MacArtney
UNDERWATER TECHNOLOGY

In Depth

Q3 2009

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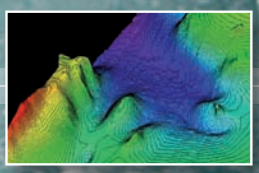
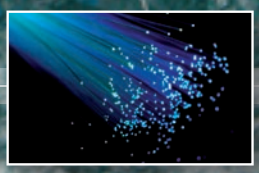





Expert advice and integrated systems are key

Supplying solutions

In the underwater technology industry, products are rarely bought alone off the shelf. More than likely they are part of a package of items that make up a system.

Underwater instruments need lowering into place on the sea bed or in the water; information from instruments needs to be sent, received and assimilated by multiplexers and computers; ROVs need launching into the water and recovering again and underwater cables and monitoring stations need testing and support.

Providing solutions for the underwater technology industry therefore often means providing full system packages and new developments. Sometimes these system packages are made up of MacArtney produced products alone, but often they are systems that encompass other manufacturers' proven technology that need to be integrated into one full working system.

One of the MacArtney Group's strengths is its ability to integrate complex systems and instruments into a package that is easy to use and more importantly reliable.

Experts in all fields within sales, engineering, project management, manufacturing and testing, quality assurance and support work together to produce and support these onshore and offshore systems and products.

Such coordinated efforts are reliant on good communication and mutual respect both within the group and towards our customers and suppliers. We have always felt that customers can feel the difference.

Niels Erik Hedeager, CEO

MacArtney designed towed vehicles can carry a range of measuring devices and control their towing to ensure their exact dynamic position.

With 70% of the surface of the planet covered by water, there can be a myriad of reasons for needing to know what is happening beneath the waves. From monitoring ocean life to underwater mining, the waters on our planet, their dynamics and the life in them are under the spotlight of a whole host of interested industries and scientific institutions.

Supplying complete solutions
Ocean science projects often involve the measuring of several parameters simultaneously. Arranging an array of devices into a system or set of systems requires precise engineering and a thorough understanding of underwater dynamics. Systems also need to be lowered into position, launched or towed in the water. Data needs to be transmitted or stored and information needs to be assimilated.

The MacArtney Underwater Technology Group has been working in the harsh underwater environment for over 3 decades and has offered specialised expertise within the ocean science sector for over 9 years.

They are globally recognised for their expertise in integrating various instruments, both their own instruments and those made by other producers, into reliable, useable ocean science systems.

Instruments and moorings
Along coastlines, in vulnerable natural areas or in areas considered for marine construction, rows or groups of moorings are used to monitor the life and dynamics underwater. They collect a vast range of data, from salinity to turbidity of the water and wildlife movement.

They are invaluable tools both in monitoring existing dynamics and in predicting the effect of marine building – for example in bridge or port building.

MacArtney has supplied instruments and assisted with designing arrays for mooring projects worldwide, and most recently in connection with monitoring of the Fehmarnbelt, detailed above. Moorings can also run horizontally and monitor shallower water, for example in connection with dredging projects.

Expert advice can be essential for a project.

Trusted worldwide
From complete packages, including launch and recovery and data assimilation, to sensors and components, MacArtney Underwater Technology expertise and systems have been installed worldwide and trusted by industries and institutions to provide reliable and accurate data on what is happening beneath the waves.

MacArtney offers:
Underwater instrumentation: Profiling CTD systems, moorings, ADCPs, transmissometers, analysers, water samplers • Telemetry systems • Towed vehicles (Triaxus, Focus) • Complex system integration • Consultancy

MacArtney supply to help predict impact of Fehmarnbelt Link

Before building the new transport link from Denmark to Germany over the Fehmarnbelt, detailed studies of the current environment need to be performed.

MacArtney A/S has been chosen to advise and supply instruments and infrastructure (underwater cables, connectors, terminations, etc.) to monitor life and flow in the strait.

This information will help planners choose which kind of link to build and document any environmental changes it brings.

Monitoring before, during and after
Building any construction in a marine environment affects water current and marine wildlife.

Decisions about which type of link to build cannot be made until accurate projected effects of the marine construction are monitored.

MacArtney supplied instruments will provide information invaluable for the investigation of the before, during and after effects of the construction process and the final link.

The right partner at the design stage
Getting the right advice and choosing the right partner at the start is essential for the success of long term projects.

The computer models that will predict the effect of a construction in the strait are reliant on the data collected at this initial stage.

MacArtney A/S has helped to design and supply the monitoring stations to be placed in the strait and at the points where a bridge or tunnel is likely to be built.

Their experts assisted on selecting and designing the best ways to measure environmental conditions (including current, temperature, salinity and oxygen) on the array of underwater stations in the strait, and were there from the planning stage.

MacArtney has more than 3 decades of experience in underwater technology, and has worked on several similar projects, including the Oresund Bridge.

Their in-depth knowledge of the underwater environment and oceanographic measuring systems and sensors made them the perfect choice for this project.

"We are delighted to be working on this exciting project," explains MacArtney CEO Niels Erik Hedeager, "our systems and infrastructure will assist in the gathering of detailed quantitative data for modelling and predicting the effects of a bridge or tunnel link in the strait.

The bridge consortium will be able to base their decision on what type of link to build on more precise information than ever before possible."

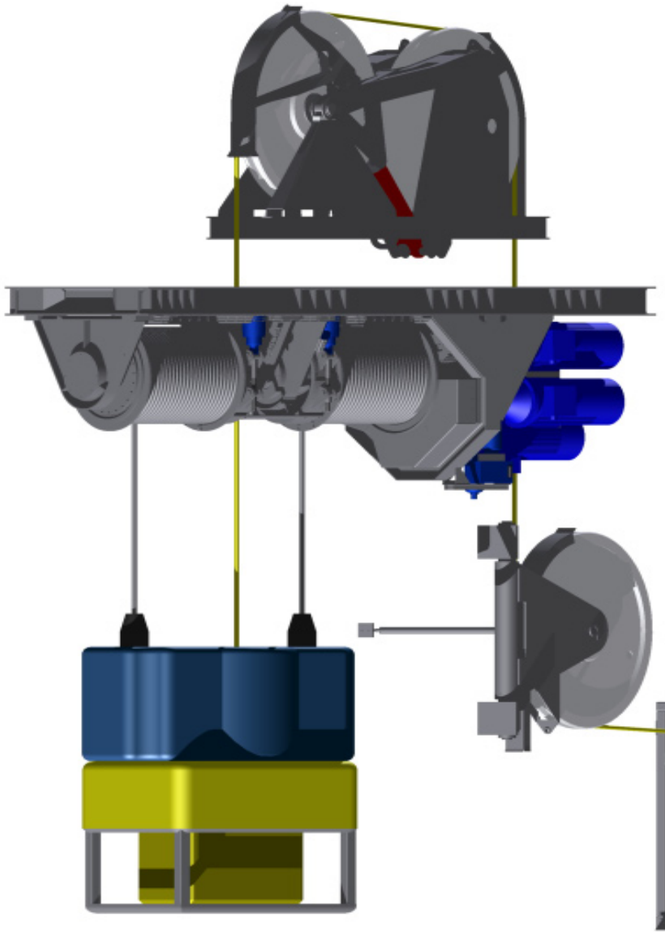
MacArtney supply for the first stage
The complete system for the Fehrmarnbelt consists of 10 stations situated along the Danish and German coast lines of the strait and 3 in likely bridge or tunnel positions.

They will measure environmental conditions and send real time information to monitoring stations.

MacArtney supply includes:
- CTDs (30+) for moorings
- Kevlar infrastructure cables
- Connectors
- Winch and CTD with water sampler

Profiling CTD systems and NEXUS telemetry systems were an important part of the Galathea expedition, sampling and testing water and assimilating valuable information on the oceans.

MacArtney supplies visionary launch & recovery system



Already from the initial contact from Acergy, engineers and experts at MacArtney recognized that this system was destined to perform like no other.

Months on, the system is performing excellently and Acergy are very happy with the performance so far.

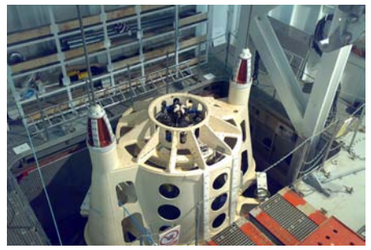
"This ingenious design allows ROV launch and operation in sea states far out of the reach of ordinary vessels."

MacArtney's latest supply to the new Skandi Acergy, one of the world's best equipped offshore construction vessels, brought launch and recovery systems into an entirely new dimension.

2 complete twin systems of 3 harmonised winch arrangements operate work class ROVs through the middle of the vessel, allowing for deployment in very heavy seas.

Beating heavy seas
Normally, ROV systems are launched from the aft of a vessel or over one of the sides using Active Heave Compensation winches that allow them to operate in heavy seas.

When Acergy acquired the Skandi they envisioned a system that could go beyond the current limit and designed a launch and recovery system that would launch ROVs through a fully automated moon pool system in the centre of the vessel.



Protecting the ROV
Often the most risky part of an ROV dive is the launch and recovery. Winds and sea swell have an enormous effect on the launch, operation and recovery of tethered vehicles from a vessel. In heavy seas, pitch and roll can alter the position of a vehicle in relation to the water by many metres in seconds, causing potentially damaging snatch loads.

Strong winds can also cause unwanted movement of suspended equipment and very strong winds can even render launching impossible.

Launching the vehicle from the centre of the vessel minimises the effect of sea conditions as the centre is the most stable place in regard to both pitch and roll. It also provides protection from the wind.

This ingenious winch and control system allows ROV launch and operation in sea states far out of the reach of ordinary vessels. Combined with AHC, the launch and recovery system provides the ultimate protection for the ROV during the launch and recovery period.

Each of the twin systems installed on the Skandi is designed for sea states equivalent to significant wave heights of 6 metres [Hs 6].

The protected launch and recovery significantly extends the operational window, reducing costly down time.

Precise and complex system synchronises ROV launch
The system of winches and sheaves used to launch the ROV through the centre of the vessel employs three different types of winches that run at different speeds.

The control system includes functions, such as opening and closing the moon pool doors and automated ROV orientation and emergency recovery features.

Making this design work together as a fully automated system required precise, advanced engineering and project management.

Amazingly simple to operate
This MacArtney made system synchronises the functions and performance levels of the entire system whilst integrating a host of non-MacArtney supply features.

The easy to use interface proves that even complex systems with sophisticated launch and recovery sequences can be user friendly.
Once the parameters have been set on the Graphic User Interface, the fully automated launch and recovery sequences can be set in motion with just a few button presses.

A new take on pre-function testing underwater umbilicals

Subsea 7, leading subsea engineering and construction company, and their customer, are delighted with their new self-contained underwater umbilical testing system.

A new take on pre-function testing, the new self-contained system envisaged by Subsea 7 and engineered by MacArtney, takes testing to the sea bed, making it faster and more convenient to test in situ.

Taking testing below water
At depths of around 380 metres, newly installed umbilicals in the Vega field in the Norwegian sector of the North Sea can be a challenge to test.

Traditionally such testing requires one end of the cable to be attached to a ship on the surface, where insulation and conductor resistance and time domain reflectometry can be measured.

Subsea 7, leading subsea engineering and construction company, has taken a new approach to in situ testing and together with underwater technology company, MacArtney Norway, designed an entirely new way of measuring cable function. Instead of bringing the umbilical to surface to test, the new system will lower testing connectors down to the cable.

Lowering testing equipment to the seabed will save time and lower costs.

Turning concept into reality
MacArtney designed a self-contained testing system with an electrical and fibre optic downline. The connector garage is lowered to the umbilical by winch and attached to connectors on the umbilical by ROV.

Much like an underwater extension cable, the self-contained system measures insulation resistance, conductor resistance and time domain reflectometry.

The topside junction is placed and operated on the vessel and is designed to operate even during harsh weather conditions.

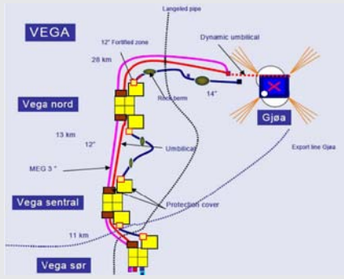
The subsea junction box can withstand pressure of at least 50 bar and can be operated at depths of at least 500 metres.

The system tests the umbilical section-by-section, pre-commissioning the entire length of the umbilical flow line system before it is taken into use.

MacArtney supply:
- Topside junction box
- Winch
- Downline cable with reel
- Electric and fibre optic stress terminations
- Connector basket and subsea junction box

The Vega Project
Subsea 7's umbilical system for the Vega Project, a daisy chained installation including flow line expansion spools, static umbilical, dynamic umbilical and a 3" ID MEG line, is being installed during the 2009 season.

At depths of approximately 380 metres in Norwegian sector of the North Sea, the installation will service the new Gjøa floating production platform.



Success comes from within

About MacNorway

- Established in 1994, MacArtney Norway was the first MacArtney subsidiary
- MacArtney Norway employs 26 people in the workshop, warehouse and office
- Located in Stavanger, the current premises cover approx. 1200m^2
- The Managing Director in Norway is Anders Andersen

Norway's secret to success
Anders Andersen, Managing Director, is in no doubt why MacArtney Norway has been successful over the last fifteen years since it changed from being a sales office, started in 1985, to a fully fledged subsidiary in 1994:

"Martin "Mac" MacArtney let me in on the secret when I joined the company 27 years ago. The secret is to put the customer first and make sure they get at least what they need."

It's not new thinking but it does require continual focus and an organisation that understands the importance of communicating properly and giving exceptional service.

"And this comes from within – colleagues need to communicate properly with each other, treat each other with respect and provide each other with the service that they need.

Customers can feel when an organisation works properly because the service that they receive reflects the way in which the company works."

MacArtney Norway's excellent service and products have made it one of the leading suppliers of underwater technology equipment in the competitive Norwegian market.

Larger premises will augment services
Building of new premises is due to start in spring 2010 and will give MacArtney Norway even more space to offer service and workshop space.

New capabilities will include a new pressure test tank, a test pool, fibre optic room, a large department for servicing electrical and fibre optic slip rings and much needed warehouse and stock space.

The new purpose built building at 2500m^2 will be more than double the 1200m^2 currently at their disposal.

Available from MacArtney Norway
• Cable moulding and encapsulation
• Electrical and optical connectors
• Cables and terminations
• Winch and handling systems
• Electrical and optical slip rings
• Cameras and lights
• Sonar systems and acoustics
• Multiplexer and control systems
• Engineering and services
• ROV and ROTV systems
• Lease pool

MacArtney Group news

MacArtney UK
David Buchan
Managing Director
United Kingdom

Financial year 2008/9 is set to be the second best result for MacArtney UK ever. Our new pressure test facility is in regular use and now has a dedicated full time technician, and the fibre optic workshop is also busy with orders for the reliable and rugged Optolink connectors. Interest in MacArtney system solutions for high voltage/current connections in the renewable energy sector is also keeping us busy.

We are pleased to welcome Andy Smith, who joined our sales team in August and has been thoroughly trained in the broad range of systems and products supplied by MacArtney.

EurOceanique
David Mazzochi
Managing Director
France

It is now almost a year since we built our new workshop and it has proved to be a great success from day one. Our workshop has been busy from the start, and as growth continues we are in the process of hiring an additional workshop technician.

We are also currently implementing additional services, including fibre optic and stress termination capabilities. These services will be operational by early 2010.

Our customers' feedback is very positive in regards to the quality and reactivity offered, and have even requested more services, including pressure testing.

MacArtney Norway
Anders Andersen
Managing Director
Norway

The renewable energy sector is a continually growing market in Norway and this sector is ideally suited to MacArtney as much of its existing product range is geared for transferring energy underwater. Designing and providing the right packages is very important in this sector, and our engineers draw on their expertise and experience to work with customers to provide the best solutions for their designs.

The need for packages extends into other business areas, including winches and launch and recovery systems, and we are increasingly working with customers to provide entire systems.

MacArtney Benelux
Ron Voerman
Managing Director
The Netherlands

MacArtney Netherlands has been working on an updated, improved version of the underwater video unit, the Video Mac C2. The new self-contained video unit will run 2 cameras and 2 lights via a PC based splash proof unit that is easy to use – even when wearing diving gloves.

Specially designed software makes the system easy to use with 3 options; start recording, stop recording and capture image. All other parameters are preset. The unit is ideal for the diving industry and for those who need to record underwater video data. The system has already proved popular, with 3 units sold already.

MacArtney Offshore
Chris Howerter
Managing Director
United States

We are delighted to announce that MacArtney Offshore will be moving premises at the beginning of November 2009.

Our new premises are 11,000 square feet (approximately 1220m2), three times larger than our existing base.

The new premises are currently being adapted to suit our requirements and will greatly expand our capabilities in the US.

Our new address is:
2901 W. Sam Houston Parkway N.
Suite D - 260
Houston TX 77043

MBT GmbH
Torsten Turla
Managing Director
Germany

Within next few weeks an MVP 200 system will be added to our rental pool of instruments. The MVP 200 is equipped with a sound velocity profiler.

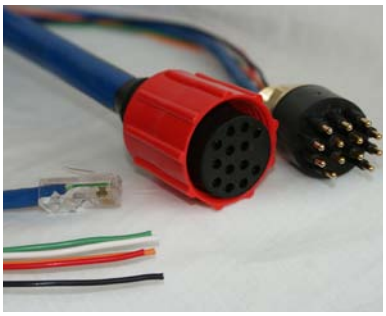
The MVP system is an ideal add-on to increase the performance of any multi beam echo sounding system. The MVP 200 will be fully refurbished and updated.

We will be able to accept rental orders from November 2009.

Please contact Andreas Reikowski on +49 431 7207 200 or by email at: ar@macartney.com

Latest news in brief

SubConn®'s new combined Power and Ethernet Cable makes data transmission faster and less expensive



In response to growing needs in the ROV industry, SubConn® has developed and manufactured a new combined power and data cable.

ROVs and other underwater equipment can now be powered through the same cable used for data transfer.

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

This newsletter is produced by the MacArtney Underwater Technology Group • MacArtney A/S, Gl. Guldagervej 48, 6710 Esbjerg V, Denmark • Editor: Stephanie J. C. Pedersen • Editor in chief: Niels Erik Hedeager, CEO