

## Pontoon boost for Scottish Sea Farms

SCOTTISH Sea Farms is successfully operating an innovative new pump-ashore pontoon system that enables salmon to be efficiently transferred from a wellboat straight into the company's processing plant at South Shian, near Oban.

The pontoon puts Scottish Sea Farms in a leading position in ensuring that harvested salmon reaches its customers quickly and in the best possible condition. The innovation has delivered improved fish quality, and research findings have confirmed the welfare advantages of the system.

Designed and built by Fusion Marine, the 215m pontoon features a unique closed circulation system, with the seawater that is pumped-out with the fish being returned to the wellboat. The water then undergoes an ozonation treatment before being discharged thereby preventing any risk of cross-contamination between fish farms.

The wellboat, the 40m *Ronjaskye*, was specially designed and built in Norway last year to work compatibly with the pontoon. Since becoming operational in September 2001, the pontoon has consistently been able to pump ashore up to 20 tonnes per hour whilst still providing optimal conditions for the fish.

The pontoon had to comply with strict planning guidelines, with its black



*The pontoon has provided a major boost for Scottish Sea Farms*

polyethylene construction offering considerable advantages over traditional steel in ensuring that the structure blends in well with the surroundings.

Ian Armstrong, Scottish Sea Farms processing manager at South Shian, said: 'It was essential to work with a reliable and proven supplier because it is vital for our customers that there is no interruption in our harvesting

process. The system supplied by Fusion Marine is extremely durable and is working well. The pontoon has provided a safe and stable platform in even the most inclement weather conditions thereby permitting continuity of supply throughout the winter. The welding system used by Fusion Marine minimises any risks of leakage and protects the quality of our product. We are extremely pleased with the results achieved.'

## Fusion to the rescue!

WHEN British Waterways requested help to solve a problem on a stretch of the River Carron near Grangemouth Fusion Marine was only too happy to help.

At Kerse Road Bridge British Waterways was seeking to introduce a protective fendering system under its narrow arches to protect passing vessels. Fusion Marine devised a solution involving three 250mm polyethylene pipes, the outermost ones at either end of the narrow stretch being set at an angle so as to gently lead craft in under the arch centres.

Sales Director Alan MacLeod said: 'Polyethylene is the ideal material for this kind of work – it is tough but has enough yield to prevent damage to boats.'



## **Important role in developing Iranian aquaculture**

FUSION Marine is set to play an important role in the development of aquaculture in Iran following an invitation by the country's fisheries department to run a two-week training seminar.

The Department of Fisheries of Iran asked Fusion Marine to organise two courses, one directed at aquaculture in the Caspian Sea to include salmonids, and the other for marine species relevant to the Persian Gulf, including grouper and sea bream.

The training will be delivered by Fusion Marine staff and associated experts and co-ordinated by the company's International Aquaculture Consultant, Professor Carmelo Agius. Fusion Marine has conducted similar courses in the last few years, including for the Fisheries Department of Turkey.

Iran has enormous potential to develop its aquatic resources through modern technology. It has significant freshwater resources, exploited mainly through inland trout farms, but also has extensive potential for future aquaculture development along its Caspian Sea and Persian Gulf coastlines.

Prof. Agius says: 'Fusion Marine's previous work abroad attracted the Iranians.'



## **New cage system for seal protection**

FUSION Marine has become the exclusive European distributor of a wire cage net that offers several advantages over traditional fish farm cage net systems.

MarineMesh, developed by Australian company OneSteel, consists of interlinking metal wire mesh which provides protection against seal attacks and dramatically reduces fouling. Its intrinsic weight and strength makes it ideal for use in exposed sea sites.

Fusion Marine International Aquaculture Consultant Professor Carmelo Agius, who has been closely involved with the development of MarineMesh, says that while the system is more expensive than traditional netting, its durability, and predator protection and anti-fouling properties makes it more cost effective in the longer term.

'While traditional netting is lighter to handle, it has a number of drawbacks such as damage by predators, fish with sharp teeth chewing their way through them, and general wear and tear leading to a short life,' he says.

Fouling is reduced with MarineMesh

because marine organisms find it hard to gain purchase on the smooth metal wire.

Prof. Agius says: 'Fouling of nets has long been one of the greatest and most expensive problems faced by fish farmers, particularly in warmer waters.'

'Fouling reduces water flow through the net and therefore water exchange resulting in reduced oxygen replenishment and increased waste accumulation. This leads to stress and disease.'

'MarineMesh has huge potential in certain environments where fish farming has previously been out of the question. It suits predator infested areas and also high energy environments where strong tide and currents can damage nets.'

As well as sea bream, the new net system is particularly well suited for species such as grouper which like a stable and quiet environment, and flatfish such as turbot.

Fish farms which still prefer to use nylon or polyethylene cage nets can use MarineMesh as perimeter netting for protection against predators.

## **Leading role in tuna farming**

FUSION Marine is set to take a lead role in the development of tuna farming both in the Mediterranean and elsewhere. The Oceanflex cage design is being seen as ideally adapted for tuna farming; its unique combination of strength and flexibility enables it to survive in rough open seas as well as the towing

stress over hundreds of miles.

Tuna are caught from the wild and after transfer to the cages are towed to their moorings - sometimes over hundreds of miles away.

Projects are now underway in many Mediterranean countries such as Turkey, Malta and Libya where the highly prized bluefin tuna is farmed.

Enquiries are also being received from further afield relating to the yellowfin tuna. Serious enquiries have, for some time, been pursued from Indonesia, Hawaii and Venezuela. Fusion Marine has managed to establish itself at the forefront of this technology early on in this fast developing sector.

# Square cage cod farming unit for Lakeland wins high praise

AQUACULTURE producer Lakeland Marine is set later this year to make its first ever harvest of cod. The fish have been grown in a Fusion Marine square-cage system, which according to Lakeland manager Owen Powys has played a major role in ensuring the success of the project.

The 5m x 5m cages, grouped in a unit of four and situated at Kilmartin south of Oban, were specifically designed for Lakeland's cod growing project, with the pioneering company intending to start harvesting the first fish around Christmas.

Owen Powys says: 'We are very pleased with the square-cage system supplied by Fusion Marine. It's well constructed and withstood last winter's storms with great ease. The unit forms a good stable work platform, which is important in cod culture because of the amount of grading required in the early stages of cod development.'

'As a company committed to the protection of the environment we don't like using



Iain Forbes of Fusion Marine, left, with Owen Powys of Lakeland Marine

antifoulants on the nets and having four cages together enables us to easily move cod from one cage to another to allow a net to dry and clean itself.'

Fusion Marine general manager Iain Forbes said: 'Lakeland is playing a major role in the development of cod farming in

the UK and we are delighted to be involved at such an early stage. They came to us looking for a cage design suitable for the site and it's good to see that the system is working well.'

The first harvest is expected to consist of approximately 100 tonnes of three-kilo fish.

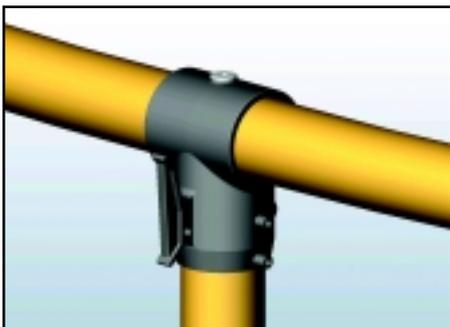
## Fish farm cage fittings bring advantages

A STANCHION 'Top-T' for use on cage handrails has been developed offering several important benefits for fish farm operators. The Top-T is particularly suitable for exposed sites.

The special welded fitting technology utilised means that installation and repairs can be carried out on cages at their sea sites, which reduces costs.

Fusion Marine has also developed an electro-fusion stop for base units. The unit comprises of a small welded fitting which permits joint integrity.

Fusion Marine has developed a range of options for customers who prefer socketed stanchions and loose handrails for their varied sites and operations.



The Top-T, above, and the test rig, right, for testing and improving cage parts

## ***Big brother is coming!***

FUSION Marine is developing a new cage design for offshore use. Based on the company's highly successful Oceanflex 315, the new 450 cage system will be much larger and capable of handling some of the toughest sea conditions.

'This is the big brother to our highly successful Oceanflex design,' says managing director, Stephen Divers. It is designed specifically for exposed conditions, and as well as being ideal for offshore salmon farming operations, we see it as having considerable potential for tuna farming, given the large holding capacity of the system.'



The base unit of the new 450 cage, far back, compared with current systems

# Cage nets and rigging - the only barrier to stock losses

NETS are the only barrier to stock losses, and as such their performance is critical. Although every practical fish site manager will have developed his own ideas of hanging, rigging and weighting these nets, there are some important principles which should not be violated, especially in sites with strong currents and higher offshore wave climates.

- Cage nets generate huge loads on the cage collar during heavy wave motion and strong currents. During high waves, the strongest components of force are usually in the vertical direction. If the collar buoyancy causes the collar to be accelerated violently upwards as a wave crest approaches, the vertical heave loadings on the nets and net attachment points are very high. It is for this reason that the principle net loads must be carried on the cage collar, and **NOT** on the collar stanchions.

- In the highest wave climates, it may be necessary to 'de-couple' the nets from the cage collar by installing net float lines and allowing the collar to respond separately and differently to the net. However, the Jumper Net must always be set up slack, so that the heave loads are not transferred to the stanchions, whose



function is **NOT** to support the nets.

- In strong currents, the net loadings are angled downward, and become increasingly angled towards the horizontal with increasing currents. In very strong currents the Net Weight Ring is deflected upwards, and the cage net will 'billow' through the spaces between the normally vertical Weight Ring suspension ropes.

This 'billowing' contact can cause abrasion damage to the nets on the down current side of the cage, and on sites where this is a regular occurrence, consideration should be given to strengthening the nets on the 'critical' sides, perhaps with panels of sacrificial net, or by adding a smooth plastic or 'Baggy-wrinkle' covering to the Net Weight Ring suspension ropes.

- The trend towards larger cages and nets has increased the use of mechanical handling by workboats cranes and winches. Consequently the incidence of mechanical damage has increased. Nets which are regularly changed by crane or winch must be manufactured with a sufficient number of suitably strong bolt ropes and 'hooks' on eyes.

- Divers must inspect and report on nets and net damage on a regular basis. Some species actually 'chew' the nets, causing damage. Certain areas have predators, which can make holes in the nets. Mechanical net cleaning, or air lifting mortars can cause significant net damage.

- Nets exposed to excessive UV radiation will be rapidly weakened, and this is a major problem in the more sunny Mediterranean climates.

Onshore, nets **MUST** be stored away from exposure to UV radiation. In any case, it is good practice to have all nets 'tagged' with their date of manufacture, and fish farm history of use. For a small sum, hand held machines are available for testing the strength of a net's mesh.

## New appointments spur growth



STEVEN Murphy has been appointed to the new role of Operations Manager.

Steven (36), who lives in Benderloch, joins the company after spending the last 13 years as a flight operations manager with the Royal Air Force.

In his new role, Steven will be in charge of all aspects of fabrication work, as well as meeting clients and undertaking site surveys.

STEVEN Greener, 33, has joined as Internal Sales Co-ordinator – a newly created position in the company that will form an important link between field staff and customers.

He has a good knowledge of the fish industry having worked for eight years in accounts, sales and logistics with Hydro Seafood GSP and latterly with Lorne Fisheries.



NEIL Blackadder has joined Fusion Marine as Technical Sales Engineer. Neil has 16 years experience in the aquaculture industry.

In a varied career Neil has been closely involved with fish farm feeding systems and has also been involved in a large number of fish farm projects in countries such as Malta, Libya, Kuwait, Canada and Oman.

**Contact  
Fusion  
Marine @**

Fusion Marine Ltd, Marine Resource Centre, Barcaldine, Oban, Argyll, PA37 1SH.  
Tel: 01631 720730 Fax: 01631 720731 email: enquiries@fusionmarine.co.uk

**www.fusionmarine.com**