



# SCANMAR info

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Success doesn't come easy

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## Scanmar systems 'essential' for top Nova Scotia shrimp factory/freezer trawler



There's no doubt that we owe much of our fishing success to the Scanmar catch & control monitoring systems.

*Leroy Marshall, skipper of the 66m Northern Eagle*

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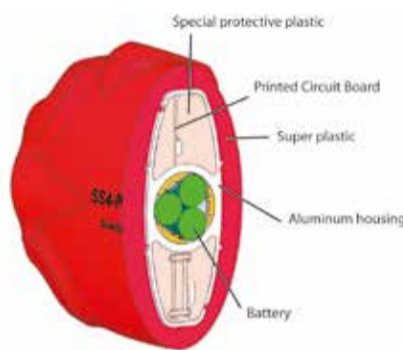
**EDITORIAL**

**Recycling**

Most of today's electronic products on the market are developed to minimize the need for maintenance and repair. If the product fails, it is most likely more economical to purchase a new product rather than repairing it.

Scanmar predicted this development and chose from the start in 1980 to design robust sensors that only need minor service; only change of batteries. In addition we introduced a favourable exchange scheme, which makes it profitable to exchange a used sensor into a new one of the latest model.

Scanmar sensors are moulded in a very robust polyurethane plastic. Large amounts and resources are used in the development of the highly advanced moulding process and development of plastic materials.



By encapsulating the electronics in thermosetting plastics, we achieve properties that protect the sensors in deep waters against rough wear and tear. The new SS4 sensor generation is casted in a two-step process with new plastic materials, and the sensors come with a 5-year warranty.

Looking back after 35 years, we see we made the right decision; a Scanmar sensor has an average lifetime of more than 10 years.

Some manufacturers are still designing their products based on assembly of exchangeable parts, but it often shows that this is affecting the durability and the lifetime of the product. The only advantage is that the parts are easy to recycle.

The disadvantage with products that are not robust enough and often has to be sent from the vessel for repair, is that the crew will have unwanted interruption in fishing or will have to continue without a functional information system. This results in reduced effectivity and profit.

**TCO (Total cost of Ownership)**

Whenever a professional buyer considers which offer he should choose, it is common to look at the total cost of ownership based on expected lifetime.

Scanmar can now offer an agreement where the customer always has the sensors he chooses to prioritize available. With this type of agreement, Scanmar offer predictable cost, reliability and a continuous upgrade of the equipment. By signing such an agreement with Scanmar you are guaranteed a 10 year lifetime on all of your Scanmar sensors.

Ulf Lundvall,  
Managing director

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**USEREXPERIENCES**

“ The symmetry sensor gives us lower gear costs and an increased catch in relation to fuel consumption and time at sea  
*Agnar Langtveit, skipper of the shrimp trawler Astrid Ann*

We wouldn't go to sea without our TrawlEye system  
*Brendan Gill, owner/skipper of the pelagic trawler Brendelen*

“ The only sensor still working properly under heavy sea conditions is the Scanmar TrawlEye  
*Antonio Bon Lagoa, skipper of the fishing vessel Eirado do Costal*

# Watching what lies beneath...



**Scanmar's TrawlEye, SuperCatch and TrawlSpeed sensor systems have proven themselves to be a vital tool for successful pelagic and semi pelagic vessels targeting a variety of mid and lower water column species, but it is perhaps in the international demersal fisheries where it has become a 'must have' for all bottom trawling skippers.**

One such vessel reaping the rewards of Scanmar's years of dedication to its Research & Development strategy in bringing this technology to the commercial fishing industry is the 40-metre Icelandic twin-rig fresh fish demersal trawler Thorunn Sveinsdottir, skippered by one of Iceland's top whitefish fishermen Vidar Sigurjonsson.

With dimensions of 40m in length and beam of 12m, Thorunn Sveinsdottir was built at the Karstensen shipyard in Denmark in 2010 and is almost identical in design to the ex-Irish trawler Mark Amay – a vessel which enjoyed massive success catching the deepwater Orange Roughy species until that fishery was closed by the EU Commission.

Although also experimenting in the Roughy fishery in Icelandic waters, Thorunn Sveinsdottir has centred its operational working trips of four to five days, mainly in shallow waters of 100 to 400 fathoms in depth. The vessel targets high value whitefish species such as cod, haddock, saithe, redfish and blue ling, with silver smelt also a developing fishery (in April and May) for this type of vessel.

Although many EU fishermen look enviously at Iceland's 40-odd trawlers and a large inshore fleet of liners and netters which are not under the often oppressive regime of the EU quota system, Icelandic fisheries are still controlled by their own quota system and, being so, the opinions from local fishermen do not differ greatly from their EU counterparts in that many see that the fish stocks are in a very health-

state but it is difficult to convince those that set the quotas that more fish should be allowed to be caught.

Thorunn Sveinsdottir's skipper Vidar Sigurjonsson explains that the quota for their vessel is approximately 100 tonnes per trip but that they fish this stock sustainably – for example by avoiding the cod during the months of January to May when the season is at its height for long liners and netters.

It also makes good economic sense for the trawlers not to land cod during these times as the additional seasonal landings from the smaller vessels creates a glut on the market which can lead to a drop in prices for fishermen.



**Working the system**

Working twin rig demersal, 'rock hopper' trawls supplied from Irish net manufacturers Swan Net-Gundry (55 metre headrope and 25 metre hopper footrope), combined with Type 12 trawl doors from Thyboron Trawldoors in Denmark, skipper Vidar Sigurjonsson says that due to the nature of their operations in working many different types of hard grounds to target different species at various times of the year, he considers the Scanmar systems vital in as a consistent source of real time and factual data.

“As we often need to vary the depths of water we fish in to target different species i.e. saithe in 100 to 200 fathoms, redfish 300 to 350 fathoms etc., and it is essential that I have the technology



I can rely on to ensure that the gear is working correctly. A net not towing properly means not only fish missed and time lost but also fuel wasted," Vidar said.

"While the Scanmar TrawlEye sensor, which we have centred on the headline, is part of that vital technology, I believe that the Scanmar flow sensors (TrawlSpeed) is the most underestimated piece of marine electronic equipment in the modern-day fishing industry. Basically, I don't understand how anyone can manage without it," Vidar said.

## How can anyone manage without it?

A fisherman all his life, and a skipper for the past twelve years, Vidar Sigurjonsson says that the combination of TrawlEye, catch, trawl speed and door sensors from Scanmar gives him the 'complete package' in terms of catch control and monitoring of the gear.

"All trawls have an optimal water flow rate. This varies according to design, mesh size, thickness of purse line, knots, age of materials, etc. But, because of underwater currents, the trawl speed will deviate from the vessel's GPS speed and must be compensated. If the trawl moves too fast through the sea, a "bucket effect" will be created in the trawl, forming an area of pressure ahead of it.

"If towing is too slow, this will allow fish to escape, especially large ones which have greater swimming power. The TrawlSpeed sys-



## Reduce Fuel Consumption with the TrawlSpeed/Symmetry Sensor

Scanmar has delivered TrawlSpeed/Symmetry sensors for many years and they are absolutely indispensable for those who use them. The sensor is used to assure optimal towing speed and trawl symmetry to reduce fuel costs and loss of catch.

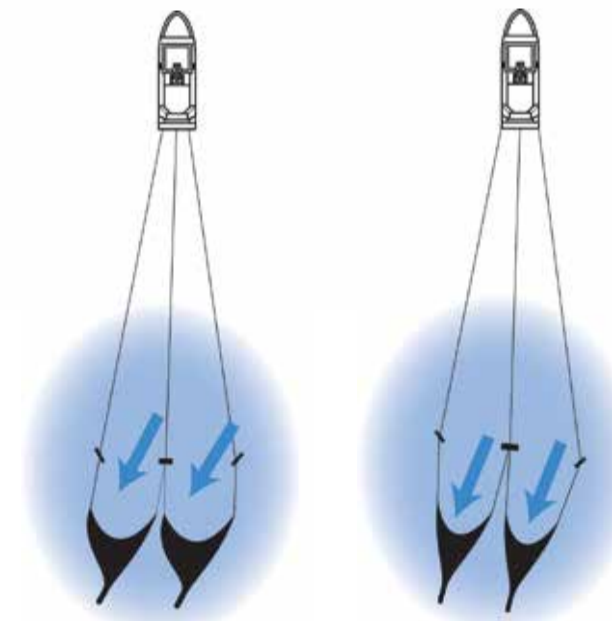
### The Symmetry feature

The Symmetry feature shows if there is a side current into the opening, leading to a skewed trawl. This will in turn lead to the meshes being closed on one side and wide open on the other, allowing current and fish to pass through the side panel.

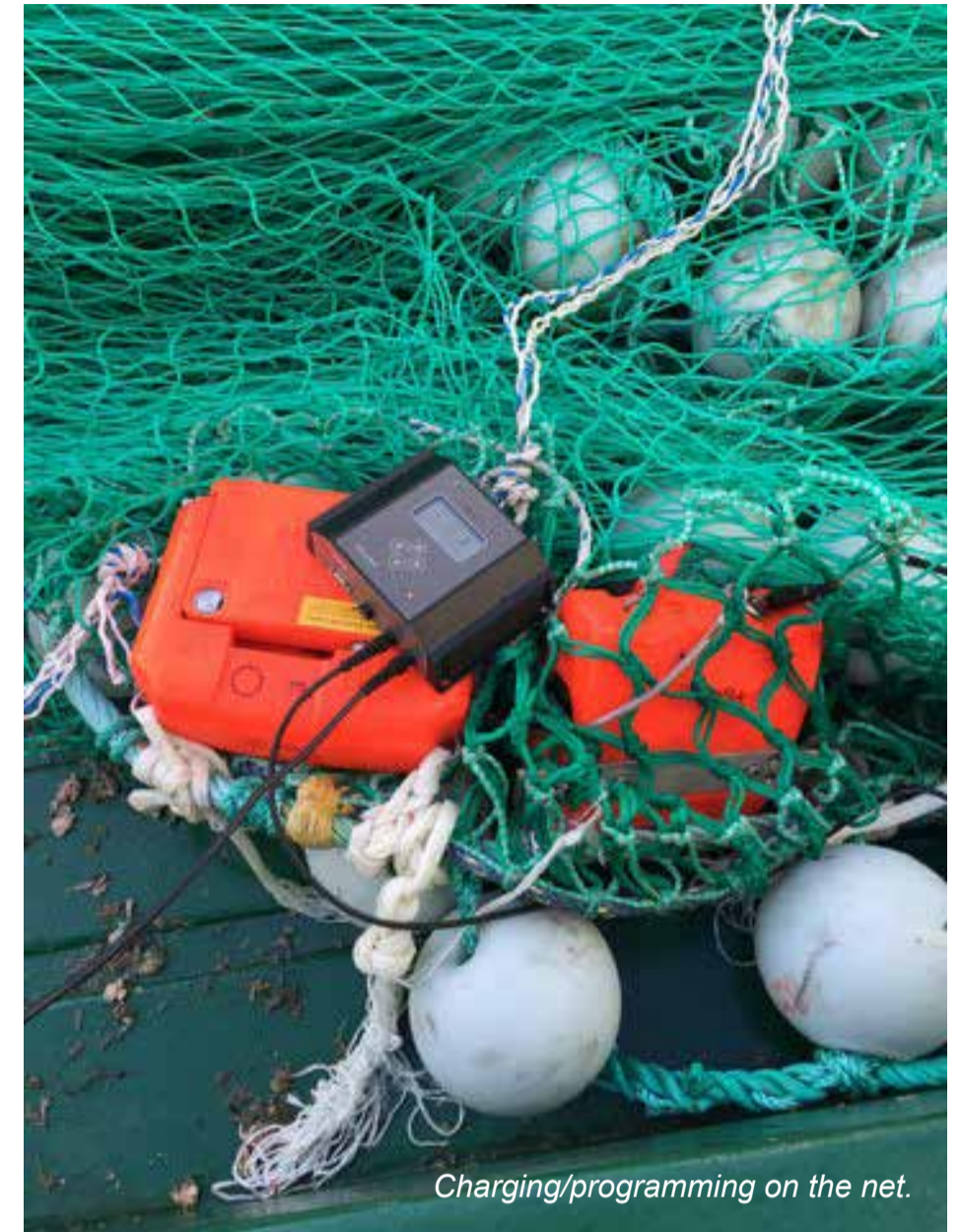
### The TrawlSpeed feature

Because of underwater currents, the trawl speed will deviate from the vessel's GPS speed and must be compensated.

If the trawl moves too fast through the sea, a "bucket effect" (pressure) will be created in the trawl, preventing fish entry and increasing fuel consumption. If towing too slow, this will give fish an opportunity to escape, especially large ones with greater swimming power and endurance.



- ▶ Keep the trawl symmetrical with the waterflow
- ▶ Avoid fish escaping through the mesh (bucket effect)
- ▶ Assure optimal towing speed in relation to underwater currents
- ▶ Reduce fuel consumption



Charging/programming on the net.

tem's function alerts you to any adjustments required to allow for changes in water flow so that you can maintain the correct towing speed," Vidar explained, adding that this can be particularly important when the vessel is towing on shallow grounds in heavy seas.

"I have often told other fishermen that this system from Scanmar is the best that I have seen in informing you when minor gear or vessel speed adjustments are needed to ensure maximum efficiency of the trawl – maybe it's a simple matter of slightly hauling the wire on one side, or increasing towing speed fractionally – but it's all priceless information that helps ensure successful catches," he concluded.



SS4 Doorsensor

# Scanmar systems ‘essential’ for top Nova Scotia shrimp factory/freezer trawler



Photo: M.V. Osprey Ltd.

shrimp, frozen in 22-kilo bags and stored in the vessel's 1,784 cubic metre freezer hold – most of which goes for the export market predominantly to China and Japan with a smaller percentage to the Russian market.

## Thanks to Scanmar!

“There’s no doubt that we owe much of our fishing success to the Scanmar catch & control monitoring systems, along with the door spread sensors,” Leroy said.



Photo: M.V. Osprey Ltd.

for yet another trip, Captain Leroy Marshall summarised his faith in the Scanmar range of technology:

“It’s simple – there are no other systems currently available that can give this kind of clear, quick and easy to understand information. The systems just need to be told what you want from them and, once you set these parameters, then you can totally depend on the reliable and stable data that is returned to the wheelhouse console.”

## ‘Crystal clear’ data returned from sensors after doing 300 hours’ work (60 tows) without recharging!

Fishing skippers from all over the world have recently been praising the ongoing advancements in fisheries monitoring and control systems from Scanmar – with one major common opinion: the need to recharge sensor batteries has become a chore of the past with Scanmar sensors now capable of lasting as long as 22-days at sea.

Giving testament to this fact is skipper Leroy Marshall who commands the impressive Nova Scotia shrimp freezer trawler Northern Eagle – a 66.4m / GT 1,343-tonne freezer factory ship working in the tough sea conditions from the northern Newfoundland waters up to the tip of Labrador.

“I’ve always been a fan of Scanmar technology, but one of their greatest developments is the capacity of their sensor batteries. While some vessels with other makes of sensors find themselves having to recharge these batteries every day, 48 hours or even once a week, we only have to do it once per trip,” Leroy said, explaining that their average trip is around 18 days but that even on their longest trip (22 days) the sensors were still with a charge when they went ashore.

## Northern Eagle

Leroy Marshall’s vessel is a fine example of what a deep-water vessel built to withstand heavy sea conditions and rugged fishing operations should look like.

Owned by the Nova Scotia-based company M.V. Osprey Ltd., Northern Eagle was built in 1996 by the Brattvaag Skipsverft AS Shipyard in Norway and the 4,080hp (3,000kW) Wartsilla-powered vessel targets shrimp in various grounds with several different types of bottom trawls all supplied by Vonin, and combined with 11.5 sq. m. Rock trawl doors manufactured in the Faroes Islands.

While generally fishing twin-rig trawls, Leroy Marshall explained that, depending on weather conditions (sometimes in winds over 35 knots), they are equipped to make the switch over to single trawl whenever the need arises, which can also be due to harder ground when a single ‘rock hopper’ trawl is the more advisable option.

With the average trip of 18 days targeting shrimp, the vessel generally returns ashore with approximately 480 tonnes of coldwater

## How to see if the clump is in line with the doors



This box shows the distance between both doors and clump, and if the clump is in line with the doors



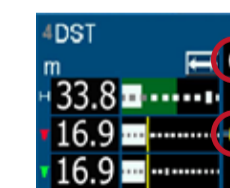
“I’ve been using Scanmar technology for the past twenty years but this latest system that we had installed a couple of years back really is an excellent piece of kit.

“The Trawl Eye system lets me see exactly what is going back into the net, and the other sensors keep me in touch with everything else so that I know that the gear is fishing to its maximum abilities. The door sensors that monitor pitch & roll also have to be seen to be believed – the quality of the information provided every second immediately shows if any adjustments are needed,” he added.

“For example, if our optimum spread is around 65m and the data tells us the spread is currently at over 70m, then we know the belly sheet is probably torn. Or if the spread is less than 60m then there’s a chance that the gear is fouled and needs immediate investigation – information like this is priceless as it can save a lot of wasted fuel and towing time.

“For our particular operation, one huge added benefit of the sensors is the ‘real time’ water temperature reports. For the more common shrimp we target (Borialis), the water temperature needs to be around +2°C but we sometimes also fish for the other type of shrimp (Montaqui), which prefer temperatures of -1°C – so obviously Scanmar’s ability to report on exact temperatures, along with all the other vital information, is of great benefit to us.”

Concluding this interview as he prepared to head back out to sea



After adjusting the wire length on the winches, the clump is now in line as can be seen in the panel on the right. The distance between the clump and both doors is now the same and perfect geometry has been achieved.

# Norwegian Purse seiner success using Scanmar

In this era of focus being largely placed on trawling and various forms of trawl monitoring and control systems, the sometimes-forgotten but still a major force in pelagic fisheries, is the purse seining sector which, in Norway alone, represents a massive catch volume for the fleet.

The 41m Radek is one of the top vessels in this sector which, according to owner/skipper Arild Skekkingstad, owes much of its ongoing success to Scanmar technology.

Radek, operating mainly for capelin and herring in Norwegian waters, also ventures into the North Sea area for mackerel and herring during the winter – and spends much of November and December chasing mackerel in the Shetland Islands' area.

Powered by a Cummins 1800 and using three different types of nets, all supplied by Mørenot, Radek's average working trip at herring sees some 500 tonnes coming ashore in peak condition in the vessel's RSW tanks.

Such a consistent success rate relies heavily on accurate electronic catching technology, says Arild Skekkingstad, adding that Scanmar is the most stable he has ever used.

"I like Scanmar. Their equipment is accurate in real time and is very easy to use. And most importantly, it never seems to have any problems," the skipper/owner said, commenting that he has tried several other similar products from other companies but



none offered the same clarity, speed and accuracy of Scanmar's monitoring of sink and depth action.

"This stability and accuracy is not just important in helping to avoid the gear 'touching bottom' but also to tell us when we are at the optimum depth to start closing the purse under the mark of fish.

"I also believe that one of the biggest benefits in using Scanmar is the quality and long life of the sensor batteries. Some other brands I have tried were not only inferior but also had extremely poor battery life capacity – it was always a problem --- but not a problem we have any more, thanks to Scanmar!" he said.

## New vessel – new Scanmar installations

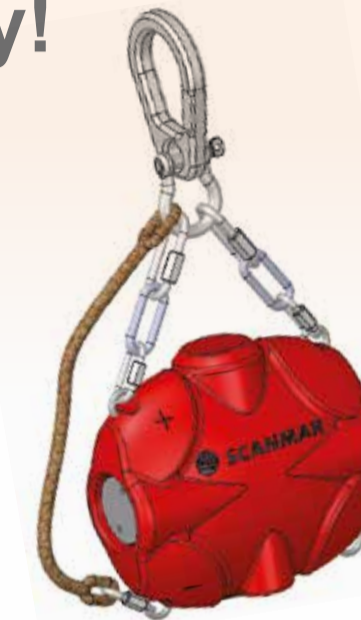
Due to additional quota being available in more inshore waters, Aril Skekkingstad has decided to add another vessel – a smaller type, and is currently building the 15.99m seiner Oma which will be ready early next year. An exciting and modern design, this build is at an advanced stage at the Blokken skipsverft AS shipyard in Sortland, Northern Norway.

"Naturally I am installing the same Scanmar unit onboard Oma as I'm confident it will bring as much success as Scanmar has already brought to Radek," Arild Skekkingstad concluded

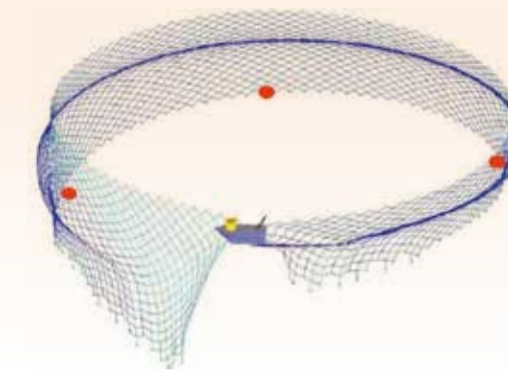
## New Sensor for Seiners with Depth and Height functionality!



The new SSH-S-DH



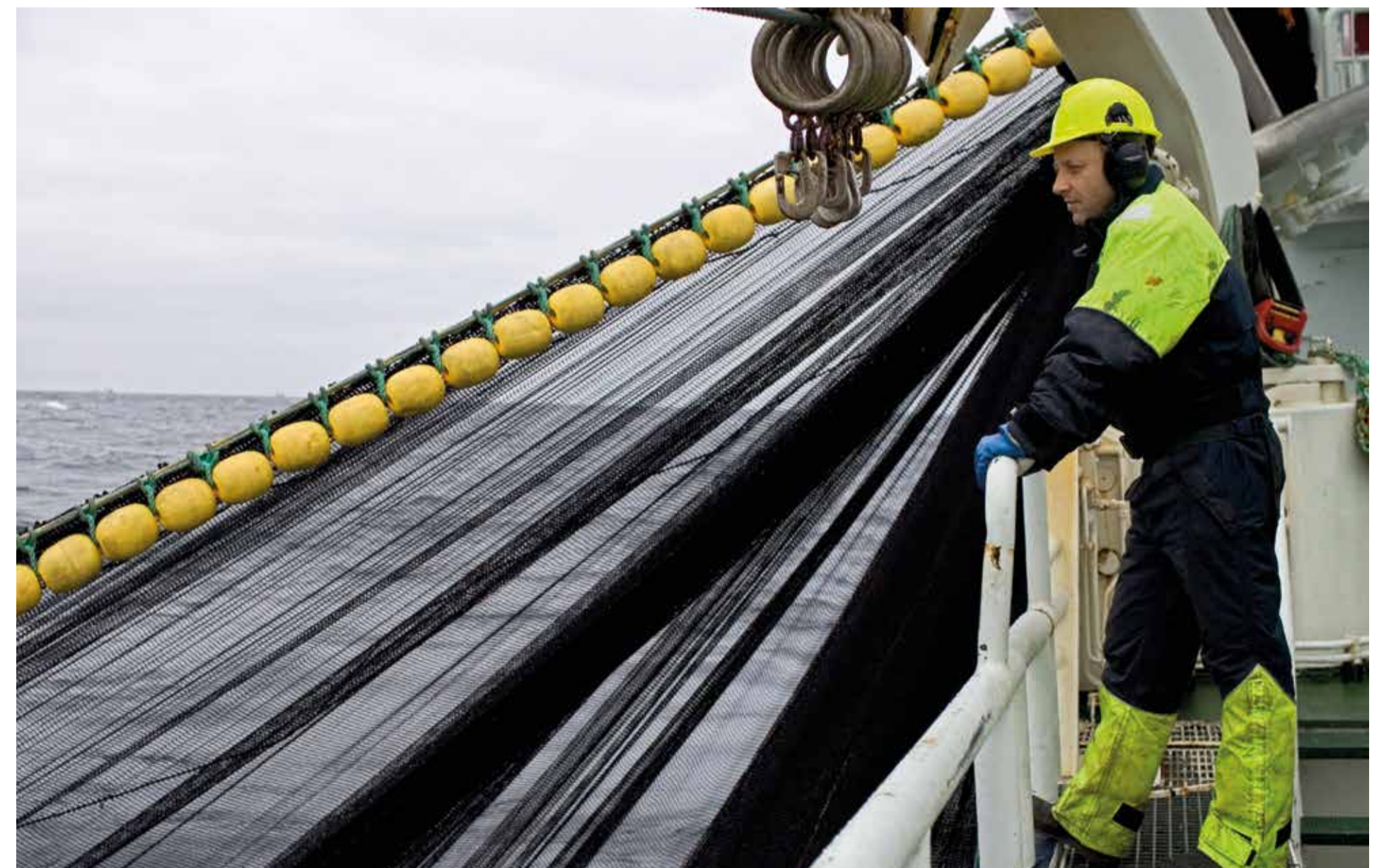
With mounting kit



The optimal position on the seine

- ▶ Special sensor for seiners with depth/height functionality
- ▶ Very special construction with special plastic that protects from damage (ex from Triplex)
- ▶ Follow up on the seine's position and movement

## The SS4 Depth sensor provides accurate and reliable measurements and has several benefits:



# Scanmar Catch Control System

## ▶ ScanScreen



- Up to four separate presentation monitors
- Displays all sensor functions, incl. TrawlEye
- Extended log function with information about the haul
- Easy-to-understand graphic screen presentations

## ▶ ScanBas



- Displays all sensor functions, incl. TrawlEye
- Database with log and information about the haul
- Clear graphic screen presentations
- Upgradeable to ScanScreen

## ▶ ScanMate 4/6



- Displays up to four or six sensor functions
- Easy-to-understand graphic presentations
- Automatic selection of hydrophone

## ▶ QBC-X1



- Configurable transmitting power and frequency
- Choice of quick or normal update rate
- Check of operation time and battery capacity
- Battery can be calibrated for max. operation time

## ▶ SS4 DoorSensor SS4 ClumpSensor



- Multifunctional sensor for single and multi trawl with functions: Distance, Angle, Temperature, Depth, Tension
- Very accurate measurements and automatic correction of the speed of sound in relation to depth and sea temp.
- Up to 700 hrs operation time and very quick charging
- Solid construction and plastic protects against damage

## ▶ Height/Depth sensor



- Specialized sensor for purse seine with height/depth measurements
- Extremely robust construction with special plastics protecting against damage
- Withstands a stretch of 6 tons- Scanmar's strongest sensor ever

## ▶ SS4 CatchSensor



- Multifunctional sensor: Catch, Filling indication, Temperature, Rip, Up/Down• With the SuperCatch function (fast update) you can easily prepare hauling and avoid overfilling
- Up to 1 500 hrs operation time and quick charging
- Solid construction and plastic protects against damage

## ▶ SS4 DepthSensor



- Multifunctional sensor: Measures depth and sinking speed of trawl and seine, temperature and angle
- Constructed for up to 2 300 m depth
- Solid construction and plastic protects against damage
- Up to 700 hrs operation time and very quick charging

## ▶ TrawlEye



- Detects species that are not visible on the vessel's echo sounder or sonar
- Provides clear images and precise information about the height of the trawl opening, bottom contact or bottom clearance
- Two options; Narrow-beam and Wide-beam

## ▶ TrawlSounder



- Shows fish influx
- Provides information about the height of the trawl opening, bottom contact or bottom clearance
- It also shows the volume of fish passing, and together with a TrawlEye in the opening you can easily see whether the fish end up in the cod end

## ▶ FlowSensor



- The sensor comes with TrawlSpeed function and/or Symmetry and measures the waterflow's speed and side currents into the trawl opening
- The sensor is used to reduce fuel costs, increase the efficiency and reduce loss of catch
- Used in the tunnel to avoid a bucket effect

## ▶ GridSensor



- Used to sort shrimp from fish efficiently
- Measures the sorting grid's angle which indicates the catch volume
- Shows if the waterflow through the sorting grid is blocked

# Technology for all seasons

## French mixed fisheries trawler skipper 'seduced' by Scanmar's 'perfect' data reporting systems

Operating a 24m trawler in a wide variety of pelagic, semi pelagic and demersal fisheries throughout a vastly diverse range of fishery seasons is a tough challenge – but is one that is made easier thanks to the high quality of Scanmar equipment such as trawl & door monitoring systems, says Sébastien Sagot, owner/skipper of the French vessel Sainte Marie de la Mer.

The fishing tradition is ingrained in the Sagot family who have been involved in this industry for over three generations. The Sagot family's current vessel, Sainte Marie de la Mer, operates five-day trips in the East Channel areas, Western Channel and the often-harsh conditions of the North Sea.

Sébastien Sagot describes his vessel's tough and constantly changing regime which sees them targeting mackerel and squid from January to March before turning their focus to sea bass for



two months. This short season takes them to another two-month fishery, this time in the Eastern Channel when the target is whiting and mackerel until they return to the Dieppe area in the autumn to fish for cuttlefish. The busy year is completed by working in the waters off Boulogne sur Mer when the main species are whiting, cod and squid.

As with all European fishermen, the management and distribution of quotas remains a controversial issue: "Quotas in EU are very strict and can appear, from time to time, to be unsuitable or even unworkable for fishermen. They are distributed to the fishing vessels, based on historical catches which may date from the early 2000s, through their national fisheries organisations. But, of course, these quotas do not always necessarily correspond to reality. Thus, we can find some very significant differences quotas for a species for equivalent vessels," Sébastien explained.

Built in 1989 at the Caloin shipyard in Etaples sur Mer in the north west of France, Sainte Marie de la Mer has dimensions of 24m in length and beam of 6.80m and is powered by a 750hp Caterpillar main engine.

In operating its range of bottom trawl and pelagic fisheries, the vessel employs two main types of trawl doors: a set of 2.70 x 1.70m custom-made 1.3-tonne doors as well as the Polyfoil rectangular type from Morgère.

### Technology playing a vital role

However, of all of the important equipment installed on his vessel, Sébastien Sagot believes that it was the decision to equip with Scanmar technology 10 years ago – a Scanmate 4, HC4 door sensors and trawl sounder TS150 – that brought immediate improvements in the vessel's success and overall catch performance, adding that more importantly, this new technology and its flexibility for different systems of fishing allowed for gear changes to be undertaken in just one day whereas before it might have taken weeks.

**“I recommend this system to any fisherman”**

“Beyond productivity gains, we found that, because we had a clearer understanding of the seabed, we suddenly had more confidence to be able to deal with more difficult trawling grounds where previously there were unknown risks of damage to the trawl gear from cables, rocks, etc. But now, in difficult sea bottom conditions, once we encounter an obstacle, we see it immediately and can then react to avoid damage to the trawl gear.

“Scanmar technology has become vital to our overall operation. For example, the use of temperature function allowed us, over a period of two years, to establish correlations between the presence of species and temperature measured in the different areas. Thus we are able to better anticipate our activity, which also represents a productivity gain.

“Once the system is installed, utilization is very simple and user friendly. You just need to navigate through the different displays to find the one that suits the best. Then no need to touch anything. Information such as pitch/roll, distance, opening and clearance are clearly displayed,” he said.

### Reliability

The vessel's system configuration was upgraded about 18 months ago with a Scanmate 6 and SS4 multifunctional door sensors which include distance, roll / pitch and temperature – all of which even further impressed the Sainte Marie de la Mer skipper/owner: “I was 'seduced' by the increased autonomy and new functionalities,” Sébastien commented and went on to say that the first major difference he noted after installing Scanmar equipment was that the quality of the signal transmission was greatly improved. “We have never lost the signal and the system is operational at all times and at 100%, regardless of the sea conditions. The new sensors are also more sensitive and accurate allowing us to be more confident on difficult sea bottom and have finer adjustments. The angle feature allows adjusting more easily the fishing gear. This is even more important in the bad weather, where the measurement of the angle of the doors enables to reach stability of the fishing gear much faster.” Sébastien Sagot also commented that the Li-ion batteries technology is a great improvement:

“Beyond the ease of use, since we have a range of around 300 hours -- this is the safety side on board that has been improved and it means less risks at sea as my crewmen no longer have to climb over the trawl doors to remove a sensor that needs charging. Now we just charge them once a month when we are on our way to the fishing grounds. The charger indications are very useful because they allow better management of batteries.”



### Reputations

Having bought his first Scanmar system many years ago, Sébastien said that he was guided by its reputation for reliability, performance and robustness, making it the ideal system.

“For new multifunction door sensors, I wanted to be among the first to use them in France.

“I kept my first system for ten years without any issues or problems. I can estimate that my productivity has been increased by a minimum of 20%. In the fishing world, information travels fast and reputations are made and broken quickly.

“Some fishermen had installed and tested other systems. They finally got rid of them because of the numerous problems. Once they tried out Scanmar, their comments were clear: “If you do not want trouble and a system working all the time, take Scanmar”.

It is great testament to Scanmar technology that Sébastien summarises his opinion of this equipment by commenting that if he had to make this choice again, “I would make the same decision with my eyes closed!

“Of course, I recommend this system to any fisherman. And I have already told my fishing colleagues when they are seeking a new system... “do not even consider others – Scanmar is simply the best...”

**“We have never lost the signal and the system is operational at all times and at 100%, regardless of the sea conditions. The new sensors are also more sensitive and accurate allowing us to be more confident on difficult sea bottom and have finer adjustments.”**

*Sébastien Sagot, owner/skipper of Sainte Marie de la Mer*



Bridge on Gadus Poseidon



Gadus Poseidon, one of three new vessels

# Why ‘the best’ choose the best

## Success doesn’t come easy – it must be worked for

“It seems the more successful I am, the luckier I am” was the response from an arrogant young football manager a long time ago when he was dismissed by his peers as just being ‘lucky’. Ten years on and one Jose Mourinho, now recognised as one of the top managers in the world, jokes that apparently he ‘continues to be lucky’...

While the businesses of professional football and the commercial fishing industry may be a million miles apart, they do share one common factor – success only comes to those who work hard for it.

In the international fishing industry, one company whose ideology of employing a strategy of combining hard work and diligent management to achieve long term success is that of Havfisk ASA – Norway’s top demersal catching sector fleet operation.

Havfisk, who currently operate nine vessels in Norwegian waters, has 29.6 fishing quota licenses for cod and haddock and 31.9 quota licenses for saithe (Coalfish) as well as prawn qu-


otas, also catch other species such as Greenland Halibut, red-fish and shrimp - generally caught as secondary by-catches. All fish are headed and gutted on-board the vessels at sea so that the company can provide fresh and frozen fish to its customers throughout the year.

A somewhat complex coming together of various different companies first led to the establishment of Havfisk when agreement was reached to merge Norway Seafoods AS, West Fish-Aarsæther AS and Nordic Sea Holding AS, Aker Seafoods ASA (now HAVFISK ASA). The largest owner of HAVFISK ASA is Aker ASA, with a 73.25% ownership stake. However, a recent change in strategy has seen and Havfisk and Norway Seafoods being operated independent of each other so as to separate the sea-going (catching) and land-based (processing) businesses.

Havfisk ASA, with headquarters based in Ålesund but with landing points in many locations throughout the country, sell fresh fish to the filleting plants of Norway Seafood AS in northern Norway.

The basic price is agreed on the basis of current minimum prices (which are normally negotiated three times per year). A bonus can be added to the basic price in accordance with an agreed matrix if such is justified (e.g. the degree of freshness, quality, etc.).

Frozen fish are sold at compulsory delivery auctions, open auctions or under contract. These auctions take place on an electronic trading system and only approved purchasers listed in the Directorate of Fisheries’ Register of Purchasers are allowed to participate. Frozen fish are also sold at compulsory delivery auctions, open auctions or under contract. These auctions take place on an electronic trading system and only approved purchasers listed in the Directorate of Fisheries’ Register of Purchasers are allowed to participate

 *Our strategy for success is built on a foundation of strong management*

Last year the Oslo stock exchange listed Havfisk ASA, with a turnover of NOK1bn, recorded a total catch amounting to almost 70,000 tonnes, including 32,765 tonnes of cod, 7,853 tonnes of haddock and 10,872 tonnes of saithe.

### Challenges

So, has achieving all of this success been an easy task? Quite the opposite says Havfisk ASA Operations Manager, Mr. Ari Theodór Jósefsson:

“Our strategy for success is built on a foundation of strong management – not just in fiscal matters, but in looking after our nine vessels and our team of almost 400 staff, from deck crews to office staff.

“If the entire Havfisk ASA operation was to be compared to one big machine, then it is essential that every part

of that machine is working smoothly,” he said, adding that it is attention to every detail – no matter how small – that ensures the vessels are in top working order and achieving their maximum efficient catching capabilities.

### Scanmar – a vital cog in the Havfisk machine

Naturally the smooth operating of nine large whitefish trawlers demands top quality technical equipment and Ari Theodór Jósefsson is quick to point out the importance of Scanmar’s trawl control and monitoring systems on board the Havfisk fleet.

“From proven experience working with Scanmar’s technology, we have very strong faith in their equipment. They [Scanmar] are an excellent company who have built their reputation on their commitment to reliability.

“And, in addition to Scanmar’s high quality fisheries monitoring and control equipment, we enjoy a unique service agreement with them which ensures immediate service and repair for anything that gives a problem (which isn’t very often),” he said, further commenting that this level of commitment to service means that Havfisk vessels never suffer any downtime or unscheduled delays ashore while waiting for repairs or service to be carried out.

The Havfisk Operations manager added that while he admires Scanmar’s ongoing strategy of investment in Research & Development (R&D), it is their dedication to ensuring that customers are getting the most from the equipment that he sees as vitally important.

“From time to time Scanmar arranges a workshop meeting where we bring all of our Havfisk fleet skippers around one table and Scanmar technical staff will not only ensure that everyone has full understanding of how the equipment should work, but also takes the time to go through any minor details and technical questions that the skippers might have.

“This kind of attention to detail and continuing customer service can only be described as ‘first class’,” Mr Jósefsson said.



Ari Theodór Jósefsson – Operations Manager, Havfisk ASA



# Scanmar Agreement; Predictability and Economic Benefits

Scanmar is the leading supplier and producer of catch control systems to the global fishing industry and research vessels. It is our experience that close cooperation with our customers creates opportunities for both parties, and this has always been our main focus.

To retain and build customer relationships we now offer our loyal customers an opportunity to get the best benefits from our equipment, most competitive prices and the best terms and service possible.

Some of the advantages of the Scanmar Agreement; Skipper Seminars & Technical training - to demonstrate the benefits of a full Scanmar system, telephone support, a dedicated contact person, access to trial licences for new functions and improvements, 10 years depreciation, your own service stock, all repairs and spare parts, access to Scanmar web portal and a monthly transaction report.


The agreement will also provide predictability for our customers in their purchases as they get exclusive prices. The agreement can be tailor made to suit each customer, and the customer can choose a Plus Purchase agreement, a Service agreement or both. It is our goal to assure that the agreement is so beneficial to each customer that they do not only choose Scanmar for the superior quality and user benefits, but also for the best service in the market.

Several customers have already seen advantages of being an Agreement customer, and have already benefitted from it.

For more information about the Scanmar Agreements, or inquiries about how to make fishing more profitable for your vessel(s), please contact our Sales department at sales@scanmar.no.

Benefits of a Scanmar Agreement
Purchase of new sensor - exclusive prices
Trade-in discount - exclusive prices & service policy
Scanmar seminars
Technical training at Scanmar
Priority participation in development and testing of new products
Dedicated contact person - exclusive Account Manager
Monthly transaction report
Spare parts
Repairs
Access to trial licenses free of charge at time of purchase
Depreciation 10 years
Technical telephone support

## Examples of customers with an agreement

Havfisk – Aalesund, Norway  **Page 14**

Moradiña – Vigo, Spain  **Page 23**

# Scanmar's superiority in pelagics



It is a fine testament to any product or fishing vessel system for a skipper to say he relies so heavily on its performance that he would rather stay ashore than go to sea without it – but such is the case with Greencastle-born skipper of the Killybegs-based pelagic vessel Brendelen.

“We have been using Scanmar for over five years and there is no doubt that our current package of two TrawlEyes in combination with the extra fast catch sensors (SuperCatch system) gives us the edge not just in catching but also in monitoring our gear to make sure everything is working as it should,” says Brendan Gill, owner/skipper of the Irish 64m pelagic trawler Brendelen.

The Donegal fishing port of Killybegs in the north-west corner of the Irish Republic has for centuries been a home for the fishing industry and today, due to its natural deep harbour and easy access to the Atlantic north western waters' fishing grounds, is Ireland's most important centre for the pelagic fleet.


MFV Brendelen is one of a 20-strong pelagic and semi pelagic local fleet which, after some vessel owners briefly dabbled in pelagic purse seining in the mid-1980s, turned its attention to the mid-water trawling operations for which these Irish vessels are now recognised by their peers as one of ‘the best in the business’ at.

The 64m Brendelen, the third vessel of the same name, was built in Karstensens Skibsværft A/S in Denmark in 2004 for Brendan Gill who, with partner Michael Cavanagh in the identical sister ship Father McKee, have held a reputation for over two decades as being one of the top pelagic pair teams in Ireland.

Brendan, now joined in the wheelhouse by his son Jonathan, still commands Brendelen as this vessel continues its successes in a wide range of pelagic fisheries.

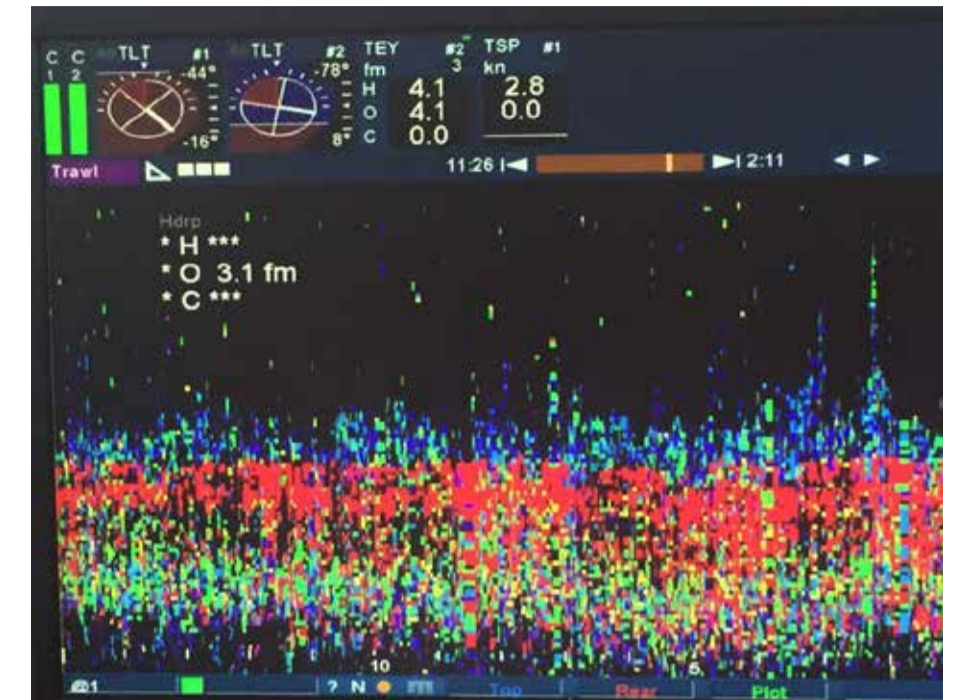
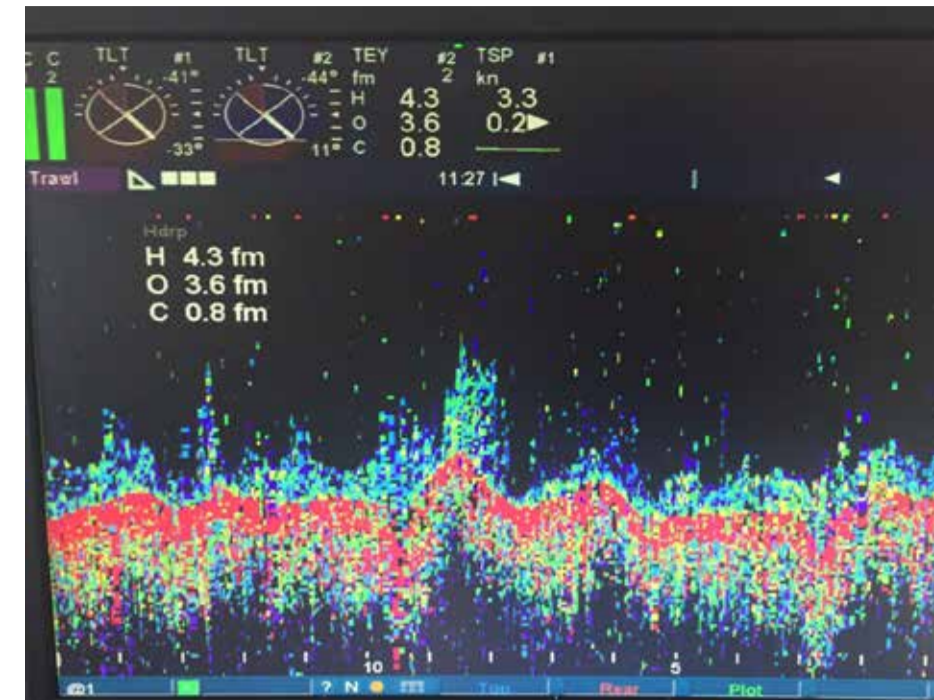
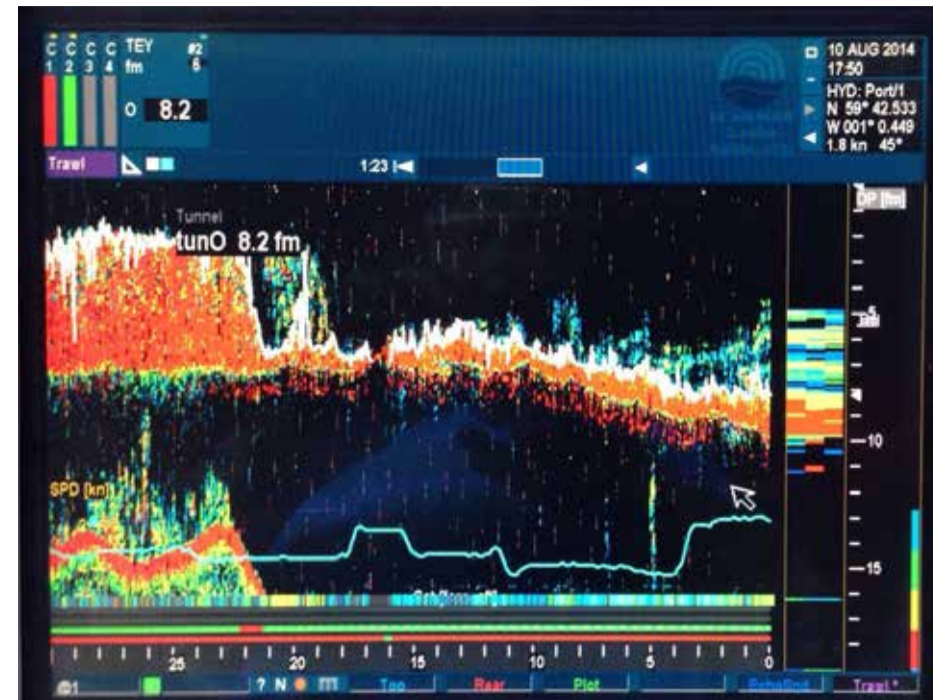
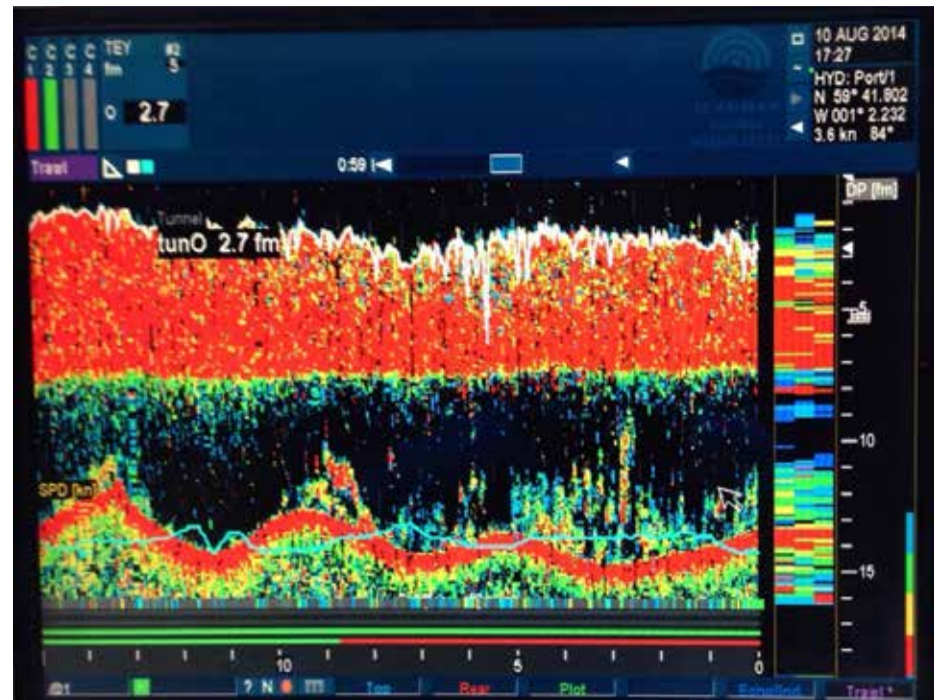
“It's not many years ago that mackerel was the mainstay for vessels such as ours,” Jonathan explained.

“But nowadays, with reduced quotas in so many species, it is vital that we diversify and participate in other pelagic fisheries such as blue whiting, horse mackerel (scad), herring, boarfish and Albacore tuna – not just to make our fishing season longer but obviously to keep our vessels as viable ventures.

 *We wouldn't go to sea without our TrawlEye system*

“All of these fisheries have one thing in common for us – our TrawlEye system. Whether the fishery be mackerel or tuna, the information this system provides is priceless in terms of telling you if your gear is fishing correctly – it will show you if your brailer is too tight, or if your spread is too wide or not wide enough.

“It shows you very quickly if you have a problem,” Brendan said, adding that if the bag opening is showing to be more or less than it normally would be, then there's something wrong... and you can haul up and fix the problem immediately (i.e. a burst lacing, foul line or a torn net) and not waste time towing about and not catching.



Fish influx as seen on a Scanmar trawley in the tunnel

“For example, when pair trawling for tuna (which these vessels must carry out at a speed 5.5 knots, compared to 3.7 knots for blue whiting and 4.8 knots for mackerel), it used to be good enough to know that if you had the fish in between the pair of vessels then they would go back into the net. But in reality that is often not the case as the tuna are a fast-swimming fish that could alter at the last minute and you’d miss them.

“Now with our Scanmar systems we can monitor them approaching the boats and the gear via sonar and then observe them entering the tunnel, and finally into the brailer – allowing us to then turn to search for more fish, safe in the knowledge that we had already ‘bagged’ a certain amount,” he said.

As well as its real time catch sensors, Brendelen fishes with the TrawlEyes set about 100 metres apart with the bottom one just above the brailer for the tuna fishery. This, says Brendan, gives them optimum efficiency in maximising control and monitoring of the gear and the incoming catches.

**I would recommend this Scanmar system to anyone**

“Before this system, catch monitoring systems were basically just a computer generated image to give the skipper a rough idea of what was going on – but now we have actual ‘real time’ images of what is taking place,” Brendan said, explaining that previously they had an older model trawl sounder which was good but basic and it just gave the skipper a ‘rough idea’ on the bag opening and when fish started and stopped in the tunnel.

“Now with the TrawlEye you can see the fish tight on the bottom sheet or high up in the tunnel under the top sheet. Quickly you can see the different characteristics of the different species,” he said.



Brendan Gill further commented that the allowance for pitch and roll on the catch sensors is excellent and shows all angle decrease and increase changes in real time.

“We find the pitch indicator excellent for slow fisheries as you can tell before the fish get to the sensor the pitch angle changes. Our Number 1 sensor will go to an angle of 21° before activating. This is good because you know the cod end is filling up before the sensor pulls.”

When asked, Brendelen skipper Brendan Gill said he would have absolutely no hesitation in recommending this Scanmar system to anyone.

“We have by now reached the point where we rely on this system so much that we simply don’t like to shoot the gear without it. We even carry up to four spare batteries for the system at all times on board... just in case.”

### In the zone

Jonathan Gill gives an example of TrawlEye benefits in action. “On our first trip using the Scanmar TrawlEye system searching for mackerel, we towed a mark in the North Sea.

“We observed the fish starting to come and once in the tunnel, they set off an egg. We were just about to alter course when the TrawlEye began to show more fish. So we keep towing until the tunnel was clear and another egg went off.

“We hauled a shot of good size mackerel and we believe that it was the larger faster fish that came later in the tunnel. I believe that without the TrawlEye we would have altered course and lost the bigger fish before they got back to the cod end.”

# Astrid Ann: increased catch and reduced costs for our shrimp trawler



*Astrid Ann fishes for shrimp in Skagerrak. The quota is 150 ton. The symmetry sensor gives according to the skipper Agnar Langtveit an increase in the catch of 10% or more, as well as less damage to the trawl.*



*Astrid Ann was built in the UK in 1980. In 2010 the main engine has been replaced.*

«There is no doubt that Scanmar's symmetry sensor has increased our catch efficiency by at least ten percent, probably more. The information we receive from the symmetry sensor, enables us to always have control over what happens with our trawls down at the bottom and gives us the possibility to make necessary adjustments.

During fishing in difficult seabed conditions and sidecurrents, we compensate with speed and wire adjustments to ensure optimal efficiency. The symmetry sensor is our eyes in the depths," says Agnar Langtveit, skipper and owner in the shrimp trawler Astrid Ann.

## Eight-year long experience with symmetry sensor

Agnar Langtveit from Arendal bought together with his brother Endre the 25.9 meter trawler Astrid Ann in 2007. The vessel was built by Mac Tay Marine Ltd in Bromborough in Britain in 1980. In 2010 Agnar changed the engine and the propulsion unit, which is now provided by a Caterpillar 3508B with 1,045 horsepower. Until 2007 he had a small trawler by the same name that fished with a single trawl. This vessel used catch control equipment from Scanmar and Agnar took the Scanmar system over onto the new vessel. In addition, he then decided to upgrade with a symmetry sensor.

"The symmetry sensor has contributed to a stable and good fishing operation. We use twin trawl. This requires a very accurate

adjustment of the center clump in relation to the trawl doors. If we adjust by one meter, or less, the symmetry sensor will give us the information we need about the placement of the center clump relative to the doors.", Agnar says.

## Extremely accurate and reliable

Agnar is particularly well satisfied with the accuracy the sensor measurement is giving him. He adds: "It is actually possible to see if any of the wires are extending, even slightly. This assumes of

*The symmetry sensor will give us the information we need*

course temporary trawling on flat bottom with good bottom conditions. But it gives us the opportunity to fine-tune the equipment so that it becomes possible to see how the side currents and seabed conditions actually affect our trawls. We can adjust the length of the wires, or tow harder on the trawls to maintain correct symmetry."

## Reduces the risk of damage to the trawl

"If we fish on steep slopes the symmetry sensor will immediately tell us if the trawls are digging into the bottom or are getting stuck.

The active use of the sensor gives us the opportunity to limit the risk of damage to the trawl, expensive repairs and unnecessary time maintenance - not to mention lost fishing time. The symmetry sensor means lower utility costs and better catch in relation to fuel consumption and time at sea "explains Agnar.

After the symmetry sensor had been installed onboard Astrid Ann in 2007, the crew has used the sensor for seven years and they only have positive experiences:

"We had seen symmetry sensor being used in fishing with single

Mounting brackets are mounted in the middle of the head line in the trawl opening. It takes only seconds to loosen the sensor on or off in order to charge the battery.

### 150 tons shrimp quota

Astrid Ann goes mostly to harbor on weekends. The shrimp fields are only a few hours' sailing from home port. This year, the vessel's shrimp quota is 150 tons of cold water prawn (Pandalus



trawl. When we in 2007 started to fish with double trawl, we were in no doubt this was something we had to have. Since that time we only had a very few hauls without symmetry sensor associated with battery replacement or service. "

### Easy to use

Agnar found the sensor easy to use, and is very happy with the technical support and follow-up he got from Scanmar during the fifteen years he has used the equipment.

borealis). Active use of sorting grid ensures very little bycatch. Profitability is highly dependent on the efficiency of trawling to avoid unnecessary use of time and fuel.

"Sometimes while fishing on difficult seabed conditions we have to make adjustments to the wire or speed several times an hour, while other times we may be able to trawl without making changes more than two or three times during a day ", says a delighted shrimp fisherman.

# Scanmar's Spanish success



As with many international fishing nations, harvesting fish at sea has gone from a simple traditional generational way of life to evolve into major commercial enterprises with extensive financial investments which seek a return through viable, profitable but sustainable fishing enterprises.

One such company is Moradiña S.L. – a group with five vessels: Eirado do Costal and Playa Mendiña Dos fishing in NAFO areas, and Santa Mariña, Playa da Cativa and Playa de Sartaxens operating in international waters and in the Falkland Island area.

### Top vessels reaping the benefits

Of all the nations in the world with a historical tradition in fishing, few can boast of the maritime heritage of Spain.

History may show that Spain conquered many new worlds but that same history often fails to record that the fishermen of Spain were the first to endure many harsh and hazardous conditions in their mission to constantly seek new far distant fishing grounds in every part of the globe.

Today the Spanish fleet comprises of a mixture of older vessels combined with a new younger fleet with state-of-the-art technology as well as increased standards of crew safety.

### Specifications


In an interview with Scanmar Info, the two skippers from vessels fishing in NAFO: Antonio Bon Lagoa (Eirado do Costal) and Ramon Porto Rodriguez (Playa Mendiña Dos), describe their vessels and the important roles that Scanmar technology plays in their successes:

Before skippering the 56.8m Eirado do Costal (for the past three years) Antonio spent 12 years fishing in Falklands onboard Playa da Cativa, also for the Moradiña S.L. fleet company. Before that he was working for six years in the Gran Sol fleet.

Built in 2004 the 550-tonne carrying capacity Eirado do Costal is designed for multi-purpose use and can alter between demersal bottom trawling and pelagic fishing as required. General demersal fisheries sees the employment of trawls and rock hoppers from EURORED and SANTIMAR, but switching over to HAMPIDJAN gear for pelagic fisheries and Antonio favours the use of Injector trawl doors for both types of fishing.

Meanwhile, Antonio's colleague Ramon Porto Rodriguez who has skippered the 51m Playa Menduiña Dos for the last ten years started his career at sea at the age of 17 and has now worked for the Moradiña company for a total of 23 years.

As well as operating in the NAFO area, Playa Menduiña Dos also works in the Irminger Sea and Hatton Bank fishing grounds.

 *The only sensor still working properly under heavy sea conditions is the Scanmar TrawlEye*

Built in 2001, Playa Menduiña Dos is a 400-tonne fish carrying capacity bottom trawler which mainly targets bottom and demersal whitefish species, using general and rock hopper trawls supplied by MANUCO, SANTIMAR, in combination with Injector doors but changing over to Viking doors mainly for deep fishing when targeting species such as halibut (aka fletan).

### NAFO waters: TrawlEye benefits in deep sea bottom and pelagic trawling

The halibut fisheries are of high importance to the Spanish fleet but they must adhere to strictly monitored quota systems.

Antonio explains that the quota for halibut is regulated as follows: the company Moradiña S.L. has around 10% of the global quota for halibut, which is being fished by the different vessels going to NAFO grounds.

"But the company can decide if one of the two vessels fish more from the quota than the other (of this 10% maximum)," he said, adding that for both Eirado do Costal and Playa Menduiña Dos, each fishing trip can take two to three months, with all catches returned to the home port of Vigo where sales see the halibut, sold at an average of €4 per kilo, go for export (mainly Asia) and the remaining 40% consumed by national demand in Spain. Each trip has a gross landing value of approximately €1 million.

The halibut season starts in January and ends in September each year and the vessels go out three times within that timeframe, and sometimes for a fourth time to fish for stingray (aka raya).



Ramon Porto, skipper on Playa Menduiña Dos.



Antonio Bon Lagoa, skipper on Eirado do Costal.

"So it is simply a matter of which equipment is best in allowing us to see and recognize various species and be able to differentiate these from the others. For example, the only sensor detecting 'Marujito' (longtail southern cod) or 'patagonotothen ramsayi', is the Scanmar TrawlEye.

It doesn't matter how old the technology can be as long as it gives you useful information. If other systems cannot provide the same level of quality information and data then that tells you what system to choose," Antonio added. Playa Menduiña Dos skipper Ramon agrees with Antonio: "For stingray ('raya') fishing, which can be around 50m to 60m depth, only Scanmar TrawlEye works well. The sensor picture is clear and, from my experience, no other system shows the 'marks' stingray as clearly as Scanmar," he said.

### "No price too high for top quality technology"

Both skippers, who are currently using Scanmar's TrawlEye sensor system (in parallel with a similar system), gave a brief explanation of why they choose Scanmar's TrawlEye:

"A big advantage is in the parameters -- we control the gain, opening scale and the colour range. For example, for pelagics we can filter out all the colours for species we don't want to see, such as shrimp," they said.

"The signal qualities, reliability of the signal and of course the performance of the sensors are the key factors why we chose Scanmar TrawlEye," Antonio and Ramon said, adding that a skipper can easily differentiate with the Scanmar TrawlEye while fishing in bad weather (winds of 35 knots or more).

"The only sensor still working properly under heavy sea conditions is the Scanmar TrawlEye and the weather conditions do not affect the system and all demersal species and fish entering the net can still be detected and clearly seen in the TrawlEye screen," they said.

When asked if they considered Scanmar's fishing technology to be value for money and worth recommending to other fishermen, both Antonio and Ramon quickly responded that the cost of such systems should never be an issue when it does such a good job.

"We know what equipment is the best and we advise the Moradiña company what systems we need (Scanmar's TrawlEye in this case) to operate successfully.

"And through using Scanmar on its vessels, our company has come to rely and trust in Scanmar systems. Our company, and ourselves as fishing vessel skippers, would naturally recommend all vessel owners and skippers to have Scanmar systems installed."

### The devil in the detail

In such a demanding fishery it is obvious that success relies on having top quality electronic equipment. And when the question of keeping up with the latest technology upgrades or preferring to rely on 'old favourites' in terms of products and manufacturers, both Antonio and Ramon were very clear in who they see as the real leaders in fishing technologies.

"We used to rely on good old equipment, such as some of the other so-called 'brand leaders' but when it comes down to it, there are certain species of fish which you cannot detect with their versions of technology," Antonio commented, explaining that it therefore basically comes down to the quality of the equipment and of its limitations.

# New noise hydrophone with revolutionary features/properties

Written by Edmund Mongstad

Scanmar are about to unveil their latest innovation, a hydrophone with noise detection/measurement. Its revolutionary capabilities include features such as interpreting noise from the vessel and what this means for the individual fisheries. The hydrophone also estimates the scare factor, based on the fish species' different hearing curves. This will to all appearances become an invaluable instrument for fishing with seiner and trawl in the future.



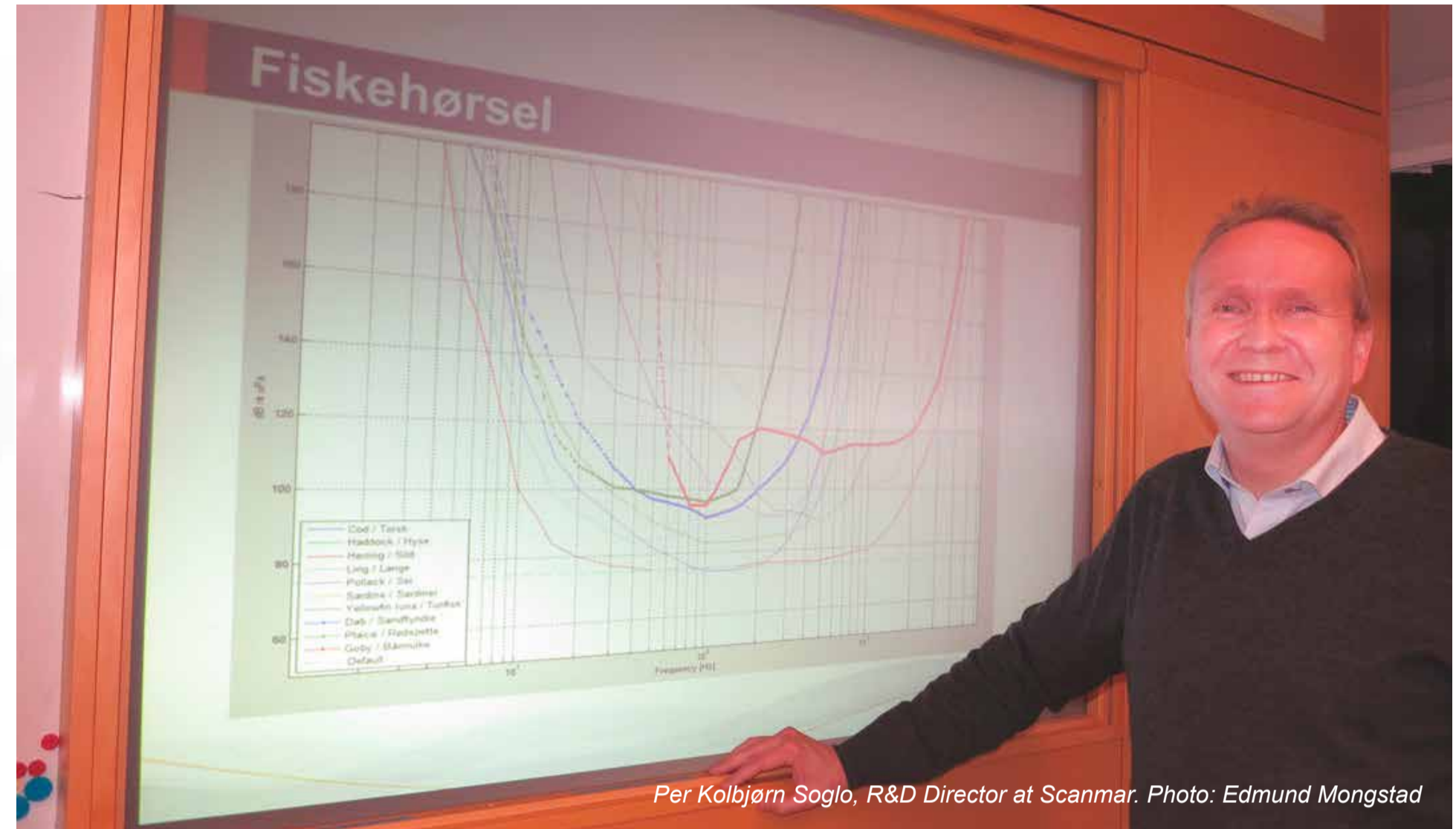
The aforementioned scare factor is based on hearing curves for different fish species. These hearing curves are the result of extensive research from across the world. The new hydrophone will give the skipper on the bridge invaluable information during fishing with trawl or seiner, such as if the noise coming from the ship is above a certain threshold (it will have a large scare factor on the fish). It's a well-known fact that sound carries well under water, and according to the R&D Director Per Kolbjørn Soglo at Scanmar, you must go deeper than 400-500m before noise from the vessel stops effecting for example herring.

## Trial completed

The noise hydrophone has just completed the last of many ocean trials with Havfisk's trawls and has passed with flying colors. The first noise hydrophones are already being mounted on docked vessels. They have the same size and mounting procedure as regular hydrophones and the vessel must be docked for hull installation. This innovation gives complete noise surveillance of the vessel in real time, which provides invaluable information during both trawl and seiner fishing. Noise from the propeller and the ship barging forward is a well-known factor for most skippers. It is well-



Ulf Lundvall and Sasha von Sthaa. Photo: Edmund Mongstad



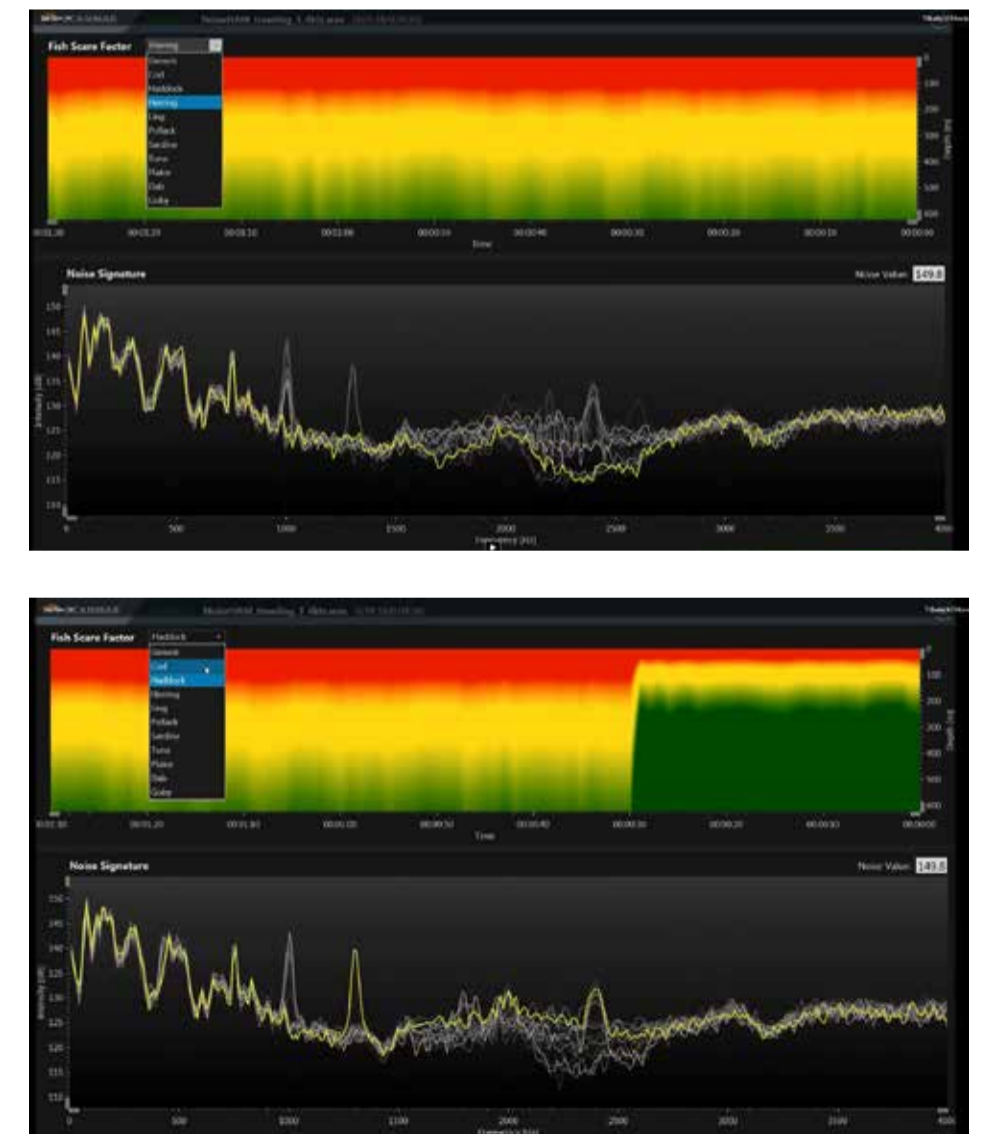
Per Kolbjørn Soglo, R&D Director at Scanmar. Photo: Edmund Mongstad

known how easily fish gets frightened by sounds, some species to a large extent others to a smaller degree. Of course noise is of great concern when trawling and when searching for schools and deploying seine nets.

## Avoid scaring fish

The new noise detection system will continuously measure the vessel's noise levels and the skipper will, based on the information provided, be able to make small alterations, as reducing speed, modifying propeller angle or making other adjustments to reduce the noise to acceptable levels. The skipper will easily learn to know the scare factor of the particular fish species, what the noise means, and will experiment and figure out what levels are optimal for own fishery.

According to the R&D Director at Scanmar Per Kolbjørn Soglo no one has ever before linked noise to fish behavior in the way it has been done with this system. The interest amongst skippers around the world for this new revolutionary possibility is great and is based on the new understanding of how important the instrument will be for the fishery. It is already broadly expected that Scanmar's noise hydrophone will be standard equipment on fishing vessels in the future. It can be used either as a stand alone system, or together with other Scanmar systems onboard.



Screenshots from ScanNoise System



**SCANMAR**  
YOUR EYES UNDER WATER

www.scanmar.no/en

# From the East to the West

Quality-Conscious New Builds choose Scanmar



**Araho**  
Seattle, US  
59 m  
Built in 2015  
Owner: O'Hara Corp.  
(Natural Env.Research Council)



**Kolkoz Andeg**  
Murmansk, Russia  
60 m  
Built in 2016  
Owner: Andeg Fishing Collective



**Kings Cross**  
Peterhead, Scotland  
78 m  
Built in 2016  
Owner: Lunar Fishing Company Ltd  
Wiseman Fishing Company Ltd



**Pathway**  
Peterhead, Scotland  
78 m  
Built in 2017  
Owner: Lunar Fishing Company Ltd  
Peterhead, Scotland



**Mark**  
Rostock, Germany  
86 m  
Built in 2015  
Owner: P&P Netherlands



**Kronprins Håkon**  
Tromsø, Norway  
90 m  
Built in 2017  
Owner: Polar Institute NO  
(Fed. Office for Agriculture and Food)



**Dr. Fridtjof Nansen**  
Bergen, Norway  
57 m  
Built in 2017  
Owner: Havforskningsinstituttet,  
NORAD



**Borkur**  
Neskaupstadur, Island  
80 m  
Built in 2014  
Owner: Sildarvinnslan HF



**Sigurdur**  
Vestmannaeyjar, Iceland  
80 m  
Built in 2014  
Owner: Isfelag Vestmannaeyjar HF



**Rammi TBN**  
Thorlakshofn, Iceland  
80 m  
Built in 2017  
Owner: Rammi HF



**R/V Tamgu**  
Pusan, Korea  
64 m  
Built in 2015  
Owner: NFRDI



**Oshoro Maru**  
Hakodate, Japan  
78 m  
Built in 2014  
Owner: Faculty of Fisheries,  
Hokkaido University



**Ruth**  
Hirtshals, Denmark  
88 m  
Built in 2016  
Owner: Rederiet Ruth A/S



**Beinur**  
Hirtshals, Denmark  
78 m  
Built in 2016  
Owner: P/R Beinur



**Ferox**  
Cape Town, South Africa  
45 m  
Built in 2015  
Owner: Irvin & Johnson Ltd.



**Jean Pierre Le Roch**  
Lorient, France  
33 m  
Built in 2015  
Owner: Scapêche