleting defects



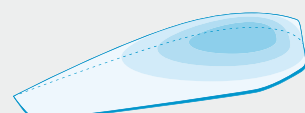
X-Ray Scan

X-ray camera scans the fillet and locates the bones



Measuring

Vision system measures the fillet density for cutting based on weight



X-Ray

The X-ray system uses low energy X-ray technology which gives the highest contrast possible and more reliable detection of small bones than with conventional technology.

Meet us in Brussels

Valka will display the machine at the exhibition and welcomes all to visit:

**Hall #4
Booth 6115**



Scan to see
the machine
in action



Capacity & yield

The machine belt speed can be up to 460 mm/sec. The throughput of the machine is calculated as a function of the weight of the whole fish. For a 3 kg gutted Cod the machine capacity is about 2.000 kg per hour.

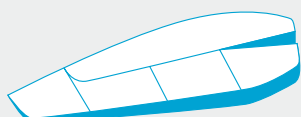
The pin bone cut-off in Cod is around 5-6% of the fillet size. The cutting proximity to the bones can be adjusted to cut closer and hence increase the yield and furthermore the expected yield will increase when cutting at an angle is available.

Key Features

- X-ray camera detects bones down to 0.2mm in size
- Automatically cuts out pin bone and to the desired portions
- Greatly improves product handling as all cuts are made in a single machine
- Ensures bone-free products

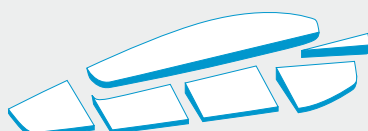
Portion Calculation

Analysis software calculates the optimal portioning



Water Cut

Water jets cut out the pin bone and portions



 **Valka**

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sales@valka.is
www.valka.is

Seafood – Responsibly Made in Iceland

The FAO-Based Iceland Responsible Fisheries Management Certification Programme is a third party certification model used to verify responsible fisheries management in Icelandic waters and good treatment of marine resources.

Well managed fisheries and certification

Iceland has taken a leading role in fisheries management, focusing on the sustainable use of the fish stocks and good treatment of the marine ecosystem. The Icelandic fisheries system has been developed in accordance with international law and the United Nations Food and Agriculture Organization Code of Conduct for Responsible Fisheries.

There is an increased demand from seafood buyers for documentation showing that the product they are buying has its origin in responsible fisheries. The purpose for obtaining certification of Icelandic fisheries from an independent third party certification body is to demonstrate with complete transparency that fishing and fisheries management in Iceland is carried out in a responsible and recognized manner. The UN FAO has developed and adopted Guidelines for market based certification and ecolabelling that are based on explicitly stated principles. These principles include avoidance of obstacles to trade and state that ecolabelling schemes should be considered equivalent if consistent with the FAO Guidelines.

Icelandic authorities have adopted harvesting policy and formal harvest control rules for cod, haddock and saithe fisheries. Subsequent independent third party certification according to the highest international requirements confirms that these fisheries are well managed. The International Council for the Exploration of the Sea (ICES) has confirmed that the adopted harvest control rules for those fisheries are consistent with the Precautionary Approach to fisheries management. Global Trust Certification of Ireland, which is part of SAI Global with operations in many countries, conducted the assessment and issued the certificates for those fisheries. The Golden redfish entered the certification process in 2013 and is expected to be certified in 2014.



Seafood from Iceland
for the benefit of future generations
www.ResponsibleFisheries.is



Skaginn Super Chiller

Doubles Shelf Life

Superchilling raw material to between -1°C and -1.5°C:

- Increases yield and allows better portioning
- Increases quality and throughput
- Leads to better prices
- Doubles shelf life

Boosting chilling from 2.0°C to -1.0°C with the Skaginn Super Chiller allows the shelf life of products to be doubled*

* This is in reference to 72 hours between catching and production, and products shipped to European markets by sea.

(Source: www.matis.is)

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**We
specialize
in food
cooling
solutions**



When quick thinking is critical



Sjókall (CrewCall) is a compact piece of equipment that can make all the difference in an emergency

A young Icelandic company based in Neskaupstaður, MultiTask, has started production and sale of its new Sjókall (CrewCall), a small location device that slots into a life jacket. If a crewman falls overboard, it is activated automatically and within 20 seconds a distress call is routed direct to the ship's VHF. Time is critical in this kind of incident, and it is imperative that rescue operations are initiated immediately after the accident has taken place.

A simultaneous distress call goes to the Coast Guard operations centre and within a minute a GPS position for the casualty is available on the VHF screen. This is

renewed twice every minute for twenty minutes, after which it switches to displaying a new position very five minutes so as to conserve battery power.

Síldarvinnslan is one of the companies that has bought CrewCall units for all of its vessels, and MultiTask worked closely with Síldarvinnslan while CrewCall was in development. The Coast Guard and its operations centre have also closely followed development and tests, which have stood up to every expectation.

Visit our website: www.multitask.is

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OCEAN CALCIUM

Certified Natural Product

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Suitable for vegetarians & vegans.

Good for bone and joint health.



OCEAN KRILL

Phospholipid Omega-3

100% pure krill oil, rich in phospholipid EPA and DHA, providing clinically proven superior bioefficiency.
Natural antioxidants.
No added Preservatives.

Good for brain, heart and joint health.



OCEAN CALM

Calming Blend of Minerals

Natural marine magnesium extract and calcified red algae with added vitamin B6 (P5P) and vitamin C.
Suitable for vegetarians and vegans.

**Promotes calm and energy.
Better sleep, naturally.**

No fillers, colourants, anti-caking agents or other additives

HAFKALK

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HB Grandi – broad product range essential for markets

18

HB Grandi hf. is one of Iceland's largest fisheries companies. All of the company's activities reflect its depth of experience and expertise in utilising marine resources. A strong emphasis is placed on using the best available technology to produce top quality products from the freshest raw material obtained from the pristine waters around Iceland, with renewable energy used wherever possible.

Responsible utilisation of resources has been the main objective of the company's operations and the company follows recognised quality standards throughout its entire production, including International Food Standard, HACCP and FEMAS.

Product development is an important part of HB Grandi's activities, and the company seeks constantly to broaden the range of products it offers in order to meet the demands of customers around the world. The foundation of the company's production is built on

groundfish and pelagic species. The recent acquisition of two companies that specialize in further processing, Vignir G. Jónsson and Laugafiskur has ensured that the supply of new products has been considerably increased.

Vignir G. Jónsson mainly produces from lumpfish, cod and capelin roe. A staff of 40 persons handle approximately 1500 tonnes of raw material on an annual basis, with main markets in Europe and the USA. Laugafiskur has been a producer of dried fish products since 1980, most of which find their way to markets in Nigeria. Laugafiskur has an annual production of around 6000 tonnes of raw material, and over the last few years the main source of raw material has been from HB Grandi.

HB Grandi employs over 900 employees, both ashore and at sea. The company operates eleven fishing vessels. Its headquarters are located in Reykjavík however the company also has significant production at its Vopnafjörður and Akranes locations. Primary markets for exports are Europe, North America and Asia.



THERE IS ALWAYS A REASON WHY



It is no coincidence that HB Grandi's exceptionally good employees at sea and on land take pride in delivering quality products to our buyers and consumers. It is simply the core of their job.

The people of Iceland have known for centuries that the only way to survive on an island in the middle of the North Atlantic Ocean is to live in complete harmony with nature.

That's why.



New: Grease – and damp-proof packaging for seafood

Around two-thirds of Oddi's turnover stems from packaging, and close to a half of this production goes to seafood producers. Now Oddi is introducing new reinforced grease- and damp-proof packaging that is highly suited for pelagic products with a high oil content such as herring and mackerel. Packaging of this kind is something new in seafood and Oddi expects to present this at trade exhibitions this year. Fishing company Samherji has been Oddi's partner in developing this packaging.

Export markets

Oddi has a staff of approximately 300, of whom around a hundred are involved in producing seafood packaging. The company has also been active in building up its export markets, and Oddi is an example of the innovative additional employment that the seafood industry's supply sector has generated in Iceland.

'We place emphasis on providing a comprehensive product line and services when it comes to seafood packaging. We're working with the legacy of the forerunner companies Plastprent and Kassagerd, both of which are now part of Oddi,' the company's managing director Jón Ómar Erlingsson said, commenting that the company saw a large increase in production when the Icelandic mackerel fishery took off.

'The main direction development has been moving in is towards damp-proofed paper packaging. Packaging for mackerel also needs to be able to withstand the grease from the product, which is particularly important for export to overseas markets. Damp-proofing reinforces the packaging and provides additional protection, which means that there is less likelihood of damage to the product during long-distance transport. We have been testing new materials mixed with organic matter for this packaging and this has been very positive,' Jón Ómar Erlingsson said.

In the past plastic laminated sheets were mainly used as damp-proofing. The disadvantage of plastics is that they are problematic for recycling packaging.

Innovation

'As far as I know, this is the only company in the world that has been using this type of raw material for seafood packaging. It's encouraging to note that we have also been visited by international paper manufacturers who want to know more about this innovation,' he said.





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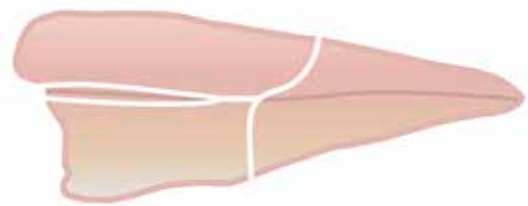
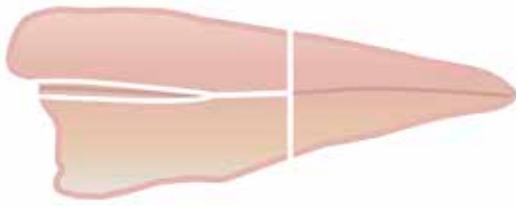
Automatic Bone Detection and Removal for Whitefish is Now a Reality

About Marel

Marel is the leading global provider of advanced equipment, systems and services to the fish, meat and poultry industries. Our brands - Marel, Stork Poultry Processing and Townsend Further Processing - are among the most respected in the industry. Together, we offer the convenience of a single source to meet our customers' every need.

With offices and subsidiaries in over 30 countries and a global network of more than 100 agents and distributors, we work side-by-side with our customers to extend the boundaries of food processing performance.





Whitefish processing is about to take a giant leap forward, with the launch of Marel's FleXicut, a trimming robot for high precision bone detection and removal. The bones in whitefish are notoriously difficult to locate and remove, and the process traditionally requires a lot of skilled labor. The automation of this process with FleXicut is therefore set to reshape the whitefish industry, as it not only reduces the need for skilled labor, but also greatly improves product handling and yields.

Automation Set to Improve Yield and Product Quality

Marel's FleXicut incorporates two critical processing steps in one machine: locating the pinbones precisely and then removing the bones while portioning fillets to specification. The equipment consists of high resolution X-ray detection, image control, and a water-jet cutting mechanism for removing pinbones.

"Determining the orientation of the bones is critical to improving the yield," Marel's Director of Product Development Kristjan Hallvardsson explains. Cutting out less flesh on the V-cut will leave more on the loin. "At present, 6-10% of the fillet is removed manually by the V-cut to take out the pinbones. The goal is to achieve as much as 2-4% improvement in yield, which represents significant added value for our customers."

Marel has more than 30 years' experience in the fish processing industry and has built on its extensive expertise in portioning, X-ray, and robot technology to develop the FleXicut. This innovative trimming robot uses the latest X-ray technology to locate the pinbones with high accuracy, and then remove them.

The FleXicut can perform a variety of cutting patterns thanks to the flexibility of using water-jets for the bone removal process, and the angle cutting option allows it to follow the curved lines of the bone frame very closely, thereby further reducing pinbone material. This means significant yield gains in the loin - the most valuable part of the fish.

The automation of the process enables processors to produce bone-free products with virtually no manual handling and introduce new products such as skin-on loins and baby fillets.

An important feature of Marel's FleXicut is that the X-ray scanning and water-jet cutting is performed on the same belt. This unique feature means that there is no risk of movement between the bone-detection and cutting processes, which ensures a superb level of cutting accuracy based on the bone location. An additional feature is the built-in blade cutter, to optionally cut the tail piece.

Transforming the Fish Industry Time and Again

The FleXicut is the first tangible output of an ongoing project called APRICOT (Automatic Pinbone Removal In COd and whiTefish) - a collaboration between Marel, Sintef, Norway Seafoods, and Faroe Origin. It is based on detailed research on the raw material and processing techniques, using the very latest of Marel's technological solutions.

"We regard FleXicut as the first step towards a new generation of whitefish processing concepts," says Hallvardsson. "The automatic bone removal will clearly reduce processing time and have an impact on the overall design of the processing hall, including improvements in the packing process."

"The concept responds to the industry's need to deliver higher quality, higher value, bone-free products with higher levels of precision, automation, and flexibility. These priorities are also chosen because they will ultimately provide the fastest return on investment, while additional payback will also result from increased quality and greater product variety."

The FleXicut may provide the breakthrough that will enable whitefish processors to keep their processing close to source, while remaining competitive; instead of shipping fish to countries with cheaper labor costs. It will be exciting to see how the FleXicut begins changing the nature of whitefish processing, and what implications this will have for the whitefish industry as a whole.

Visit www.marel.com/fleXicut



Samhentir – all-round solutions for recyclable packaging



Packaging is a crucial factor in maintaining quality all the way to the customer when handling and transporting fresh seafood, and care is of vital importance. Icelandic packaging specialist Samhentir offers seafood producers a range of suitable solutions for packaging, including the option of recyclable packaging that is now becoming increasingly popular. In addition to its activities in Iceland, Samhentir owns half-shares in partner companies Vest-Pack in the Faroe Islands and Tri-Pack in the UK.

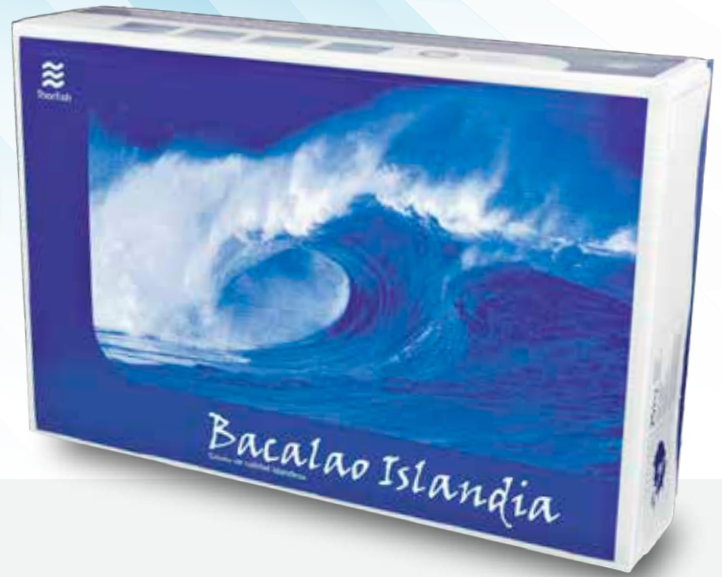
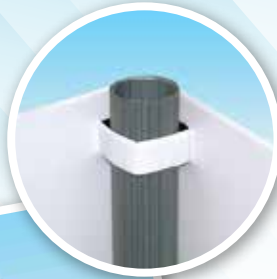
In recent years the demand for CoolSeal packaging that Samhentir offers both in Iceland and overseas has grown noticeably quickly. These are particularly suitable for fresh fish shipped overseas in containers. Much of the Icelandic langoustine catch that finds its way to overseas markets is shipped using these boxes. CoolSeal has also gained a significant foothold in Norway and in the last few years has attracted attention in Holland.

The range of equipment linked to packaging has also become a growing part of the Samhentir line of products. Included

in the range is a specialised packaging line for pelagic factories that are these days being refurbished with new production lines. Equipment from Samhentir will be part of the suite of production facilities at the new pelagic factory due to open in the Faroe Islands this summer. The line receives frozen blocks, then packs and binds them before they are marked. From there the blocks go to an automatic stacker that places them on pallets, and finally each pallet is wrapped in plastic. Increased automation not only saves labour, but also ensures better handling of raw material.

In the eighteen years that Samhentir has been in existence, the company has established itself in a leading position on the market for packaging and other equipment. Although the seafood business has been at the core of its activities, Samhentir also has a solid customer base among most other industry sectors. The company is able to deliver boxes, cartons, bags, paper, plastic, tape and a variety of other goods direct from its own storage facility.

Packaging solutions for fisheries



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Matís takes centre stage in EU fisheries initiative



Dr. Gunnar Stefánsson of the University of Iceland's Science Institute and Matís project manager Dr. Anna Kristín Daníelsdóttir are to lead the four-year initiative



Visit our website:
www.matis.is

A new EC-funded research and technological development project, 'Co-creating Ecosystem-based Fisheries Management Solutions' (MareFrame), was launched on the first of January this year.

Management of the €7.8 million project is in the hands of Icelandic company Matís, which engages in food research, innovation and safety, aiming to increase the value of food through research, development, dissemination of knowledge and consultancy, with Dr. Anna Kristín Daníelsdóttir in the role of co-ordinating project manager.



The Icelandic experience of fisheries research and management is expected to play a prominent part in the MareFrame project

MareFrame's prime objective is to increase significantly the use of the ecosystem-based approach to fisheries management (EAFM) when providing management advice on European fish stocks, achieving this through new tools and technologies, development and extension of ecosystem models and assessment methods, and development of a decision support framework that can highlight alternatives and consequences; all in close collaboration with stakeholders in the co-creation processes.

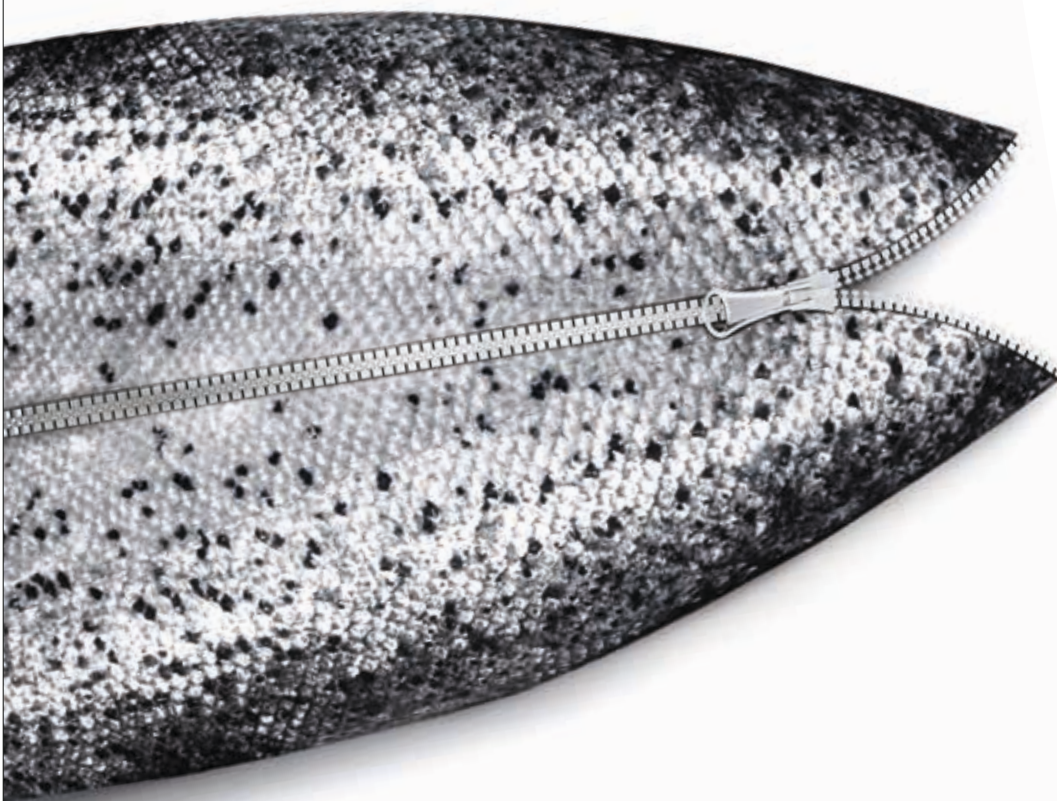
'Leading this pan-European initiative is a significant endorsement of Icelandic scientists and their contribution to international scientific co-operation,' said Dr. Gunnar Stefánsson of the University of Iceland's Science Institute.

The project addresses key issues within the Common Fisheries Policy, the Marine Strategy Framework Directive and the Habitats Directive. MareFrame will contribute to the EAFM by developing options for supporting and maintaining a balanced marine community, incorporating socio-economic components. MareFrame also aims to develop visualisation tools using 3D gaming technology, and to develop learning simulations to communicate scientific results and management scenarios, as well as to raise public awareness about the conservation of marine biodiversity.

The MareFrame consortium's 28 partners include established RTD organisations with expertise in fishery science, including ecosystem modelling, model testing and assessment, economics and social science, as well as experienced leadership from Denmark, Sweden, Finland, Poland, the UK, Spain, Italy, Romania, Norway, Iceland, South Africa, Australia and New Zealand.

To notice value

where others cannot, is one of human's most valuable talent. Our role is to make it easier, for those who are gifted with such a talent, to develop it, provide them with further assistance and help them execute, for the good of the community as a whole.



Staying stable with Foss anti-roll tanks

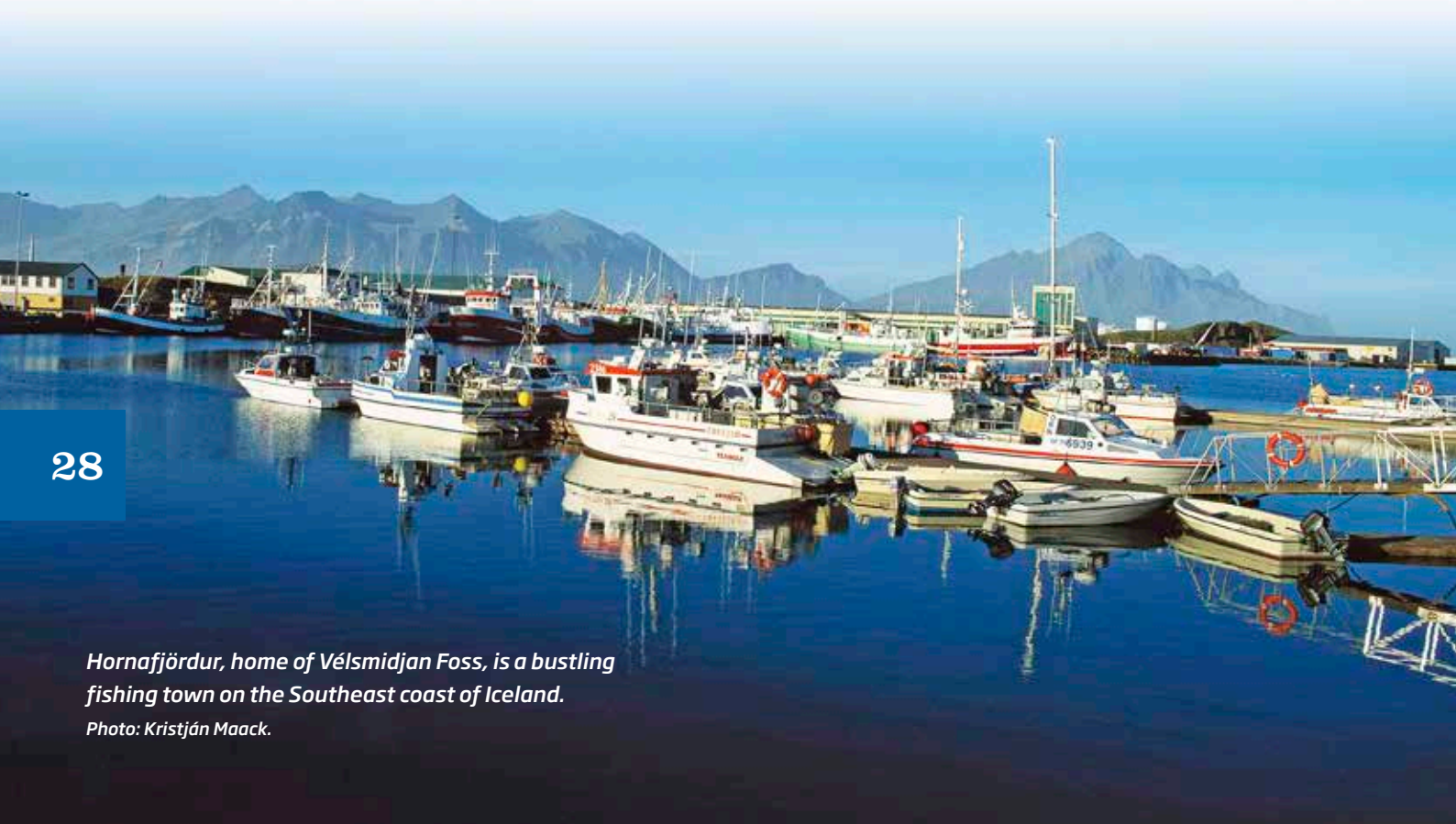
Hornafjörður company Vélsmidjan Foss has built up a reputation for the anti-roll tanks it produces for subsidiary company Rolling ehf, which Foss established with naval architect Stefán Gudgeirsson and engineering consultancy Verkís, specifically to develop, produce and promote this technology.

One of Rolling's anti-roll tanks have been fitted recently to freezer trawler Órfirisey RE-4, operated by one of Iceland's leading fishing companies, HB Grandi. Similar tanks had previously been fitted to three other HB Grandi vessels, pelagic catchers Lundey NS-14 and Faxi RE-9 and freezer trawler Venus HF-519.

'The skippers' positive experience with these tanks is the best advertisement we could have,' said Ari Jónsson, managing director of Vélsmidjan Foss, commenting

that the anti-roll technology makes a significant difference to a fishing vessel, both for the crew and not least for the catch and handling. 'This applies particularly to pelagic vessels that are increasingly landing for human consumption. Ensuring minimal movement of the catch in the tanks is an important part of ensuring quality is maintained.'

On pelagic vessels the anti-roll tanks are fitted on the whaleback and on trawlers forward of the wheelhouse. Each tank consists of a series of vents and the Stability Watch control management system developed by Verkís which controls the tank's activity. 'We build the tanks here and then there's the work of installing them on board,' Ari Jónsson said, adding that as well as the deliveries to Icelandic vessels, an anti-roll system has also been supplied to a customer in Australia.



Albert Sveinsson, skipper of Faxi RE-9:

Unbelievable improvement in the ship's behaviour

29

Skipper Albert Sveinsson on Faxi RE-9 said that there is no doubt that the addition of an anti-roll tank has improved the ship's behaviour. 'The change is unbelievable after we had the anti-roll tank fitted before last year's mackerel season,' he said, commenting that the changes were noticeable immediately. Before, the crew often slept badly and were tired during long spells of poor weather.

'We gave it a good testing during that first trip last year. The weather was rough and we steamed to the fishing grounds with the wind astern. I remember waking up after a good night's sleep the next morning and reckoned that the weather must have improved during the night, but when I went up to the wheelhouse I could see that the weather was still as foul as it had been but the boat hardly moved.'



Faxi RE-9 has an anti-roll tank supplied by Vélsmidjan Foss.



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Navís designs French trawler



This Navís-designed trawler was delivered last year to a company in Japan that had lost its previous vessel in the tsunami



Reykjavík Engineering consultancy Navís is finishing the design work on the largest freezer trawler to be designed from the keel up in Iceland. This is a 100 metre vessel for a company based at Saint Malo in France.

Navís managing director Hjörtur Emilsson said that the ship is a combination vessel for demersal and pelagic work. It will have a

full filleting factory deck and also surimi production facilities, as well as a fishmeal plant. Part of the design brief was to take into account the harbour conditions at Saint Malo in Brittany, with the overall dimensions and draft designed to suit the port facilities.

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31

marel.com/seafoodexpo




FleXicut

Automatic Bone Detection and Removal for Whitefish is Now a Reality

- Less pinbone material – higher yield
- Improved product handling
- Reduced labor
- New products: skin-on loins, baby fillets

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The marketing drive has received favourable coverage in various Spanish media.

Innovació mediterrània amb bacallà islandès

Fermin Puig destaca les receptes catalanes i afegits que avui la clau són les coccións més llargues

Icelandic saltfish, bacalao, promoted on the banks of the river Nervión in Bilbao, Spain.

Saltfish producers happy with co-operative promotion:

Marketing drive in southern Europe to continue in 2014

A co-ordinated marketing drive in southern Europe by Icelandic saltfish producers started in February and its success has prompted a decision to continue with the initiative. Guðný Káradóttir, marketing director at Iceland Responsible Fisheries, has overseen the project and commented that the emphasis has been on promoting the quality and freshness of products caught in pristine waters under a responsible fishing regime.

The drive has been based on primary aim set out for Icelandic seafood products as a whole by Promote Iceland via Icelandic Responsible Fisheries on overseas markets under the tagline "Taste and share the secret of Icelandic bacalao."

'The aim has been to bolster the reputation and the image of Icelandic saltfish as a quality product by drawing attention to its origins and unique status that are based on quality and cleanliness. We have taken an unconventional route, using marketing strategies and public relations in digital

Visit our website: www.responsiblefisheries.is

media, videos and social media alongside presentations for journalists,' Guðný Káradóttir said.

Successful presentations have been hosted in Barcelona, Bilbao and Lisbon in co-operation with well-known chefs and recognised restaurants. It is clear that there is a strong tradition of consuming Icelandic saltfish in these countries, in spite of the stiff competition from producers of cheaper goods that do not reach the same quality levels.

Guðný Káradóttir said that the initiative will be carried on, for the rest of this year at least, but any continuation beyond that is as yet undecided.

'The responses so far have been extremely positive and the media interest indicates that we can certainly hope to do even better yet,' Guðný Káradóttir said.



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Iceland punching above its weight

It took the shock of the 2008 financial crisis to remind Icelanders that theirs is first and foremost a fishing nation. While the country's economic life is considerably more diverse now than it was a few decades ago, the conclusion is clear; seafood remains the cornerstone of Iceland's economic life.



A report commissioned from consultants McKinsey and Company on Iceland's economy and the possibilities for the future, Charting a Growth Plan for Iceland, states that: 'In 2011 the fishing industry contributed nearly 11 percent to GDP, generated more than a quarter of all export revenues and directly employed over 9,000 people. In an international comparison, no independent country captures more relative value from fisheries than Iceland.'

The report also states: 'Despite having only 0.004 percent of the world population, Iceland had over 1.2 percent of the global catch in 2010. To sum up, it is safe to say that the industry remains the backbone of Iceland's economy.'



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Bioactive cosmetics and dietary supplements?

By-products that are the result of seafood processing can range from shrimp shells, heads, tails or offal, and there can be significant values that can be extracted from them. A shrimp's shell is its defence; marine organisms have developed their own materials and mechanisms as the environment they live in can be a hard and ruthless one. For these reasons, they build up their own defences to deal with the conditions they live under. Hólmfríður Sveinsdóttir is a nutritionist at Food and Biotech R&D Company Matís.

The effectiveness of bioactive materials

'These materials have a level of bioactivity that can enhance our health. These are antioxidising substances that reduce blood pressure, cholesterol and blood sugar and which can also protect us against the sun's ultra-violet rays,' she said in an interview with the Icelandic fishing magazine Ægir. Hólmfríður also pointed out that research is

needed to confirm the benefits of bioactive materials, and that calls for funding. Subsequently there needs to be production from these by-products, which then need to be marketed and sold. She commented that the general awareness of natural foodstuffs has increased significantly and there is a great deal of potential in this sector.

There has already been much progress in fishing vessels delivering by-products to shore. On board larger vessels where there tends to be more space available, it is possible to separate and keep roes and livers and also to keep milt. This means that use is made of practically the entire fish. The offal of a fish is generally around 10% of the overall weight, of which the liver is roughly half. During the spawning period the proportion of offal can rise to between 15 and 25% of the overall weight, with the spawn itself accounting for approximately 10-15%.

Emphasis on quality

To make it possible to make full use of the by-products, handling of cod has to be perfect from the moment it comes on board the catching vessel. Sigurjón Arason, chief engineer at Matís and professor at the University of Iceland, said that following the right procedures for bleeding and cooling the fish are the factors that make the difference in landing quality raw material.

'There is a huge amount of whitefish available on the world market, from Norway and other countries. So it's crucial that we place every emphasis on the quality of raw material.'



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INNOVATION AND EVOLUTION
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A New Generation of Fish Processing Machines

Vélfag has attracted plenty of interest both in Iceland and overseas for its development and production of fish processing equipment. In 2011 the company received an award at the Icelandic Fisheries Exhibition for its innovative approach to developing filleting and heading machines, and the latest addition is a high-throughput skinning machine that can be either linked directly to a Vélfag M700 filleting machine or used as a standalone unit.



M800 Skinning Machine



M500 Heading Machine

The M800 skinning machine has two separate skinning units so each fillet is skinned individually. One of Vélfag's achievements with the M700 filleting machine is to get the fillets presented in the right aspect as they leave it, so that they pass direct to the M800 skinning machine without the need for staff to adjust fillets manually for skinning.

M800 - Special position on the market

The M800 skinning machine has unique features. Its maximum efficiency and quality of fillets are ensured as each customer receives four skinning units with each machine. The M800 is in fact almost two skinning machines, and customers can get additional skinning units if required.

Additional units can be adjusted or fitted for specific species, the condition of the raw material, or they can be simply kept in reserve if a unit in use needs to be serviced. They can easily be exchanged in a matter of minutes to ensure that production is not interrupted, which promotes maintaining fish freshness and stable skinning.

Compact and low maintenance

Experience so far with the M800 skinning machine has demonstrated good yields as well as outstanding fillet quality, not least with species such as haddock that require careful handling. Users on factory vessels have pointed out that tails are clipped much less than they are used to seeing, and that it's important that the skinning machine is simple, quiet, low-maintenance and takes minimal space.

As with all of the Vélfag machines, a primary concern in the design is that cleaning should be straightforward and this applies equally to the M800 skinning machine so that bacteria levels can be kept to a minimum

M700 filleting machines and M500 heading machines from Vélfag are in use in both high-volume factories and on board factory vessels in Iceland and overseas, and these machines have earned praise for their high capacity, endurance, low breakdown rate and high yields.



M700 Filleting Machine - directly compatible with the M800 Skinning

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**Seafood is our heritage,
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**Conservation and sustainable use of
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The Iceland Responsible Fisheries programme highlights the origin of seafood products from Iceland and well managed fisheries in Icelandic waters.





SAMHERJI

An unbroken chain is the key

The key to success is that everything is coherent; fisheries management, catching, production, sales and logistics, Thorsteinn Már Baldvinsson, managing director of Samherji, stated in a speech he made in Akureyri.

'We all need to join hands and work together to make this work,' he said and commented that Samherji's staff study market conditions around the world on a daily basis.

Samherji is a leading company in Icelandic seafood and its production plant at Dalvík is one of the most sophisticated in existence anywhere. Samherji's activities are located in twelve countries and its products are sold to 45 countries around the world.

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Collagen from cod skin



Erla Ósk Pétursdóttir, managing director of Codland.

Photo: Anton Brink

Grindavík company Codland has started production of collagen from cod skin, in co-operation with a company in Spain. The aim is to produce this high-protein material for use in cosmetics and food additives. Managing director Erla Ósk Pétursdóttir said that the first collagen-based products should be available in early May.

Among Codland's aims is the full utilisation of raw materials. Erla says that this can make a significant difference in terms of yields and values. Codland was recently commended by the Confederation of Icelandic Employers as the emerging high-tech company of the year. It is owned by fishing companies Vísir and Thorbjörn in Grindavík, and is expected to be a leading company in research, consultancy and cod processing.

A step further

Iceland is already ahead of the game in full utilisation of marine resources, but Codland has taken up the challenge of going

another step further, not least in the light of the ongoing debate over the opportunities presented by research, development and marketing of seafood products.

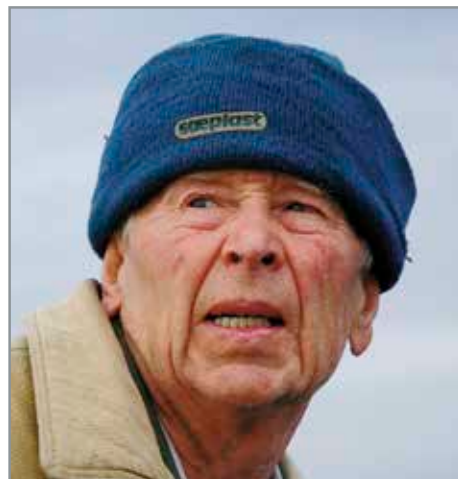
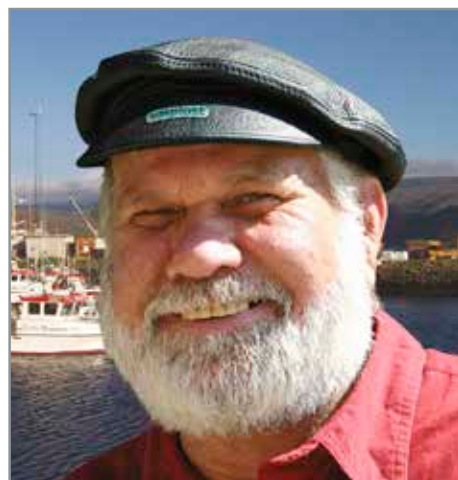
Codland is working with Seafood Cluster company Ankra, which has been developing cosmetics from marine resources, but Erla maintains that Codland is still seeking further opportunities, commenting that they are working on the development of standardised products from offal in the form of offal oil, which research indicates could be of benefit to people suffering from exzema and other skin problems.

Opportunities

'The characteristics change with the seasons and the availability of feed in the sea, so there is still much groundwork to be done but there are opportunities that we can take advantage of with further development,' Erla Ósk Pétursdóttir says.

For more information visit www.codland.is

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Ragnar is a Business Manager in Seafood Industry at Íslandsbanki.

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