

In Depth

Online at www.macartney.com/in-depth

Issue 1, 2013



Local service - Global support

Theme: MacArtney service and support facilities worldwide, pages 4-8



What's in a solution?

Having recently opened a new subsidiary in Singapore, MacArtney is continuing to successfully expand its global presence within the market for underwater technology.

The overarching incentive for pursuing this strategy is based on our appreciation of the importance of local presence and service to operators within our industry. The fact that the MacArtney network of subsidiaries and representatives span the entire globe, enable us to provide what we call 'local service with global support'.

This means that when MacArtney supply a solution - the scope of commitment goes well beyond the mere supply of systems and products.

Both before and after our dedicated sales and engineering specialists hand over a project, MacArtney workshop and support facilities, manned by highly trained technicians, are ready to provide a wide range of value and reliability enhancing services. These services include system integration, mouldings, termination work, slip ring repair, electronics engineering, calibration, installation, pressure testing, equipment maintenance and much more. If a task cannot be performed locally, the global MacArtney network of expertise is on 24/7 standby to readily find a solution.

At MacArtney, we are proud of our ability and dedication to provide local service and global support for operators of MacArtney products and system solutions across the world. Through this issue of In Depth, I am pleased to share some insight into the facilities and capabilities that make this possible.

Niels Erik Hedeager, CEO

Featured products and solutions

New OptoLink Hybrid Connector

In response to the ascending demand for flexible and reliable subsea connectivity solutions - the MacArtney Underwater Technology Group introduces a hybrid addition to its established OptoLink fibre optical connector range.

The new OptoLink Hybrid Connector is a combined power and fibre solution designed to meet the multifaceted requirements of the subsea offshore industry. Featuring 7 power contacts and up to 4 fibre optical passes for communication and control of equipment, the OptoLink Hybrid Connector minimises the number of connectors needed to operate subsea systems.

Critical connections

Featuring a compact, however, rugged design that is ideal for securing critical connectivity and optimal design for underwater equipment solutions, the new connector is especially applicable for ROV control applications, ocean observatories, dry-mate in-line and hub terminations for renewable energy applications and subsea control and monitoring systems.

The OptoLink Hybrid Connector is tested to ensure reliability and performance under harsh maritime conditions. The connector, along with the appurtenant subsea PUR cable, has an operational depth rating of 4000 metres. In addition, the connector has a high operational



▲ The OptoLink Hybrid Connector is the latest addition to the MacArtney OptoLink range

voltage and a power rating of 10 A per power contact. The fibre optical passes of the connector are based on state-of-the-art expanded beam lens technology - with low attenuation and back reflection.

The MacArtney OptoLink range

With the OptoLink Hybrid Connector, MacArtney brings together years of experience with OptoLink fibre optic connectors and highly reliable subsea power and signal connectors. The OptoLink fibre optic connector range was first introduced in 1986, with the launch of a multi mode connector - and the single mode version was added in 1996. Ever since, the OptoLink range has been regarded as a market leading underwater fibre optical connector solution.

Market interest from day one

The new OptoLink Hybrid Connector has managed to raise global interest from day one and a number of systems were quickly ordered by a Chinese operator, to interface a research institute TMS solution.

Russian institute chooses MacArtney

The leading Russian State Scientific Centre Yuzhmorgeologiya (YMG), has recently placed a significant order for SubConn® and Burton™ connectors, to interface its underwater equipment.

YMG is active in the offshore geophysical industry, hereunder in exploration of resources on the continental shelf and in oceanographic surveying. YMG takes pride in performing comprehensive deep-water surveys, using in-house

developed surveying systems, hereunder several ROVs and sophisticated towed instrumentation systems operable at depths of up to 6000 metres. In total, YMG operates 4 specialised vessels and 110 items of equipment. Several of these are interfaced by MacArtney connectivity solutions.

According to YMG Deputy General Director (R&D and Science), Andrey Tarasenko, 'achieving safe and reliable

LUXUS Cameras and Lights for DCN Diving project

In early December 2012, Dutch subsea service provider, DCN Diving, required the assistance and service of MacArtney Benelux, to co-design and build an extensive range of underwater technology equipment for use on a major project.

Challenge, solution and equipment

DCN Diving had been called upon to perform a diver-habitat based inspection and repair of the inlet channels at a large power plant in Wilhelmshaven, Germany.

For this task, DCN chose to use two caterpillar tracked water powered diver support habitats. Each habitat supports three divers. Two divers perform work outside, while the third is on standby. The supply of air, communications, lighting and camera control is managed

from a surface pontoon. The role of MacArtney was to supply a complete solution including cameras, lights, controllers, brackets, accessories and dive umbilicals for interfacing the habitats.

Specifically, each habitat was fitted with a LUXUS Compact Camera and LUXUS Compact LED inside the habitat. On top of the habitat (outside), two LUXUS Wide Angle LEDs and two LUXUS Compact Cameras (aimed front and back) were mounted. This allows the standby diver to safely control the habitat in low visibility environments, such as the inlet tunnels, while maintaining visual contact with the divers working on the outside. Moreover, the divers working outside have a LUXUS Compact Camera/LED

set clicked on their helmet. All the LUXUS lights can be dimmed separately, and all LUXUS camera images are display and recorded at the dive control located on the surface pontoon.



▲ MacArtney LUXUS products were widely used on the DCN habitats

MacArtney upgrades SAAB Sea Owl ROV system

MacArtney Norge has a long standing relationship with ROV manufacturer SAAB Seaeye - and the two companies have worked together on numerous projects related to the production, maintenance and sale of the versatile Sea Owl 500 observation class ROV system. Now MacArtney and SAAB Seaeye have developed an upgraded XTi version which, while staying within the realm of the original and proven Sea Owl 500 design, features significant upgrades of all system facets.

The Sea Owl

The Sea Owl system was developed by SAAB in the early 90's and has since proved itself as an extremely reliable and also a very popular ROV among its users. Applications include observation and inspection of subsea installations and light work tasks in challenging

environments. The primary market for the SeaOwl is firmly rooted on the Norwegian Continental Shelf and the XTi has been developed to meet the requirements of operators who perform subsea work on behalf of, for instance, Statoil. Among the new features, the XTi boast a 360 degree control programme (6 DOF), a 3000 metre depth rating and a 400 metre tether length on the top-hat TMS. In addition, the SAAB Seaeye ICON control system enables easy integration of sensors. Finally, tooling package application is made even more flexible and user-friendly.

To realise this exciting system upgrade, MacArtney Norge has worked closely with the MacArtney Group HQ in Denmark - to develop a complete LARS and handling system that meets customer 'No Manual Handling' and HSR requirements.



▲ MacArtney LARS system for the Sea Owl XTi ROV and TMS

The entire solution is marketed by MacArtney Norge and is now available for delivery. Already, MacArtney is experiencing significant interest among existing as well as new customers.

connectivity solutions for harsh environment applications

connection and sealing of instruments is a key to success in any survey operation. At deep water, high pressure and extreme temperature variations are serious issues. YMG uses MacArtney connectivity solutions, as they warrant excellent performance and reliability under these harsh conditions'. At the moment, YMG is implementing a programme to prospect cobalt-rich crusts and sulphides in a harsh Pacific environment. For this task, YMG is

developing custom ROVs and towed systems on which MacArtney connectivity products will be widely used. Finally, the specialist service and advice delivered by MacArtney also plays a key role in YMG's choice of supplier. According to Mr. Tarasenko, 'MacArtney engineers and commercial specialists are professionally attentive to YMG challenges and technically complicated requests - while always ready to offer immaculate solutions for them'.



▲ The PT 2500 ROV - an example of YMG systems interfaced by MacArtney connectors



1 - DENMARK

MacArtney A/S (HQ)

Esbjerg, +45 7613 2000, info@macartney.com



- Sales support (all MacArtney products)
- Advanced workshop (see page 6)
- Fibre optic workshop and testing
- Electronics workshop and testing
- Moulding and termination facility
- ROV/ROTV workshop
- Side scan sonar maintenance and repair facility
- Winch and handling system maintenance and repair facility
- Static and dynamic winch and handling system testing facility
- Pressure testing facilities (400, 650 and 800 bar)
- Cable spooling and tensioning facility
- Pull/stress test facility (40 ton)
- Test pool (8x3x3 metres)
- Sensor calibration facility
- Corrosion and debonding test facilities
- Standing stock of cables and connectors (SubConn®, OptoLink, MacAPI,...)
- Field installation and engineering support
- Engineering and project management department
- 24/7 emergency support
- Access to global MacArtney support network

2 - NORWAY

MacArtney Norge AS

Stavanger, +47 5195 1800, mac-no@macartney.com



- Sales support (all MacArtney products)
- Advanced workshop (see page 6)
- Fibre optic workshop and testing
- Electronics workshop and testing
- Slip ring repair facility
- Moulding and termination facility
- ROV workshop
- Pressure testing facility (300 bar)
- Test pool
- Sensor calibration facility
- Standing stock of cables and connectors (SubConn®)
- Extensive equipment rental pool
- Field installation and engineering support
- 24/7 emergency support
- Access to global MacArtney support network

3 - UNITED KINGDOM

MacArtney UK Ltd.

Aberdeen, +44 (0) 1224 358 500, mac-uk@macartney.com



- Sales support (all MacArtney products)
- Advanced workshop (see page 6)
- Extensive moulding and termination facility
- Fibre optic workshop and testing
- Electronics workshop and testing
- Slip ring repair facility
- Machining facility
- Pressure testing facility (600 bar)
- Test pool
- Standing stock of cables and connectors (SubConn®, OptoLink, MacAPI,...)
- Field installation and engineering support
- 24/7 emergency support
- Access to global MacArtney support network

4 - NORTH AMERICA

MacArtney Inc.

Gulf of Mexico, Northeast, Pacific Northwest and West Coast Operations

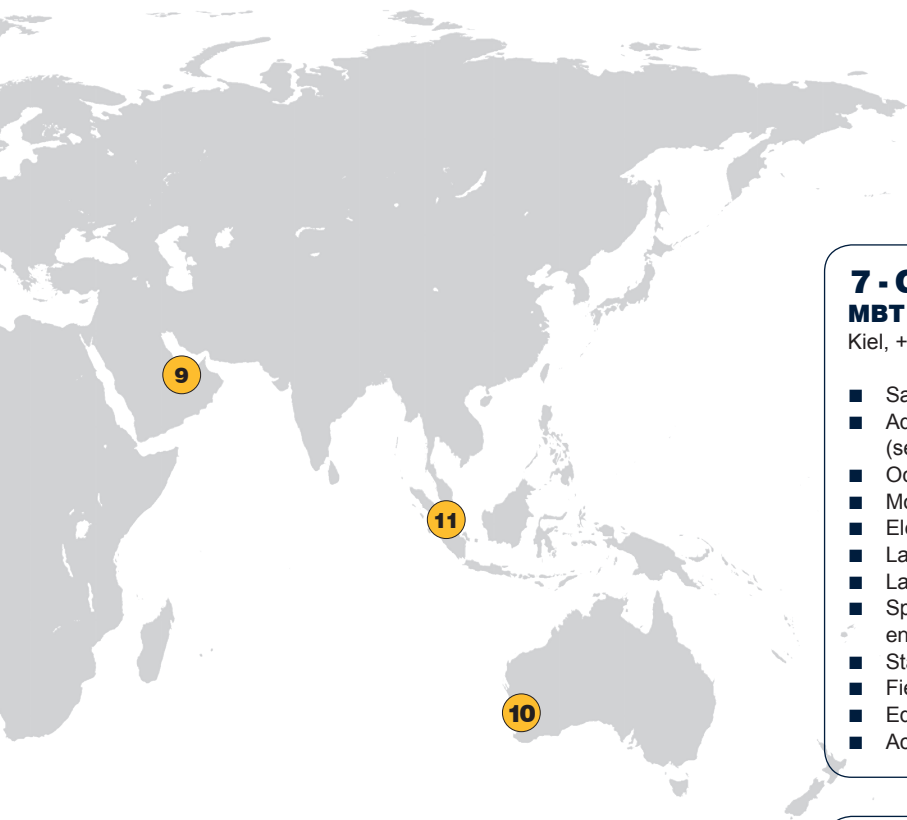
+1 713 266 7575, mac-usa@macartney.com



- Sales support (all MacArtney products)
- Advanced workshop (see page 7)
- Fibre optic workshop and testing
- Electronics workshop and testing
- Slip ring repair facility
- Moulding and termination facility
- Mobile workshop facility (on location support) (see page 7)
- Standing stock of cables and connectors (SubConn®)
- Field installation and engineering support
- 24/7 emergency support
- Access to global MacArtney support network

Theme: Local service - Global support

MacArtney service and support facilities worldwide



5 - FRANCE

EurOceanique S.A.

Rousset, +33 (0) 442 394 985, mac-fr@macartney.com



- Sales support (all MacArtney products)
- Advanced workshop (see page 7)
- Fibre optic workshop and testing
- Electronics workshop and testing
- Slip ring repair facility
- Moulding and termination facility
- Pull/stress test facility
- Pressure testing facility (600 bar)
- Standing stock of cables and connectors (SubConn®)
- Field installation and engineering support
- Access to global MacArtney support network

6 - BENELUX

MacArtney Benelux BV

Rotterdam, Brakel
+31 10 2041166, mac-nl@macartney.com



- Sales support (all MacArtney products)
- Advanced workshop (see page 8)
- Moulding and termination facility
- Electronics workshop
- Workshop for electrical fisheries equipment
- Slip ring repair facility
- Pressure testing facility (100 bar)
- Standing stock of cables and connectors (SubConn®)
- Field installation and engineering support
- 24/7 emergency support
- Access to global MacArtney support network

7 - GERMANY

MBT GmbH

Kiel, +49 (0) 431 535500 70, mac-de@macartney.com



- Sales support (all MacArtney products)
- Advanced sensor and equipment calibration facility (see page 8)
- Ocean science equipment maintenance and service facility
- Moulding facility
- Electronics workshop and testing
- Laboratory pressure testing facility
- Laboratory testing bath facility
- Specialist oceanography, applied physics and engineering staff
- Standing stock of cables and connectors (SubConn®)
- Field installation and engineering support
- Equipment rental pool
- Access to global MacArtney support network

8 - SOUTH AMERICA

MacArtney do Brasil Ltda.

Rio de Janeiro, +55 22 9244 7138, mac-br@macartney.com



- Sales support (all MacArtney products)
- Access to global MacArtney support network

9 - MIDDLE EAST

MacArtney Middle East

Hamela, + 973 39023234, mac-me@macartney.com



- Sales support (all MacArtney products)
- Access to global MacArtney support network

10 - OCEANIA

MacArtney Australia Pty. Ltd.

Perth, +61 (0) 862 58 5670, mac-au@macartney.com



- Sales support (all MacArtney products)
- Standing stock of connectors (SubConn®)
- Access to global MacArtney support network

11 - SOUTHEAST ASIA

MacArtney Singapore Pte. Ltd.

Singapore, +65 6542 4500, mac-sg@macartney.com



- Sales support (all MacArtney products)
- Advanced workshop (see page 8)
- Moulding and termination facility
- Standing stock of cables and connectors (SubConn®, OptoLink)
- Field installation and engineering support
- Access to global MacArtney support network



Theme: Local service - Global support

1. MacArtney AS (Group HQ)

Established in 1978, the MacArtney Underwater Technology Group headquarters in Esbjerg, Denmark, provides global support to group subsidiary companies in Norway, Benelux, the UK, France, Germany, Brazil, Australia, Bahrain, Singapore and the United States and to underwater technology customers across the world.

MacArtney A/S holds extensive in-house workshop and service facilities as well as external services readily available for sea trials, environmental testing and corrosion monitoring. A fully trained service team



▲ MacArtney fibre optics technician

is available, at short notice, for in-house or on site repairs, maintenance and system integration.

Workshop services and specialities:

Standard and special cable and connector mouldings • Kevlar and steel stress terminations • Fibre optics work • FITA terminations • Dynamic cable tension cycling and pull tests • Cable spooling • High depth pressure testing • Test pool equipment trials • Slip ring installation, termination, servicing and retrofitting • ROV and ROTV repair and maintenance • Side scan repair and maintenance • LARS and winch system repair and refurbishment (mechanical, electrical, software and hydraulics) • Multiplexer servicing and assembly • Corrosion and debonding testing • Full service, maintenance and repair of all MacArtney and supplier products • Electronic engineering • Field installation and engineering support.

All test equipment is calibrated and documented according to MacArtney's ISO 9001 certified QA system.



▲ ROTV and multiplexer maintenance

2. MacArtney Norge AS

Established as a sales office in 1985, MacArtney Norge marks the first international subsidiary of the MacArtney Group. Conveniently located in Stavanger, MacArtney Norge AS serves the Norwegian market for underwater technology.

Workshop services and specialities:

Kevlar and steel stress terminations • Cable and connector mouldings • Custom designed cable assemblies • Fibre optics work • High depth pressure testing • Test pool equipment trials • Multiplexer servicing and assembly • Slip ring repair and maintenance • Sensor calibration • ROV and LARS systems maintenance and repair • Full service maintenance and repair of all MacArtney and supplier products • Electronic engineering • Field installation and engineering support



▲ Before and after - MacArtney workshop technician Pavel Boris is satisfied with the work he has done to refurbish and upgrade the plastic hull of this SAAB SeaOwl ROV.



3. MacArtney UK Ltd.

Aberdeen has been the home of MacArtney UK operations since 1999 and is currently the largest group operation outside Denmark.

MacArtney UK Ltd. offers a wide range of design and engineering resources backed by the global MacArtney network. MacArtney UK can design and deliver complex system solutions for applications in all marine market sectors.

Workshop services and specialities:

Standard and special cable and connector mouldings • Kevlar and steel stress terminations • Machining • Fibre optics work • FITA terminations • High depth pressure testing • Slip ring repair, installation, termination, maintenance and retrofitting • ROV repair

and maintenance • LARS and winch system maintenance and repair • Multiplexer servicing and assembly • Full service, maintenance and repair of all MacArtney and supplier products • Electronic engineering • Field installation and engineering support

► The pressure testing facility at MacArtney UK offers live electrical, optical and visual monitoring of equipment



4. MacArtney Inc.

MacArtney Inc. was founded in Houston, Texas, in 1995 to serve the Gulf of Mexico offshore and geophysical markets.

Today, MacArtney Inc. operates four dedicated offices which are all conveniently located near the major underwater technology hubs of North America, more specifically, in Houston (Gulf of Mexico Operations), Pembroke (Northeast Operations), San Diego (West Coast Operations) and Victoria, Canada (Pacific Northwest Operations). This coast-to-coast presence represents a true dedication to providing local service with global support.

Workshop services and specialisation:

Stress terminations of steel and Kevlar cables • Fibre optics work • FITA terminations • Standard and special mouldings • Soldering • LARS and winch system repair and maintenance • Slip ring repair and retrofitting (large inventory in stock) • Full service, maintenance and repair of all MacArtney and supplier products • Electronic engineering • Field installation and engineering support

Mobile workshop facilities

The latest addition to the MacArtney Inc. portfolio of local service initiatives is the brand new Mobile Workshop. Based in Houston, this flexible and versatile service platform enables MacArtney Inc. to bring underwater technology service and support to customers' facilities in any corner of the Gulf of Mexico area. The mobile workshop performs a vast array of repair and maintenance tasks, including cable terminations, electrical and fibre optic tests - all within a controlled environment.

At the time of writing, the Mobile Workshop is performing a variety of tasks for GE Hydril, including work on FITA terminations for BOP shut down. Specifically, the job includes lifting, cleaning, prepping, soldering, crimping, potting, fibre break out and testing.



▲ Above: MacArtney Inc. technicians working on a FITA termination for GE Hydril. Below: The MacArtney Inc. Mobile Workshop brings underwater technology service and expertise to customer locations

5. EurOceanique S.A.

EurOceanique SA, part of the international MacArtney Underwater Technology Group, was founded in France in 1994 to serve the underwater technology markets+ in Southern Europe

Operating from modern facilities, located in Rousset, Aix-en Provence, EurOceanique's experienced technical, sales and administrative staffs offer service and support the complete MacArtney range of products and systems.

▼ In-house pull bench facility



▼ In-line termination (renewable energy application)



Workshop services and specialities:

Standard and special cable and connector mouldings • Terminations • Special in-line terminations for renewable energy applications • High depth pressure testing • Stress terminations on kevlar and double armoured steel cables and electro-optic and mechanical export cable terminations • Pull testing • Fibre optics work • Slip ring repair and maintenance • Electrical and optical wiring of junction boxes • Maintenance and assembly of ROV tether • Full service maintenance and repair of all MacArtney and supplier products • Electronic engineering • Field installation and engineering support



6. MacArtney Benelux BV

MacArtney Benelux BV, established in 1998, represents the full commitment by the MacArtney Underwater Technology Group to support the unique offshore and waterway markets in the Netherlands and Belgium. Conveniently located in Rotterdam, MacArtney Benelux houses modern sales, administration and technical facilities as well as an experienced staff.

Workshop services and specialities:

Standard and special cable and connector mouldings (including special engraved moulds) • Kevlar and steel stress terminations • Dive umbilical assemblies • Fibre optics work • LUXUS Cameras, Lights and Controllers repair and maintenance • High pressure testing • Slip

ring repair and maintenance • Winch repair • Repair and maintenance of electrical fishing equipment • Sonar maintenance • Multiplexer servicing • Full service, maintenance and repair of all MacArtney and supplier products • Electronics engineering • Field installation and engineering support

► Cable termination at MacArtney Benelux



7. MBT GmbH

Based in Kiel, Germany, MBT GmbH became part of the MacArtney Group in 2000 and represents an ongoing commitment to fully support underwater technology markets in Germany, Austria and Switzerland.

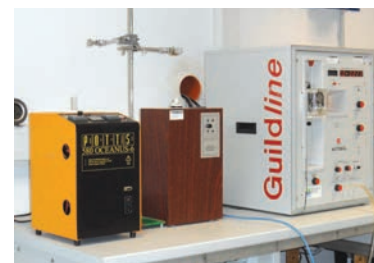
Central to MBT operations is a state-of-the-art calibration and service laboratory which is available to the entire MacArtney Group. The laboratory specialises in manufacturer-independent calibration of CTD and SVP probes and offers maintenance and repair of several different types of oceanographic and hydrographic instrumentation including multi-beam echo sounders, side scan sonars, ADCPs, LISST particle analysers and nutrient analysers.

The laboratory is fully air-conditioned and offers three salt baths for calibration of conductivity and four stabilized temperature baths as well as one bath for temperature calibration of large probes. As the laboratory offers military standard (mil-std) services, calibration of speed-of-sound and seawater density probes for navy submarines are among the main areas of application - along with CTD probes of different

survey companies. Several of MBTs staff have a strong background in oceanography, applied physics and electronic engineering, thus providing expertise and experience not only with respect to the scientific aspects of the calibration procedures but also in evolving the laboratory.

Workshop and laboratory services and specialities:

Cable and connector mouldings • Side scan sonar and echo sounder maintenance • Installation of instruments and integration of components on existing platforms • Maintenance of in-situ nutrient and particle analysers • Maintenance of oceanographic sensors, laboratory pressure testing • Mil-standard services • Calibration of CTD and SVP probes • Conductivity calibration • Temperature calibration • Pressure calibration.



▲ Above: Guildline 8400 Autosol, Isotech Gallium melting point cell (left) and Isotech triple point cell (middle) for temperature and conductivity calibration reference. Below: Budenberg pressure balance for calibration of pressure



▲ Temperature and salinity baths at the MBT calibration laboratory

11. MacArtney Singapore Pte. Ltd.

Inaugurated in March 2013, MacArtney Singapore marks the latest addition to the global network of MacArtney subsidiaries.

Located in the offshore hub of South East Asia, MacArtney is set to serve regional underwater technology customers within Singapore, Malaysia, Thailand, Cambodia, Vietnam, Brunei, Indonesia and the Philippines.

Besides a dedicated sales office, the new subsidiary also comprises of warehouse and workshop facilities.

Workshop services:

Terminations • Cable and connector mouldings • Equipment maintenance • Field installation and engineering support



▲ MacArtney Singapore provides moulding services to regional customers

Corporate news

MacArtney adds Burton™ Subsea Connectors to underwater connectivity range

The MacArtney Underwater Technology Group has entered into a distributor agreement with Cooper Interconnect, hereby adding Burton™ subsea connectors, penetrators and accessories to the MacArtney range of underwater connectivity solutions.

As an official distributor, MacArtney will keep a standing stock of Burton™ subsea connectors for immediate delivery at several worldwide MacArtney locations including Denmark, Norway and the UK. The MacArtney stock of Burton™ connectors will focus particularly on the 5500 and 6600 series.

According to MacArtney Group CEO Niels Erik Hedeager, "MacArtney is always looking to provide existing and potential customers with an exhaustive selection of reliable underwater connectivity options". Being a high quality product, featuring high pin-counts, Burton™ subsea connectors are a good addition to existing SubConn®, OptoLink and MacAPI connector solutions available exclusively through MacArtney.

Moreover, Mr. Hedeager emphasises that "MacArtney is looking forward to a long-time partnership with Cooper Interconnect and sees the distributor agreement as a good opportunity to expand MacArtney's scope of support to an even larger share of the



▲ Burton™ connectors add even more depth to the MacArtney connectivity range

market for underwater technology - especially with an eye to equipment operators that currently rely on Burton™ connectivity solutions".

Burton™

As part of global connectivity manufacturer Cooper Interconnect (Cooper Industries), the Burton™ brand holds recognition within the subsea world - offering reliable connectors for demanding applications. Burton™ subsea connectors and penetrators are precision manufactured from stainless steel and integrally moulded elastomeric materials and are widely used in all underwater environments.

MacArtney named partner on WindFloat project

After being awarded a Department of Energy grant worth \$4M and up to \$47M in total funding, to support its WindFloat Pacific Demonstration Project, renewable energy technology developer Principle Power went on to announce a list of official project partners - all marked to deliver an essential contribution to the WindFloat project.

MacArtney Underwater Technology is proud and pleased to feature on this list and to be a part of such a promising and large-scale project.

The WindFloat project

The WindFloat Pacific Demonstration Project is centred around a 30MW floating offshore wind farm, planned to be located approximately 25 kilometres west of Oregon's Port of Coos Bay.

To date, due to technology and project economics, offshore wind farm locations have been limited to environmentally and stakeholder sensitive shallow inshore waters. However, based on a patented floating foundation for offshore wind turbines, the innovative features of the WindFloat allow turbines to be placed at deep water locations, out-of-sight, where the wind is stronger and more consistent.

The WindFloat offers considerable economical advantages over traditional offshore wind solutions, since the entire turbine and floating foundation is built and assembled on shore, and installed using conventional tug vessels. This way, the WindFloat is also a more cost-effective, simpler and less risky

approach to offshore wind development.

A prototype of the WindFloat system has been operating successfully off the coast of Portugal since October 2011. This installation marks the first multi-megawatt offshore wind turbine to be installed without the use of any heavy lift offshore vessels.



▲ WindFloat prototype deployed off the coast of Portugal

A more elaborate scope of work for the Principle Power project, as well as the scope of involvement by MacArtney Underwater Technology, will be finalised in the coming months. More information will follow upon disclosure. Meanwhile, MacArtney remains confident that its underwater technology and connectivity systems will provide a key contribution to the WindFloat project.



Meet MacArtney Singapore

On the 1st of March 2013, the MacArtney Underwater Technology Group announced the opening of a new group subsidiary in Singapore.

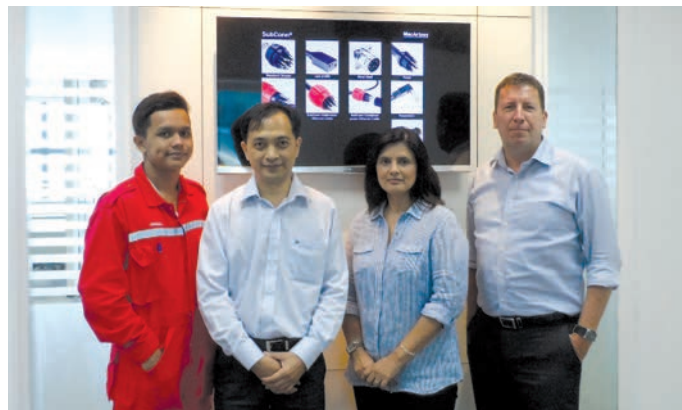
Local access to global support

Strategically located in the major offshore hub of South East Asia, MacArtney Singapore provides an increased regional sales base, offering local access to extensive stock and capacity, resulting in efficient service and prompt delivery to underwater technology customers in Singapore, Malaysia, Thailand, Cambodia, Vietnam, Brunei, Indonesia and the Philippines.

Having recently established a new and successful subsidiary in Perth, Australia - along with two new sales offices in the United States, the new Singapore subsidiary marks a natural continuation of the global growth strategy pursued by the MacArtney Underwater Technology Group. According to MacArtney Sales Manager (Global Representative Network), Steen Frejo, 'being able to combine the provision of true local support with the expertise held by the global MacArtney network, is the overarching incentive behind opening a MacArtney subsidiary in Singapore. Offshore South East Asia represents market of tremendous potential and MacArtney cannot wait to develop even stronger links and relations within this exciting growth region'.

Office, workshop and warehouse facilities

Besides a dedicated sales office, the new subsidiary also comprises of warehouse and workshop facilities. The workshop manages equipment maintenance and offers moulding and termination services for regional customers. The warehouse



▲ The MacArtney Singapore Team. Left to right: Workshop Technician Akmal Syafiq Bin Marzuki, Item Sales Manager Tan Chew Leng, Office Manager Nafisa King and Sales Manager (Global Representative Network) Steen Frejo

carries an extensive standing stock of cables, SubConn® connectors and LUXUS cameras and lights. What is more, as a member of the MacArtney Underwater Technology Group, the new subsidiary provides direct local access to the entire MacArtney portfolio of products and systems solutions - backed by global service, support and know-how for any underwater technology requirement - from individual connectors to complete launch and recovery systems

Newly appointed Item Sales Manager Mr. Tan Chew Leng will function as local contact at MacArtney Singapore. Mr. Leng brings in seven years of experience with underwater technology products in South East Asia.

Featured global network news



Norway

MacArtney Norge AS
Mats Ekström
Managing Director
Stavanger, Norway

At MacArtney Norge, we are currently focusing on consolidating our business and are working hard to become the preferred service partner of underwater technology operators on the Norwegian Continental Shelf. We constantly train our personnel and find new and exciting challenges to work with.

Our updated LARS programme has created a lot of interest in the market and kept us busy with customer visits and meetings. Many customers want specialised solutions and with our modular design we can offer this at an affordable price.

Moreover, we are increasing our efforts related to the observation class ROV area where we, in cooperation with SAAB, have designed the new Sea Owl XTi system to meet Statoil specifications and requirements for this type of ROV. With the Sea Owl XTi, we are able to offer an intelligent handling system that is completely 'no manual handling' during launch and recovery. For the next issue I hope to tell you more about the progress and experiences.



USA

MacArtney Inc.
Lars F. Hansen
President
Houston, USA

After completing the recent expansions, our offices are steadily gaining momentum. Recently, new staff has been added to accommodate increasing sales and support tasks at our Gulf of Mexico and Northeast Operations.

Moreover, we are starting to experience the positive effects of our focus on local presence with global support, which we look to strengthen even more in the future.

One related initiative, which has already been implemented, is the expansion of our agreement with Ocean Innovations to provide service and support for our SubConn® clients in California, Nevada, Oregon, Hawaii along with selected clients in State of Washington. This will enable MacArtney West Coast staff to increase focus on sales of other MacArtney products and systems.

Lunch & Learn with MacArtney Inc.

In March 2013, to mark the recent opening of two new offices on the North American Western Seaboard, MacArtney Inc. Pacific Northwest and West Coast Operations opened the doors to two ambitious events under the theme 'Lunch and Learn'.

Each event was attended by more than 40 industry professionals who engaged in learning, knowledge sharing and networking within realm of underwater technology.

As the main attraction of the events, MacArtney's experienced Technical Director, Steen Worsøe gave a technical presentation on 'Cathodic Delamination' - the invisible 'killer' of rubber moulded connectors and outlined how to identify, understand and prevent this detrimental phenomenon.

The events themselves, and especially the presentation by Steen Worsøe received very positive response and feedback from attendees and did well in terms of generating a good dialogue and useful knowledge sharing with present and new customers regarding their future connectivity needs.

MacArtney is keen to follow up on this, in order to continuously offer a product and system portfolio which is tailor made to suit customer requirements.



▲ Both Lunch & Learn events attracted an impressive audience

Quotes from attendees

Hugh Milburn, Oceanographic Engineer:

'Your event was excellent in many ways. First, it was very interesting to learn about the scope of MacArtney. Most important, was the clear and concise description of cathodic delamination. I think most of us in the audience did not know the mechanism of that problem, and have dealt with it in the wrong manner. It was a great presentation and very relevant for what we do.'

Cyril Poissonnet, CDS - Program Manager, SeaBotix:

'We are part of a small industry, especially in the San Diego area. The Lunch & Learn was an excellent opportunity to network with colleagues in the field while learning technical details about products we all use on a regular basis.'

MacArtney welcomes

MacArtney A/S: Hanne Poulsen • Mads Drachmann • Mikkel Juul • Michael H. Langelund • Jannick Thiim Gadeberg • Laila Lønne • Helle Nedergaard • Lasse Jørgensen • Michelle Green • Morten Tauchi • **MacArtney Norge:** Gina Charlott Bergseteren • Geir Urdal • **MacArtney UK:** Vincent Findlay • Russell Sim • Rae Fraser • Ryan Reid • Steven Stewart • Greg Robertson • **MacArtney Inc.:** Rodolfo Gonzalez • Scott E. Allen • Jennifer Clarkson • **MacArtney Benelux:** Mitchell L. Dankoor • **MBT:** Thomas Sachau • Jörg Brunken • **MacArtney Singapore:** Tan Chew Leng • Nafisa King • Akmal Syafiq Bin Marzuki



France

EurOceanique S.A.
David Mazzochi
Managing Director
Rousset, France

At EurOceanique we are continuously working with the latest projects in marine renewable energy and in 2013, several of these are entering a more concrete phase. We look forward to seeing these projects, on which we have been close partners, becoming real before long.

Furthermore, the telecommunication market has been extremely active over the last months and we have been supporting the major players with our entire range of products and services. Moreover, we keep on developing our position on the defence market having recently been awarded a major contract for complex interconnecting systems - all made and tested locally at EurOceanique.

Finally, our service department will soon be able to offer upgraded slip ring repair as well as new pressure tank facilities featuring testing capabilities up to 600 bars.



Germany

MBT GmbH
Torsten Turla
Managing Director
Kiel, Germany

MBT is currently setting up a moulding workshop in order to support local customers with custom made cables. The opening of the workshop is anticipated for spring 2013.

Moreover, in February 2013, we completed installation, training and survey support of a Reson Sea Bat 7125 multi-beam sonar system which we supplied to the Federal Agency for Hydrography and Maritime Navigation (BSH).

Also in February 2013, we completed delivery and installation of one new and one refurbished hydrographic winch system to BSH.

Sensorbots set the test tank alight at OB 2013

As our understanding and appreciation of the oceans rapidly increases, so does the demand for equipment capable of remotely monitoring this inhospitable and underexplored ecosystem.

For this purpose, scientists at the Arizona State University have developed Sensorbots - a pathbreaking technology that promises to mark the beginning of a new era in ocean sensing.

Sensorbots, how do they work?

Sensorbots are small, transparent spherical devices equipped with variety of surface mounted sensors for measuring various analytes such as pH, trace metals and temperatures related to underwater environmental micro and macro events and conditions. Surface mounted sensors pick up a readings which are reported to the inner electronics and optically transmitted through bright flashes of LED light.

These optical signals are picked up and passed on by neighbouring Sensorbots until they are eventually received and transmitted to the surface by a central masternode which is designed and manufactured by MacArtney.

Underwater Optical Networks

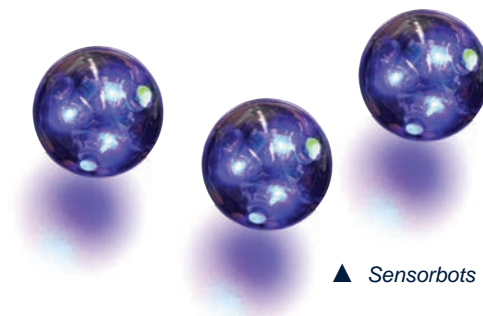
This kind of optical underwater light propagation - where Sensorbots relay information about the surroundings to neighbouring bots and ultimately to a masternode, is based on the theory of underwater optical networks. Within such a network, optical signals transmitted by the Sensorbots are linked, using 'multi-hop' networking technologies.



Sensorbots hold applications in:

- Ocean science
- Environmental monitoring
- Aquaculture
- Fisheries
- Geology
- Marine biology
- Oil and gas industries
- Other marine industries
- Accident remediation
- Defence and security

In Ocean Science, Sensorbots will help answer questions relating to topics as diverse and complex as detecting and monitoring oil spills or emission plumes to tracking and observing animal migrations - all tasks that require extensive and accurate data to be gathered and analysed over vast areas simultaneously from remote ocean locations.



Swarms of autonomous Sensorbots

As Sensorbot technology develops, they may blanket large areas of the ocean and transmit information regularly to a central data hub. Ultimately, Sensorbots will be capable of operating in semi-autonomous self-propulsed robotic swarms, moving under remote control in a 3D geometric formation through precisely controlled volumes of seawater.

MacArtney hosts 52nd Marine Measurement Forum

The MacArtney Underwater Technology Group is delighted to have been selected to host the 52nd Marine Measurement Forum. The event will take place on the 1st of May 2013 at the MacArtney Group's UK facilities in Aberdeen.

MacArtney looks forward to welcoming speakers and attendees alike to a day devoted to the informal sharing of new knowledge and ideas within the realm of marine scientific measurement.

The course of the day will embrace several interesting features and sessions, hereunder a number of presentations on the latest developments within the diverse field of marine measurement technology.



Meet us in person on our stands at these exhibitions

- Fiskmarknad 2013, Karlstad, Sweden, 7th - 9th May 2013
- Energy Ocean International 2013, Warwick, Rhode Island, USA, 10th - 12th June 2013
- Oceanology International China 2013, Intex Shanghai, China, 3rd - 5th September 2013
- The full list of exhibitions and conferences is available at www.macartney.com/exhibitions