MacArtney
UNDERWATER TECHNOLOGY

In Depth

Q1 2010

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Drilling deeper and smarter - the future of the oil and gas industry

Listening and understanding

As oil and gas suppliers venture into deeper and deeper water to tap into new oil and gas reserves, they rely increasingly on their suppliers and partners for high technology and integrated systems to ensure reliability and economy.

Other industries too need advanced and reliable systems built with a thorough understanding of the particular challenges they face with underwater equipment.

Finding, building and supplying the perfect solution for any customer – from the fishing industry to deep water offshore oil and gas – relies on our ability to listen to our customers needs and to work together to find the right supply.

This listening stage is critical. It is the stage where the outcome of an entire project is based.

Sometimes it is at this stage that a potential sale of parts can turn out to be an exciting project where we work together with the customer to produce an engineered, final product.

MacArtney's ethos has, from the very beginning, been to understand customer needs and to meet them.

As we feel shoots of optimism spire in the underwater technology industry in this first quarter of 2010, we will continue to listen to our customers to ensure that we offer the best possible solutions.

Niels Erik Hedeager, CEO

Driven by higher yields and enabled by technology, the oil and gas industry is changing. Over the last two decades, the depth of oil and gas wells has increased and production from deep water wells now accounts for almost a million barrels of oil and 4 billion cubic feet of natural gas per day.

Drilling at such depths is made possible by the technical advance and highly engineered technical solutions that have been developed over the past two decades.

Technology leads drilling deeper and smarter into areas never before viable.

Accessing and tapping oil and gas resources in very deep waters present a whole new set of challenges.

For the MacArtney Group, this move is into familiar waters. The company has been working with oil and gas for over 30 years and in deep water technology for decades and is no stranger to the challenges particular to deep water operations.

High production rates lead the way
Driven partly by falling yields in shallow waters and partly by the prospect of higher yields, the oil and gas industry is gradually moving towards deep water operations.

Deep water, 1500 metres and deeper, and now ultra-deep water, 3500 metres or more, are becoming increasingly common.

This is especially true in the region of the Gulf of Mexico, where approximately 30% of deep water wells are located.

New deep water discoveries here promise much larger yields than shallow water discoveries and the average deep water oil well produces about 25 times more than shallow wells.

Conditions in deep water present a unique challenge and deep water drilling is only made possible by technology and the industry is reliant on continuing technological advances to access increasingly deeper waters.

The materials traditionally used in shallow drilling face an entirely different environment in deep waters and the entire subsea production process is much more automated and remotely controlled.

As subsea equipment moves further and further away from operators at the surface, transferring power and data reliably becomes more and more critical, as does the assimilation of a myriad of data threads from highly sophisticated instruments below the waves.

The MacArtney Underwater Group's high technology products and solutions are well suited to operations in deep and difficult conditions.

Their fibre optics, systems, connectors and cables transmit data over longer and longer distances back to the surface and assimilate a wide range of different types of data for access on the surface.

Their range of handling systems, including the acclaimed Active Heave Compensation range of winches, is engineered to meet the requirements of controlling subsea equipment in the harshest of environments to ensure complete reliability and minimal downtime.

They also provide infrastructure for deep water applications, where valves and oil supply are controlled from bases on the seabed.

Drilling smarter to maximise yield
Technology has also had an enormous impact on drilling precision and efficiency.

Seismic imaging gives engineers highly accurate pictures of oil and gas pockets and drilling activities and allows them to evaluate and assess a vast array of data from subsea instrumentation precisely.

Seismic technology makes pinpointing new pool discoveries accurate to within less than 50 metres, making accessing new pockets faster and more efficient.

Technology also means that drilling gets the maximum possible yield out of every location.

MacArtney supplies seismic cables, connectors and terminations on the air gun cables that blast powerful shock waves into the seabed and on the cable arrays that gather the returning echoes and relay the information back to the surface.

Their slip rings transfer power and data through the cable on the winch to onboard instruments.

Helping the industry indeep water
As drilling gets deeper and smarter, the oil and gas industry relies on technology and reliable infrastructure to work at great depths and to operate underwater instruments from the surface.

For underwater technology experts like MacArtney, this move is into familiar territory in which their tried and tested products and systems combined with expert engineering and project management helps oil and gas suppliers to work in the challenging, underwater environment.

The MacArtney Underwater Technology Group provides expertise and supply for:

- Riser monitoring
- Drilling control
- Subsea production control
- Seismic infrastructure
- CSEM (controlled source electromagnetic)
- Inspection, repair and maintenance
- Survey
- Decommissioning
- Engineering and project management

Revolutionary SumWing® trawling system reduces costs and improves catch quality

In potentially the biggest change in recent fishing history, a new trawling method stands to have a double benefit for fishermen, reducing fuel costs by half and improving catch quality.

The new method that eliminates chain dragging on the seabed also protects the seafloor environment and reduces unwanted species catch.

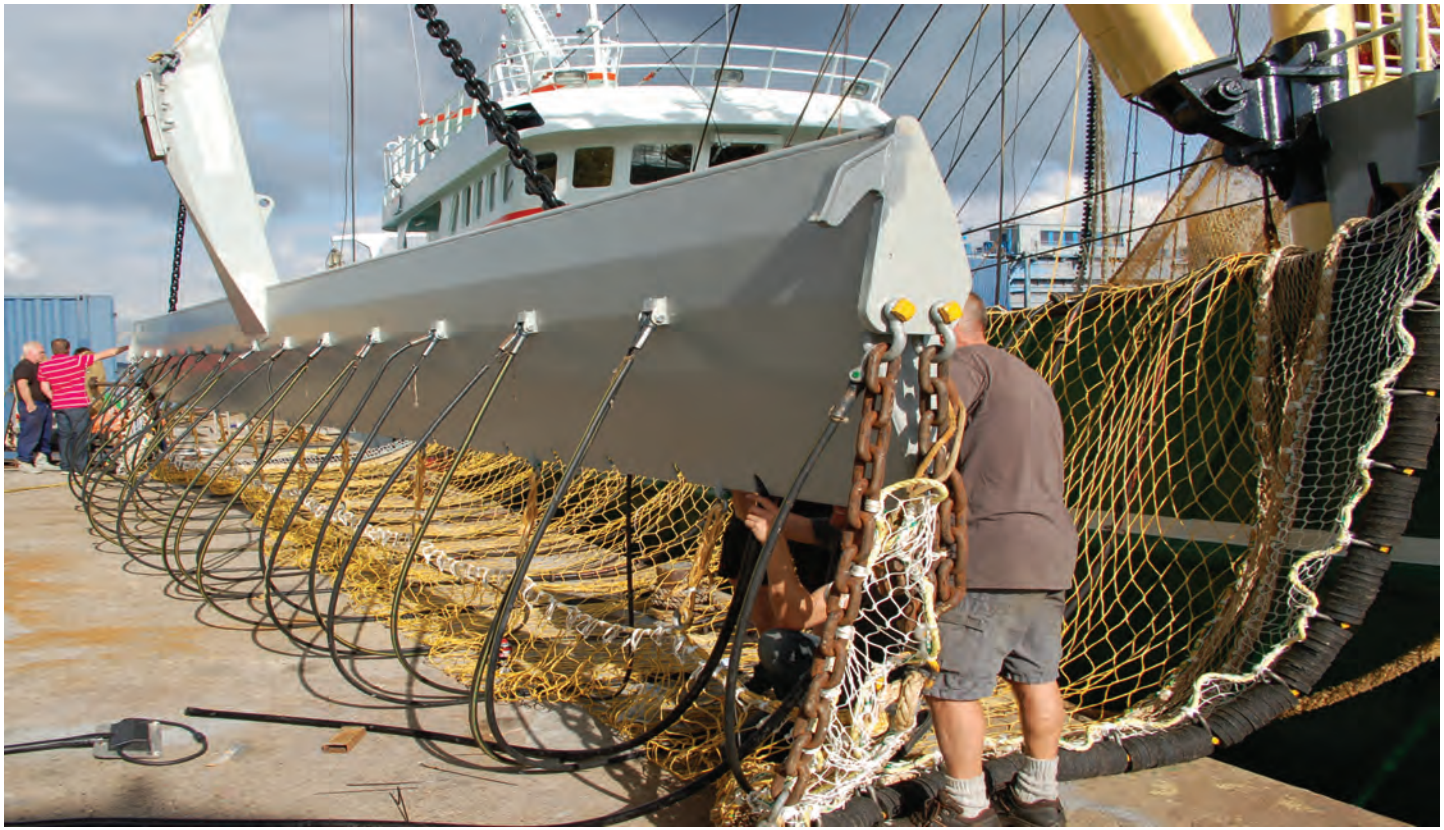
Halving fuel costs
Fishing is a tough industry and keeping costs down is essential for ensuring economic viability.

Traditional trawling methods for catching flatfish require high levels of power to drag a network of a steel beam with chains along the sea floor to scoop up fish from the sea bed.
Dragging these enormous, heavy systems across the mud, sand, rocks and other seafloor surfaces can cost up to 20,000 litres of fuel a week on trawling vessels.

The new trawling system, the SumWing®, can cut fuel consumption by 50%. The revolutionary trawling boom glides above the sea floor using the same technique as an aerofoil on an aeroplane.

Instead of steel chains, a number of streamers are attached to the SumWing®.

MacArtney Benelux helped the move from the design board to reality.



The streamers send out bursts of electrical pulses that make fish swim up from the floor bed and into the path of the gliding net. Drag from the seabed is eliminated and fuel consumption dramatically reduced.

Protecting fish quality
Getting fish in the net is just one aspect to fishing. The value of a catch is dependent on the condition of the fish because the fish that are caught need to be in good enough condition to be sold.

Chain trawling can cause bruising and damage to the fish, which makes them unfit for sale as whole fish, lowering the value of the entire catch.

The new SumWing® eliminates the dragging damage caused by chains. It stuns the fish up from the seafloor without touching or dragging, leaving the fish intact and conserving the value of the catch.

Avoids unwanted species catch and protects seabed
Traditional trawling methods drag everything up from the seabed regardless of species. The catch can often include unwanted fish types, star fish and corals.

The damage caused by the trawler can also be extensive as the top layer of seabed is dragged up. This damage could have long term issues in areas where corals and other seabed species are endangered.

By gliding above the sea floor, the SumWing® avoids contact with coral and seabed based life. Sea urchins, starfish and other unwanted seafloor life are not dragged up from the seabed. The seafloor is also spared the disruption caused when swept by chains.

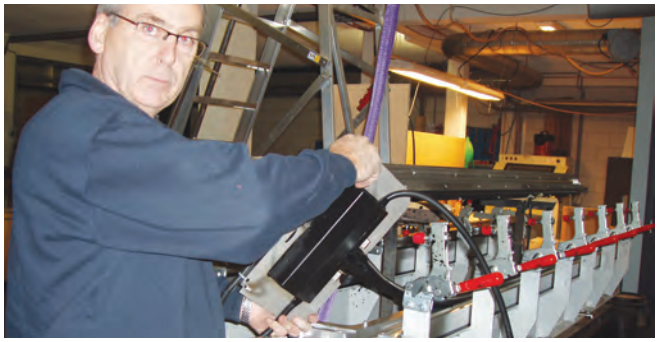
Advanced design and production
The ingenious SumWing® system was designed by HFK Engineering with technical assistance and advice from the engineers at MacArtney.

The Dutch operation of the MacArtney Underwater Technology Group has the exclusive rights to produce and supply the SumWing® system worldwide and has invested in advanced production techniques to ensure quality and uniformity.

MacArtney has supplied systems for 3 vessels in 2009 and have already received orders for 2010.

Top left: 30 electrodes are fitted to each of the 2 trawler booms in the system to catch fish without touching the seabed.

Bottom left: The production system has been custom designed and combines new engineering and tried and tested technology.



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Problem solvers by nature

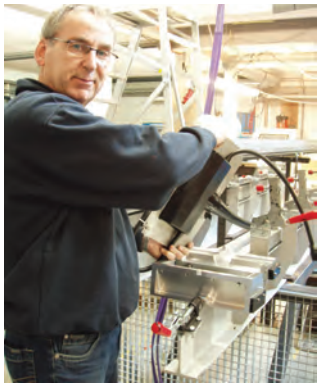
The Dutch are problem solvers by nature. When they need more land – they reclaim it. With the benefit of hundreds of years experience, the process is well-engineered and thoroughly followed through down to the smallest detail because defence against the sea is only as strong as its weakest link.

In some areas the reclaimed land lies several metres below sea level.

This approach to problem solving is part of the culture of the low lands and is reflected in the working spirit at the Netherlands branch of MacArtney.

Based on the outskirts of Rotterdam, the Dutch operation of the MacArtney Underwater Technology Group is especially well-geared to special projects and non-standard products.

Water, water everywhere
Not surprisingly, with so many canals and drainage land, dredging and diving are important business areas for MacArtney. Diving in turbid waters can be a hazardous task and the risk of lines becoming entangled in underwater



obstacles is a constant threat in the many waterways in the Netherlands.

MacArtney designs and produces a number of underwater video and camera systems that make diving safer and easier.
They relay images from underwater cameras to the surface that can spot obstacles or alert topside teams of entanglement risks.

The SumWing® project
One of their latest projects, the SumWing® cooperation, owes its success to MacArtney's engineering ballast and ability to listen to customer needs.

"It would have been easy just to sell the parts that the customer first requested but by listening and talking to the customer, HFK Engineering, we were able to cooperate to produce an excellent final product.

The idea was excellent – what we added was engineering know how and several decades of experience with underwater connectors and cables," explains Managing Director for MacArtney Benelux, Ron Voerman.

"One of our real strengths here at MacArtney is our ability to look at a challenge and find a good, viable solution."

On the move
MacArtney operations in the Netherlands will be moving into new, larger premises in the first half of 2010.

The much larger site will boast a large, well-equipped electronics and moulding workshop, increased storage space and spooling service and a pressure tank large enough to accommodate a cable reel.

MacArtney Group news

MacArtney UK
David Buchan
Managing Director
United Kingdom

Since the last issue of In-Depth, MacArtney UK has been successful in securing a Technology Contract from the ETI (Energy Technologies Institute) to design, develop and test a new generation of underwater mateable high voltage stab plate connector.

This contract is worth in excess of £ 1 million and will provide to the renewable energy market a quick and easy way of connecting their generating equipment to export cables.

At MacArtney UK in Aberdeen all our workshops remain very busy and we are all looking forward to a successful 2010.

EurOceanique
David Mazzochi
Managing Director
France

Despite a down market, EurOceanique have shown a reasonably good result for the 2008/2009 financial year.

We are optimistic and enthusiastic about the 2009-2010 result and are now seeing some delayed projects coming back to life.

The marketing is a challenging one but our entire team is motivated and targeted towards offering continually improving service to our customers.

MacArtney Norway
Anders Andersen
Managing Director
Norway

2009 saw good results for MacArtney Norway and in addition we received a " Gaselle – bedrift " certificate. A Gaselle certificate is an annual award given to the top 2% of companies in Norway.

MacArtney Norway is delighted to be amongst those companies that doubled their turnover over the last 4 years.

New invitations to quote for several complete systems for underwater equipment and a stable oil price over 70$ US per barrel indicate the beginning of renewed optimism in the Norwegian market.

MacArtney Benelux
Ron Voerman
Managing Director
The Netherlands

We are pleased to announce that we are starting the new year with a new Sales Manager.

Erwin van der Schee, who joined us on the 4th of January, will be a valuable asset to our team and will be responsible for Internal Sales, Contracts and Marketing.

Marcel Kints, who started with us 2½ years ago, will be responsible for Projects and Ocean Science. We wish both of them all the best in their new positions

We start 2010 with some very exciting projects that were started in 2009 and hope to add more during the year.

MacArtney Offshore
Chris Howerter
Managing Director
United States

Already business has picked up in our new larger facility in Houston and we are having great success with our Active Heave Compensated ROV winch systems and our nicely packaged Cormac systems. Our upgraded NEXUS multiplexer systems are also proving very successful and our service facilities are ready for business. Stop by for a tour and see what MacArtney has to offer the Gulf Coast area.

We will be at Underwater Intervention in New Orleans.

Something to look out for: Fully certified API compliant electrical connector range.

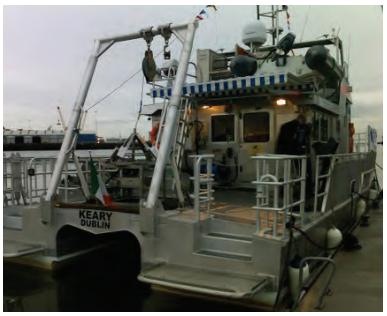
MBT GmbH
Torsten Turla
Managing Director
Germany

We are proud to have received an order for a Triaxus ROTV with side scan sonar, CTD, LOPC, camera and standard alone NEXUS multiplexer from the Institute for Baltic Fisheries.

The Institute for Baltic Sea Fisheries is an independent research institution specialising in research on the development of commercially valuable stocks of fishes and invertebrates and monitoring of fish assemblages in European Seas, the North Atlantic and Antarctic Ocean. They work with management models, fisheries oceanography and climate change.

Latest news in brief

MacArtney equipment mapping seabed in and around Ireland



The inshore waters of Ireland are areas of enormous activity and value. Yet more still needs to be learned about the seabed to ensure that effective resource management supports present and future economic and environmental issues. MacArtney supplied sonar equipment is mapping the seabed both in and around Ireland onboard the Celtic Explorer.

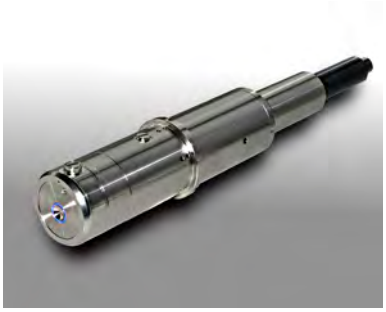
MacArtney opens new subsidiary in Brazil

The MacArtney Underwater Group has strengthened its presence in South America with the opening of a new sales office in the major offshore Brazilian city of Rio de Janeiro headed by General Manager, Marcio Robles. Expansion into the area will be further supported by a workshop in Macae that will provide MacArtney standard service locally.

MacArtney Offshore relocates and scales up

MacArtney Offshore, the Houston operation of the MacArtney Underwater Technology Group, has moved into larger premises. With more than double the capacity of the previous site, MacArtney Offshore will offer even better services to its customers and local access to global MacArtney capabilities. The move significantly increases workshop and storage capacity from 4500 sq ft to 11,000 sq ft.

ETI and MacArtney announces technology project to significantly reduce subsea cable costs for marine energy devices



The wet-mate connector project could considerably reduce the cost of cabling from offshore wave and tidal farms to the shore by allowing cables to be connected on the seabed and increasing the voltage rating. A project which could considerably reduce the cost of cabling from offshore wave and tidal farms to the shore has been announced by the Energy Technologies Institute (ETI).

Read the full story on www.macartney.com under the “news” section

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