

In Depth

A low-angle, close-up photograph of a technician working on a complex underwater cable system. The technician is wearing a bright orange safety suit, blue gloves, a white hard hat, and yellow safety glasses. They are focused on connecting or inspecting a dense array of red cable connectors. The background is a yellow, industrial-looking structure, possibly part of a submersible or underwater vehicle. The lighting is bright, highlighting the intricate details of the cable management.

Theme

MacArtney
Connectivity

Empowering underwater
technology since 1978



Editorial

Underwater connectivity has always held a very special place at the heart of the MacArtney organisation.

Even though MacArtney has seen global expansion and is now, more than ever, to be regarded as a supplier of complete system solutions - seemingly simple, yet extremely advanced products, such as cables and connectors, still have a tremendously important role to play. The reason for this is simple...

The bonding agent of underwater solutions

Regardless of industry and application, connectivity is the 'bonding agent' of all underwater technology solutions and can form part of any system and project delivered by MacArtney.

From simple A to B signal and power transfer between systems and equipment to complex subsea communication solutions and power export infrastructure, MacArtney connectivity is widely applied to interconnect and empower applications and operators across all maritime industries.

TrustLink and GreenLink

Within this issue of In Depth, we have the privilege to introduce the TrustLink and GreenLink brands - representing the latest in-house developed additions to the MacArtney connectivity portfolio. Inspired by an ongoing increase in demand for advanced subsea connectivity solutions, these new brands unify a number of new and well-known MacArtney solutions for the subsea, offshore and marine renewable energy markets.

You can read much more about MacArtney Connectivity, TrustLink and GreenLink in the theme section of this magazine.

Niels Erik Hedeager,
CEO

MacArtney sells Moog Focal FPSO slip rings for Martin Linge Project

MacArtney has received an order from OneSubsea™ for Moog Focal oil and condensate gas FPSO slip rings. The order also includes cables and associated junction boxes.

The FPSO slip rings are designated for the 'Martin Linge' project on the Norwegian Continental Shelf due west of Bergen. Here, they will add to several innovative solutions and technologies designed to reduce CO₂ emissions and environmental impacts of the Martin Linge field, which, in turn, aims to open a new era of sustainable oil and gas production in the Norwegian North Sea.

Scope of MacArtney supply

Due for delivery in the second quarter of 2015, the MacArtney scope of supply encompasses one low voltage electrical optical slip ring, one medium voltage electrical slip ring, one pedestal (mounted between the slip rings for improved cable access), one batch of turret side cable assemblies and four junction boxes to be mounted on the geostationary part for the FPSO turret.

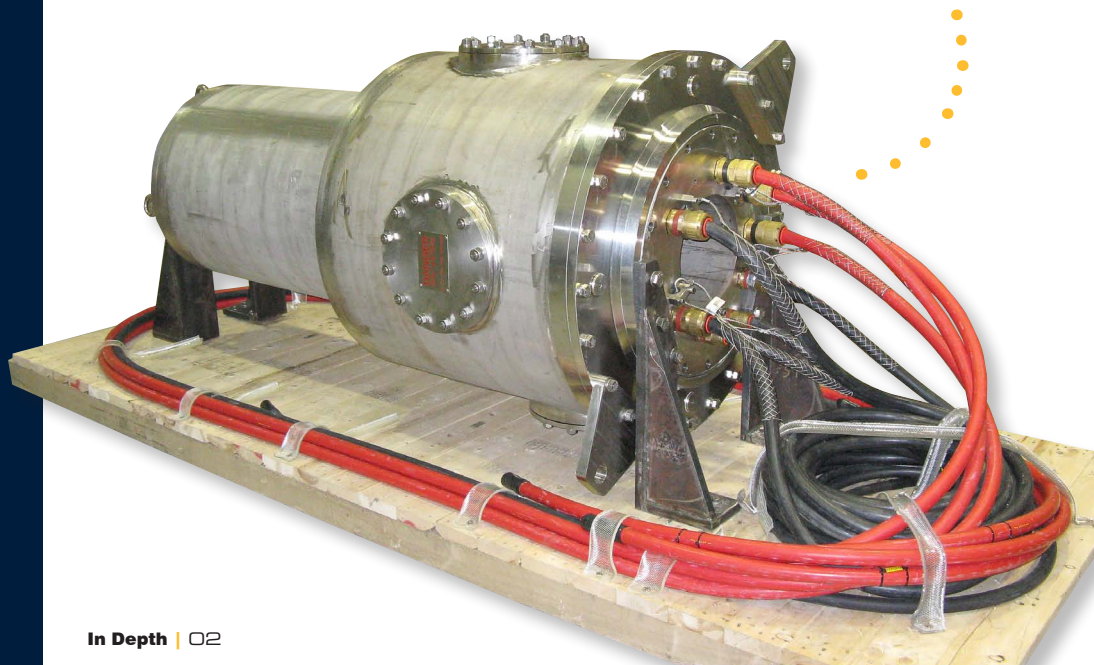
Martin Linge

Named after the late Norwegian actor, captain and World War II hero of the same name, the Martin Linge project is operated by French oil and gas company, Total, and is expected to start production in 2016 with a capacity of 80,000 barrels of oil equivalent per day. Total holds a 51% interest in the project. Its partners are Petoro (30%) and Statoil (19%).

The development of this offshore oil and condensate gas field lying on less than 115 m of water began in early 2012. It involves the construction of an integrated wellhead, production and accommodations platform. Gas from the field will be exported to the UK via the FUKA gas pipeline.

A Moog Focal Medium Voltage Electrical Slip Ring (MVESR) 250-X.

In its capacity as Moog Focal representative, MacArtney has delivered slip ring and swivel solutions for more than 40 FPSO vessels worldwide.





A delegation of client and MacArtney representatives attended a successful Factory Acceptance Test (FAT) session in Denmark.

MacArtney MERMAC winch for advanced Chinese research vessel

MacArtney has delivered a MERMAC R40 RA winch to the Hunan University of Science and Technology (Xiangtan, China).

The order was realised in close cooperation with SeaTech China in its role as exclusive MacArtney product and system representative on the Chinese market for underwater technology. The winch was procured with support from the 863 state high tech research and development plan and will be installed onboard the RV Ke Xue which is regarded as the most advanced multi-purpose research vessel in China.

AHC winch for large scale benthic drill rig

MacArtney is among the pioneers within electric winch innovation and was the first company to successfully develop and field an electric marine winch featuring Active Heave Compensation (AHC). The supplied MERMAC R40 RA winch is among the first electric driven winch systems with AHC to enter service in China.

In essence, the purpose of AHC is to keep a load, held by a vessel, motionless with regards to the seabed, independent of the wave motion, hereby allowing operators to sustain subsea equipment operation, even during adverse

weather conditions and higher sea states. AHC is enabled by using the data from a motion reference unit to detect vessel displacement (heave, pitch and roll). A control unit on the winch system then calculates and executes the actions necessary for the winch system to respond to- and compensate for the movement.

Onboard the Ke Xue, the AHC functionality will be put to good use, as the main application of the winch will be to support the accurate ocean floor deployment, handling and recovery of a large scale (60 metre) benthic drill rig for collecting sub-bottom core samples.

Cutting-edge winch for a state-of-the-art vessel

The RV Ke Xue (Chinese for science), was delivered in 2012 and is operated by the Institute of Oceanology under the Chinese Academy of Sciences (IOCAS). Featuring world-class equipment and technology, including a large laboratory, an advanced ROV system, a deep-towed vehicle, rock drill and deep-sea exploration and sampling gear, the vessel represents the cream of the crop of Chinese oceanographic research capabilities and is considered to be among the most sophisticated research ships in the world. The Ke Xue is designed to conduct a wide range of tasks including water body detection, atmospheric exploration, deep-sea environment exploration and remote sensing information verification.

Weighing in at 4,711 tons, the vessel is 99.8 meters long and 17.8 meters wide. With a cruising capacity of 15,000 nautical miles and a top speed of 15 knots, the Ke Xue can travel with 80 crew members and scientists for 60 days. This way, the Ke Xue is capable of global voyages and all-day observations while also functioning as a fully-fledged seaborne laboratory. The vessel is expected to serve as one of the key platforms for Chinese oceanographic studies for the next 10 to 20 years.

The RV Ke Xue - starboard view with aft LARS.



MacArtney and Sea-Bird Scientific join forces to supply winch, CTD and sensor packages to multiple Turkish research vessels

MacArtney Underwater Technology and Sea-Bird Scientific are joining forces to deliver cutting-edge complete oceanographic instrumentation solutions to research vessel operators and other ocean science clients across the world. A good example of the growing success of this mutual effort can be found by turning ones attention to Turkey - where no less than four complete packages will find their way to research vessels within the scope of just one year.

The package

A key common denominator for the type of oceanographic package procured by these Turkish research clients is the powerful combination of MacArtney CORMAC Q winch systems and Sea-Bird Scientific CTDs and water sampling systems. In addition to this, clients are able to mix-and-match a multitude of different instrumentation options including the broad range of optical and water quality sensors from WET Labs and Satlantic offered by Sea-Bird - to form a complete turnkey CTD package that corresponds with their specific scientific measurement needs.

The winches

MacArtney CORMAC Q stainless steel winches are high performance multi-purpose handling systems with a long and proven track record of CTD operation. With all structural components made from glass blasted stainless steel and with all moving parts encased in a cubic protective frame, CORMAC Q winches are designed and engineered for optimal durability and require minimal maintenance. Operators are allowed to choose between a broad range of specifications including speed, pull, motor size and cable capacity. CORMAC Q winches come with several intelligent features which allow for accurate and effective equipment handling. These features include an electric driven level wind, allowing for significantly improved spooling performance, while making it possible to easily change cable diameter.

A MacArtney and Sea-Bird CTD package complete with CORMAC winch and sampler carousel - seen onboard the ARAMA 1.

The CTDs

As the name indicates, Sea-Bird CTDs measure conductivity, temperature and depth with a great deal of precision, accuracy and stability. The CTD data can then be used to calculate higher level data products such as salinity, water density, sound velocity and other parameters of interest. Within the current context, and generally within the industry, the term CTD is also used to describe a package or system that includes the actual CTD as well as auxiliary sensors to measure other parameters and a water sampler to collect water samples for subsequent lab analysis.

Sea-Bird Scientific is widely recognised as the world's leading developer and manufacturer of CTD solutions, with systems purposefully designed and built to perform under harsh

and dynamic ocean conditions. Sea-Bird CTD systems are capable of pumped and ducted constant flow for matched temperature and conductivity response, so that measurements are made on the same sample of water with a predictable delay and predictable flow effects. Moreover, aligning and coordinating CTD measurements is done with software or even automatically.

The RVs

The first of four Turkish research vessels to take delivery of the MacArtney and Sea-Bird package was the R/V TUBITAK Marmara built by the CEKSAN shipyard for the Scientific and Technological Research Council of Turkey. Serving as a versatile platform for oceanographic research, this new vessel will feature a SBE 25plus CTD, a SBE 32 water sampler system with 14 x 8 litre and 14 x 5 litre bottles. Further to this, the complete package also comprises a string of additional sensors including a WET Labs combined turbidity and fluorometer, a SBE 43 dissolved oxygen sensor, a WET Labs C-Star transmissometer, an altimeter, a SBE 18 pH sensor and finally a 4Pi scalar radiometer. All these sensors will be launched, handled and recovered by means of two CORMAC Q5 winches spooled with 3000 and 2000 metres of cable. All installation, commissioning and operators training are also included in this extensive package.

The second Turkish research vessels to opt for the MacArtney and Sea-Bird package was the R/V Seydi Ali Reis - a brand new scientific vessel operated by the Sinop University.

Named after a renowned Ottoman admiral, the Seydi Ali Reis will be deployed for oceanographic and fisheries research and monitoring projects in the Black Sea. The scope of system delivery for this vessel



comprised a CORMAC Q2 winch, 1000 metres cable, and a full sensor package based on a Sea-Bird SBE 25plus CTD with sensors for conductivity, temperature, depth, fluorescence, dissolved oxygen and pH along with a 12 position SBE 32 water sampler carousel with a SBE 33 deck unit. MacArtney installation and training was also part of the package.

The third client to benefit from a turnkey CTD package is the Mediterranean Sea and Fishery Institute based in Antalya. Delivered in the autumn of 2014, this system comprises a CORMAC Q3 winch, 1000 m cable, a CTD sensor package consisting of a Sea-Bird SBE 19plus V2 CTD with sensors for conductivity, temperature, depth, dissolved oxygen and pH along with a 12 position SBE 32 water sampler carousel with a SBE 33 deck unit and full installation and training of the crew on-board the ARAMA 1. "Completed in June 2014, our brand new research vessel, ARAMA 1, will prove an important resource in our work to ensure sustainable conditions for fisheries in the Mediterranean and Aegean Sea" says Institute Director Dr. Yilmaz Emre and continues: "In order to successfully carry out this task, our first-rate MacArtney winch and Sea-Bird CTD system will be put to good use in investigating the physical, chemical and biological properties related to water quality and ocean pollution."

At the time of writing, a fourth system procured by an undisclosed Turkish client, for installation on a new research vessel, is being shipped. MacArtney will supply the entire oceanographic sensor package and handling systems for this vessel including three CORMAC winches and an extensive Sea-Bird CTD package with sensors for conductivity, temperature, depth, methane (CH₄), hydrogen sulphide (H₂S), PAR, dissolved oxygen, pH and light transmission along with a 12 position SBE32 water sampler carousel with a SBE33 deck unit, a magnetometer and a complete MacArtney installation and training programme. Commissioning of this system will take place during 2015.



The R/V TUBITAK will be used to study marine pollution, research marine biology, explore underwater oil fields and pipelines as well as give support in case of marine incidents and disasters. She will be capable of carrying out those studies at a depth of up to 3,000 metres with a crew of twelve scientists working in three laboratories.



A Sea-Bird CTD carousel deployed on a water sampling mission in the Mediterranean Sea offshore Turkey.



Delivering a turnkey solution: An experienced MacArtney ocean science specialist oversees the winch and CTD system installation, commissioning and operators training.



Mutual success

"We are certainly very happy with the recent order flow and I guess one can say that we have become the preferred supplier of this type of solution within the Turkish market. This is definitely a product of two companies combining their strengths to persistently grow a market by offering a truly competitive product boasting unmatched quality - and with more system orders in the pipeline, MacArtney is delighted to work even closer with Sea-Bird Scientific in the future."

Hans Jørgen Hansen, Sales Manager, MacArtney

"The systems delivered to the Turkish research vessels give testimony to the unique total-system capability and user-friendliness achieved when the systems and expertise of Sea-Bird Scientific and MacArtney are united: By joining forces, we are able to provide complete solutions - from surface to seabed - assuring our clients that the best solutions for their system requirements are also the most convenient for them to implement. This is a definite win for our customers. We look forward to continuing to develop our relationship with MacArtney to provide full service turn-key solutions to clients for years to come."

Casey Moore, President of Sea-Bird Scientific



Photo Credit: NSF/UW/CSSF, Dive R1801, V14

The cCSPP system is prepared for launch onboard the R/V Thomas G. Thompson. The MERMAC U winch system and the MacArtney NEXUS telemetry and connectivity system is mounted directly to the frame while the WET Labs sensor pod is fastened in a special cradle until deployed on the ocean bottom.

OOI deploys MacArtney MERMAC underwater winch for a cabled coastal surface piercing profiler

Observing and understanding the dynamic coastal ocean is a challenging yet immensely important venture. The processes that shape the Earth and impact society must be investigated over the space and time scales at which they occur. Greater knowledge of these processes is vital for improved detection and forecasting of environmental changes and their effects on biodiversity, coastal ecosystems, and climate.

OOI and the Endurance Array

For the purpose of effectively measuring and monitoring these processes, the Ocean Observatories Initiative (OOI) is constructing a global, regional and coastal networked infrastructure of science-driven sensor systems to measure the physical, chemical, geological, and biological variables and parameters of the ocean and seafloor. The OOI is funded by the National Science Foundation through cooperative agreement with the Consortium for Ocean Leadership (COL). Within this networked infrastructure is the Endurance Array, operated by Oregon State University (OSU) College of Earth, Ocean, and Atmospheric Sciences (<http://oceanobservatories.org/infrastructure/ooi-station-map/endurance-array/>). This array will place two lines of long-term moorings (at approximately 25, 80 and 600 metres depth)

north and south of the Columbia River outlet. One line of moorings will be located off Grays Harbor, Washington; the other line off Newport, Oregon. At each of the six sites there will be surface moorings with fixed sensors at the top and bottom of the water column and a water column profiler mooring. Beyond the moorings, this array will include undersea cabled sensors

The cCSPP system was deployed by means of the ROPOS ROV operated by the Canadian Submersible Facility.



Photo Credit: NSF/UW/CSSF, Dive R1801, V14

and autonomous gliders programmed to transect across and around the moored array. The array will collect a variety of data that will be made available to researchers, educators and the public.

An array of new technology

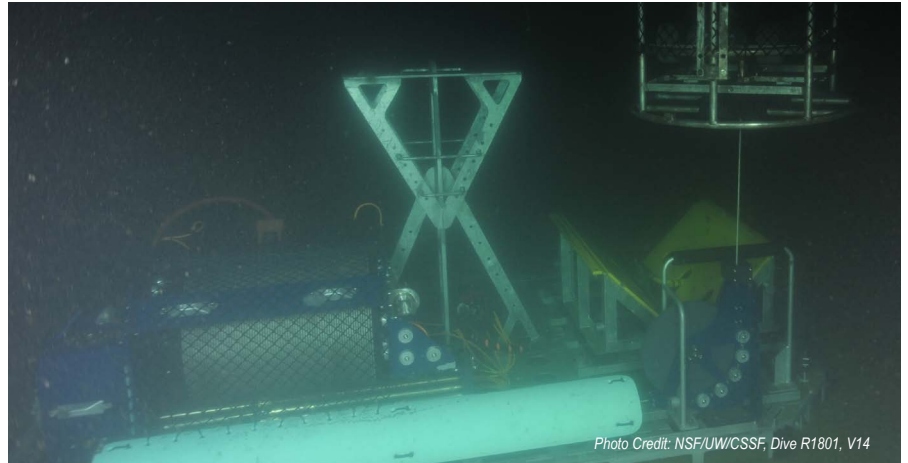
The Endurance Array utilises both fixed and mobile assets to observe cross-shelf and along-shelf variability. In order to provide long-term, high-resolution observations of these critical environmental parameters, a broad range of new and advanced technologies are needed. Among these technologies is a cabled Coastal Surface-Piercing Profiler (cCSPP) system recently installed at a site 80 metres deep within the Endurance Array. The cCSPP, funded under OSU Subaward # SA 12-11 (COL to OSU), is capable of conducting multi-sensor full-water-column profiles and, equally important, it offers reliable performance and high durability under rough maritime conditions.

cCSPP technology

The cCSPP brings together a series of novel technologies. WET Labs produced the sensor pod based on its Thetis Profiler (<http://www.wetlabs.com/thetis-profiler>), MacArtney produced the winch and telemetry and OSU produced the bottom frame that houses the winch and connects to undersea cable as well as the software interface to the system. OOI's Regional Scale Nodes team at the University of Washington (UW) Applied Physics Laboratory created the medium power junction box through which the cCSPP receives 200 W at 48 VDC power and Ethernet connectivity. The UW team is also responsible for operating the other science systems connected to the ~900 km of undersea cable installed for the OOI project. The cCSPP system was integrated collaboratively by all of these organizations at OSU.

In operational mode, the sensor pod of the cCSPP will move up and down in the water column at least 8 times per day, continuously taking measurements using the onboard CTD (conductivity, temperature, depth), dissolved oxygen sensor, fluorometer sensor for Chl-a, CDOM, and backscatter measurements, a dissolved nitrate optical sensor, AC-S in-situ spectrophotometer, PAR (photosynthetically available radiation) sensor, spectral irradiance sensor and a 3-D single point water velocity meter. This novel technology will provide high-resolution water column profiles that will allow for the tracking of trends and changes in many oceanographic parameters across tidal, daily, seasonal, and multi-year scales as well as spatial comparisons with profiles from other OOI sites.

For the cCSPP to safely, efficiently, and persistently complete its multiple benthic-surface journeys over a prolonged window of operational deployment, it needs a



The cCSPP system is fully deployed and ready for operation. In operational mode, the winch system will move the sensor pod of the cCSPP up and down in the water column at least 8 times per day.

top-shelf underwater handling system built for resilience and designed for performance.

Underwater winching

For supporting the handling and operation of the profiler, the OOI chose a MacArtney MERMAC U underwater winch system. Based on advanced technology and decades of winch system expertise and knowhow, the MERMAC system is a rugged, leading-edge solution specially designed and fully geared for the challenge.

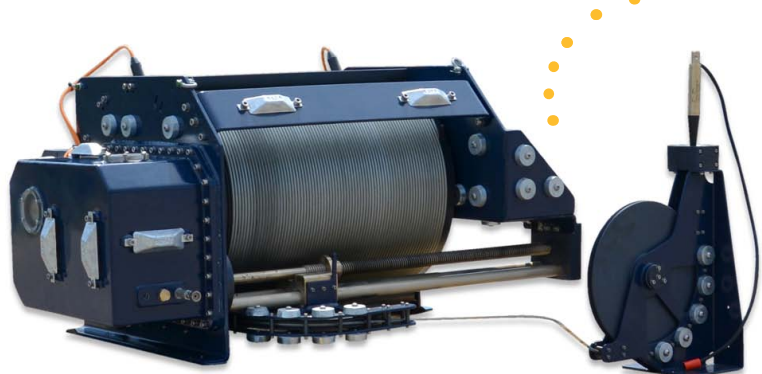
The winch is rated for deployment at 100 metres of water and features a precision-grooved drum to secure optimal spooling performance at every profiling run. In further support of the prolonged deployment which the entire cCSPP system is intended to endure, the system is made primarily from painted carbon steel supported by multiple zinc anodes while the drum and sheaves are made from non-corrosive nylon material. In accordance with the power supply available to the Endurance Array, the entire system is able to operate using merely 200 W at 48 VDC. Since the cCSPP is planned to be deployed for one year at the time without intervention and service, the winch features several sensors to monitor and document the continual operational performance of the system.

Within this context, the MacArtney MERMAC winch is designed as an intelligent system with programmable and fully automated profiling schemes to secure a sustainable flow of sensor measurement results.

According to MacArtney Sales Manager for Launch and Recovery Systems, Klaus Brix, the development of this unique combined sensor pod and winch system will pave the way for more collaboration between MacArtney and WET Labs to offer profiling systems to other clients and applications around the world.

The cCSPP was deployed successfully on September 29, 2014, from the R/V Thomas G. Thompson via the Canadian Scientific Submersible Facility remotely operated vehicle ROPOS on a cruise led by the UW. Data is being transferred to shore in near-real time through OOI's undersea cable. Preliminary data will be available online in the near future while streaming data will be available after commissioning in 2015.

The MacArtney MERMAC U winch is based on advanced technology and extensive winch system knowhow. MacArtney has been manufacturing underwater winches since 2010, with systems delivered to both scientific and defence industry clients.



Empowering underwater technology

since 1978

In the vast world beneath the waves lie endless opportunities and resources to boost the erudition, prosperity and viability of the human race.

Over the past centuries, man has developed and refined countless innovative technologies to harness this potential. From the high-tech exploration, production and safety solutions that enable the utilisation of offshore oil, gas and renewable energy sources, to the delicate vehicles, systems and sensors that allow ocean scientists to make outstanding discoveries and gain vital new knowledge - these 'underwater technologies' share one thing in common: They require state-of-the-art connectivity...

Connectivity: To, from and in between

According to the Oxford Dictionaries, the term 'connectivity' denotes 'the capacity for the interconnection of platforms, systems, and applications'. With this in mind, any installation or piece of equipment within the sphere of maritime and underwater technology comes to depend on connectivity - in one way or another.

Specifically, connectivity solutions are needed to flexibly or permanently provide the power and signal interface on any standard or custom item of underwater equipment. In turn, it is also used to facilitate the transfer of collected data from this equipment to a surface based collection point - with power often travelling in the opposite direction. Finally, connectivity is utilised to link multiple uniform or diverse units within a larger scale system infrastructure.

A heritage of connectivity

Ever since the foundation of the company in 1978, connectivity has held a special place at the core of the increasingly system oriented MacArtney organisation. Even today,

connectors, cables, terminations, junction boxes and everything beyond and in between, are involved in pretty much everything that the company does and in many ways, it is connectivity that has paved - and still paves - the way for most other innovative MacArtney products and systems.

Connectivity for everyone, everything and everywhere

MacArtney designs and manufactures underwater connectivity for any application within all maritime industries including subsea, offshore oil and gas, marine renewables, ocean science, civil engineering, defence, fisheries and diving. Key technologies include wet and dry-mateable power, signal and optical connector solutions under the renowned SubConn®, TrustLink and OptoLink brands - TrustLink and GreenLink termination/hub solutions and cables from leading global manufacturers. Besides this, MacArtney supplies an endless list of custom connectivity solutions including special moulded or machined cable assemblies, bespoke interconnect solutions and junction boxes. All MacArtney connectivity solutions are designed, built and tested for use under extreme conditions and have established a track record of uncompromised reliability in harsh marine environments.

Connectivity means the world to MacArtney - and to its clients!

The worldwide availability and serviceability of connectivity systems often define the razor's edge when it comes to the operational efficiency and success for marine technology operators and for this reason,

MacArtney supplies and services connectivity solutions at a global scale. Empowered by numerous operations and representatives in place at all key marine industry hubs around the world, MacArtney always aims to produce the shortest possible lead time for as well the delivery of new connectivity products as the service of existing systems. Moreover, MacArtney keeps a standing stock of connectors and cables at various global locations in Europe, North America and the Asia Pacific.

MacArtney has recently published a brand new SubConn® catalogue - a comprehensive guide to harsh environment underwater connectivity. The catalogue is available in print and online at www.macartney.com



MacArtney connectivity helps land UFO in the North Sea

Spearheaded by oceanographic experts from German Group Operations MBT GmbH, MacArtney has delivered the full connectivity package for the innovative UFO (Underwater Fish Observatory) which was recently deployed in the North Sea.

The UFO project - joining forces in the name of ocean science

Realised through successful cooperation between the Hamburg based Thünen Institute of Sea Fisheries, the Department of Computer Science and Electrical Engineering, the Development Center at the University of Applied Sciences in Kiel and MBT GmbH - the UFO project marks a noticeable leap forward in fish monitoring technology and methodology.

A novel approach to fish monitoring

Basically, the UFO project provides an underwater observatory for the quantitative determination of fish stocks. Specifically, the UFO project is based on a rugged subsea lander boasting multiple oceanographic sensors and high-tech equipment. The purpose of this lander is to measure fish stocks by means of stationary monitoring with optical and acoustic technology.

The novel approach provided by the UFO project is the purely observational and therefore non-invasive method applied. The successful application of this method is intended to significantly reduce cost and labour-intensive sampling catches.

Advanced oceanographic sensor technology requires a good connectivity package

The UFO system observes fish using a combination of high-resolution sonar system imagery and footage captured with extremely light-sensitive stereo installed underwater cameras, originally known from military applications. Together, these systems automatically register the passing fish, without having any influence on fish stocks in the area examined.

Further sensor systems on board the UFO lander include a turbidity sensor, a current

meter, conductivity and pressure sensors and a receiver for fish tag signals (fish tracking). The combination of the camera, sonar and sensor data provides comprehensive information about fish characteristics as well as the detection of fish stocks.



A complete MacArtney connectivity system is used to interface the multiple sensors onboard the UFO lander.

This way, the successful combination of this wide palette of sensors renders the UFO lander a very powerful and efficient oceanographic monitoring system. However, in order to ensure the best performance and results when it comes to interfacing the sensors and transmitting the gathered data back to the surface, the UFO project relies on a complete connectivity package from MacArtney.

All sensors are interfaced by SubConn® connectors and MacArtney cable assemblies hooked up to a MacArtney NEXUS MK C multiplexer, which is, in turn, linked to topside via a modified MacArtney TrustLink chamber termination and a 500 metre armoured fibre optic signal and power cable.

Beyond providing signal and data infrastructure between sensors, topside and seabed, the MacArtney connectivity system also allows operators to trigger a pop-up recovery buoy to be deployed after the operational phase.

The UFO has landed

In September 2014 - the lander was installed in about 300 metres distance to the FINO3 platform which is one of three fixed research platforms in the North Sea and Baltic Sea.

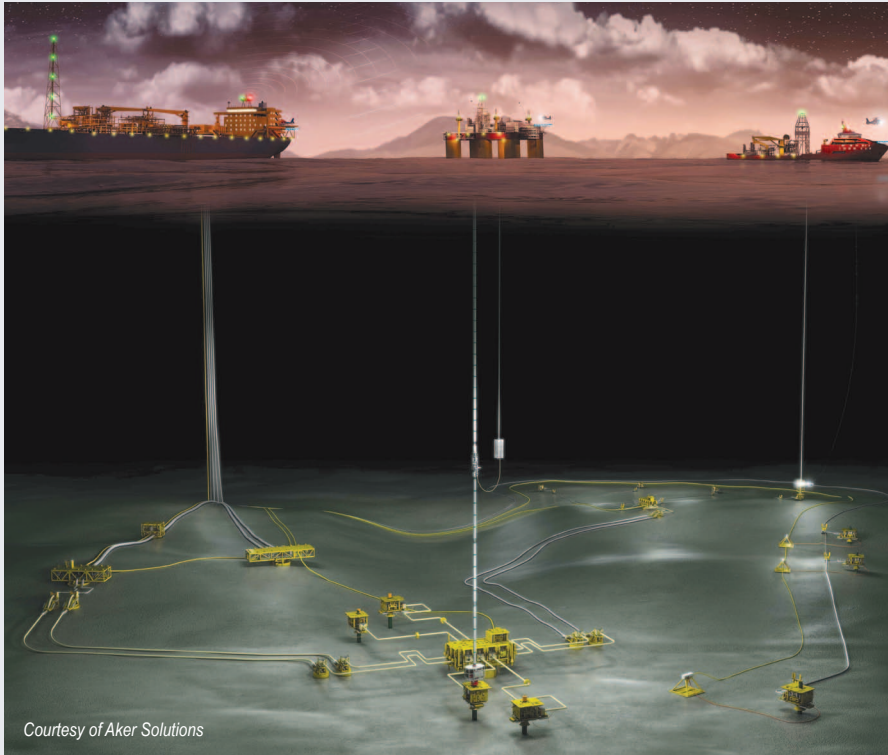
Operated by the research and development center of the University of Applied Sciences, Kiel, the site is located about 80 km west of Sylt. The platform serves the realisation of research and technology projects from various universities and companies and is surrounded by a protective zone where fishing vessel entry is banned. The UFO was installed by divers, who adjusted the lander under water in order to ensure proper operation. Afterwards, the cable was laid to the FINO3 platform and the topside end of the cable was inserted into the platform tower and connected to a junction box. A first

operational test proved successful and even allowed the first snap shots of a school of fish captured within the live image from the cameras.



"Both MBT and MacArtney are extremely proud to be part of the UFO project and look forward to further cooperation with all UFO project partners in the future."

Torsten Turla, Managing Director and MSc in Physical Oceanography, MBT



Subsea connectivity: TrustLink solutions are widely applicable within all offshore and subsea industries.

Meet TrustLink and GreenLink

Subsea connectivity solutions for the marine industry

Inspired by an ongoing increase in demand for its subsea connector products and advanced connectivity solutions, MacArtney has opted to formally unify its vast spectrum of offerings and competencies within this area under the wings of the new 'TrustLink' and 'GreenLink' connectivity brands. Common to all TrustLink and GreenLink solutions is the combination of rugged design, advanced technology, reliable performance and effectiveness.

TrustLink

- Critical subsea connectivity

With a legacy spanning decades of connectivity solution development, testing and operational deployment under some of the harshest conditions our planet has to offer, the MacArtney TrustLink range of critical subsea connectivity solutions are set to provide and sustain a dependable link between - and interface for, vital offshore and subsea applications and systems.

The connectors

At the heart of the TrustLink range is a broad selection of subsea dry-mate connectors designed and tested for prolonged deployment at depths up to 4000 metres. With pin counts spanning 4 to 24 electric contacts, TrustLink connectors offer excellent flexibility to operators of subsea systems.

API series

On top of the TrustLink connector range, MacArtney supplies a complete series of API connectors which are designed and tested in compliance with American Petroleum Industry (API) standards 16D and 17E for deployment in critical and strictly regulated environments. Today, TrustLink API connectors are widely used for interfacing subsea applications such as flexible riser umbilicals, acoustic releases for blowout preventer (BOP) systems and other systems from leading manufacturers across the world. As an industry unique feature and testimony to the level of dependability and quality sought, full API standard compliance (design and testing) of all TrustLink API connectors is third party (DNV) certified. Standard TrustLink API connector versions include 4, 12 and 24 electric pin configurations as well as a fibre optic connector solution.

The TrustLink API series also includes a Field Installable Termination Assembly, or FITA, a unique system that assembles one or more harness cables to a single cable, typically from subsea control systems to an umbilical. Unlike other termination assemblies, the FITA can be assembled on site without the need for moulding.

Terminations

The TrustLink brand also covers a broad range of standard terminations ranging from electric and optical chamber terminations and oil compensated terminations for deep sea operations to heavy-duty stress terminations for safely and reliably hooking-up cables for towed vessels, equipment or for lifting and handling heavy cabled systems. Finally, MacArtney TrustLink critical subsea connectivity systems also embrace a standard FITA option and a brand selection of oil-compensated subsea junction boxes that, under guidance of the unique, high-performance MacArtney design principles, can be tailored to address the exact challenge posed to the system operator.



The API standard compliance of MacArtney TrustLink API connectors is certified by DNV.



TrustLink

When you require a state-of-the-art connectivity solution for critical subsea and offshore applications, the MacArtney TrustLink range offers several high performance options.

Range overview:

- TrustLink Connectors
- TrustLink FITA
- TrustLink Stress Terminations
- TrustLink Specials

Key features and benefits:

- Tested to perform in harsh environments at high ocean depth
- Connectors withstand full back pressure
- Flexible, rugged and highly durable connectivity solutions combining the latest technology, quality materials and world class engineering.

TrustLink API

In case you require a connectivity solution specifically designed, built and tested for deployment in critical and strictly regulated subsea environments, the API standard compliant MacArtney TrustLink API series of solutions is a cutting-edge choice.

Range overview:

- TrustLink API Connectors
- TrustLink API Optical Connectors
- TrustLink API FITA

Key features and benefits:

- Connectors designed, tested and approved to comply with API standards 17E and 16D
- API compliance certified by DNV
- FITA and connector/cable assemblies operate even when fully flooded
- Also see 'TrustLink' features and benefits

GreenLink

MacArtney is dedicated to provide commercially viable connectivity solutions for harvesting and harnessing marine renewable energy. For this purpose, the GreenLink brand brings together a range of powerful solutions based on years of research, development and field deployment.

Range overview:

- GreenLink Inline Terminations
- GreenLink Hubs

Key features and benefits:

- Mechanical connections make vessel based preparations fast and efficient
- Flexible solution for installation in multiple stages
- O-ring test ports on termination and hub housing
- 25 years design life

GreenLink

- Connecting to nature

Given the finite nature of fossil energy sources such as coal, oil and natural gas, alternative marine based energy sources have seen a surge in global interest and investment. For example, the number and scale of wave and tidal energy projects has dramatically increased over the last 10 years with industrial scale test-turbines, novel energy converter technologies and fully operational grid connected arrays already in place at various renewable energy hotspots around the globe. Moreover, the tried and tested wind based renewable energy source is producing significant leaps in technology - with floating wind turbines placed afar from shore and out of sight - where winds are stronger - as a promising 'next big thing'.

Within this context, MacArtney is dedicated to provide commercially viable connectivity solutions for harvesting and harnessing the power generated, hereunder making sure that each and every watt is safely and efficiently transferred to the land based electricity grid. For this purpose, the GreenLink brand brings together a range of powerful solutions based on years of research, development and field deployment.

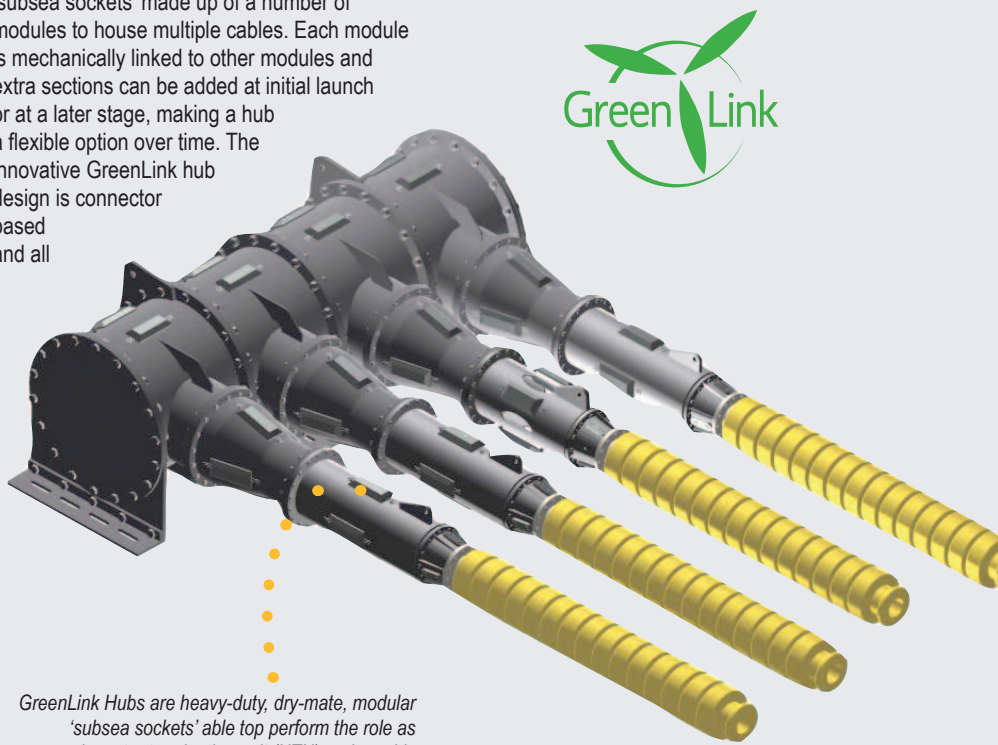
Minding the gap - between the grid and the platform

The backbone of the GreenLink range is the dry-mate GreenLink Inline Termination engineered to make offshore inline connections faster, easier and more effective while closing the gap between the power generation platform and the onshore power grid. Cables can be terminated on site or ahead of cable laying and the actual mechanical connection of the two halves takes less than two hours, making it a good solution for marine renewable applications

with limited time windows, such as tidal energy units. The short connection time also means that valuable ship and downtime is reduced.

Proven and dependable, MacArtney GreenLink Inline Termination solutions are often used to connect dynamic cables from offshore renewable wind, tidal and wave energy converters to export cables. Moreover, they are widely used to interconnect subsea units. This interconnection process can be further supported by the availability of MacArtney GreenLink Hubs which are heavy-duty, modular 'subsea sockets' made up of a number of modules to house multiple cables. Each module is mechanically linked to other modules and extra sections can be added at initial launch or at a later stage, making a hub a flexible option over time. The innovative GreenLink hub design is connector based and all

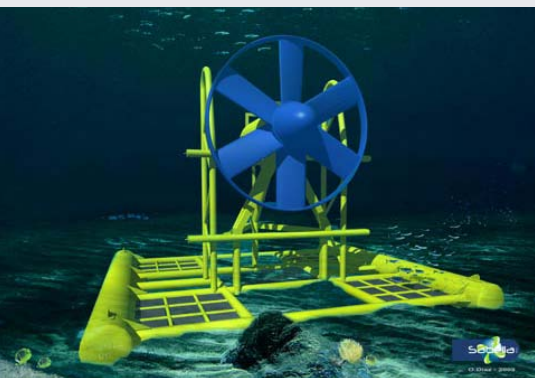
connections are mechanical, eliminating the need for moulding and drying, hereby making on-vessel preparations faster and more efficient. GreenLink Hubs and Inline Terminations alike can be supplied with O-ring test ports mounted on the housing. These can be used for testing the O-ring seal on the fully assembled system.



GreenLink Hubs are heavy-duty, dry-mate, modular 'subsea sockets' able to perform the role as underwater termination unit (UTU) and provide connectivity for multiple dynamic cables from turbines and energy converters to an export cable. They can also be used to interconnect multiple energy converters, turbines and other subsea installations.

GreenLink connectivity solution for Sabella tidal turbine array

MacArtney is delighted to announce that French marine renewable energy pioneer Sabella S.A.S. has placed an order for a complete MacArtney connectivity solution for its new industrial scale 'Sabella D10' tidal stream turbine project.



The Sabella D10 tidal stream turbine is interfaced by MacArtney connectivity.

Sabella tidal energy solutions

Over the past decade, Sabella has developed an original concept for a screen of tidal turbines positioned on the seafloor. By means of efficient simplicity and robust quality - acting as a guarantee of reliability and low maintenance requirements in hostile environments - the Sabella subsea turbine concept aims to differentiate itself from other technologies emerging around the world.

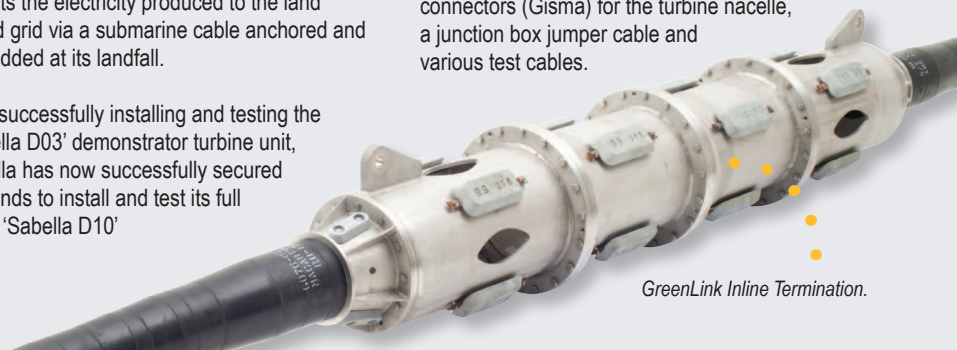
Pre-orientated in the direction of natural tidal currents and empowered by symmetrical rotor blades, the turbines effectively capture the energy generated by the shift between ebb and flow. The rotor is activated even by modest current motion and powers a generator, which exports the electricity produced to the land based grid via a submarine cable anchored and embedded at its landfall.

After successfully installing and testing the 'Sabella D03' demonstrator turbine unit, Sabella has now successfully secured the funds to install and test its full scale 'Sabella D10'

0.5 kW rated power and 1 MW maximal output power turbine in the Fromveur Strait near South Ushant (Brittany, France). Future Sabella tidal farm sites could feature units with a capacity up to 2 MW.

MacArtney brings back the power

For successfully transmitting the harnessed tidal power to the onshore grid, the 'Sabella D10' relies on a total custom MacArtney subsea connectivity solution. Based on a GreenLink Inline Termination for connecting the turbine to the grid via the dynamic subsea export cable, the solution also comprises a couple of hang-off stress terminations, a custom made flange including various medium and low voltage connectors (Gisma) for the turbine nacelle, a junction box jumper cable and various test cables.



GreenLink Inline Termination.

OptoLink expanded beam technology

Tech feature:

Over the recent decades, the use of high bandwidth fibre optic solutions in the offshore, subsea and marine industries has exploded. As applications go deeper and tasks are performed in ever more demanding environments, the need for combining ruggedness and performance is advancing at an equal rate.

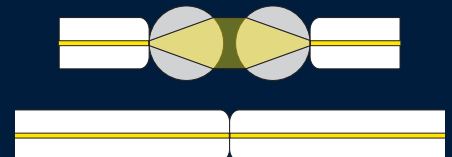
Even back in the 1980s, when MacArtney introduced its OptoLink multi-mode range of fibre optic connectors, one chose to use expanded beam technology for signal transfer between two connectors. Since then, single-mode technology, dedicated FIST cables and water blocked dual way penetrators have been added to the equation, thus resulting in a cutting-edge and industry unique solution for speed of light signal transmission to and from the immense ocean depths at which MacArtney clients often operate.

'Expanding' the usability of delicate technology in harsh marine environments

With expanded beam technology, the beam exiting a fiber is expanded and collimated by a spherical (ball) lens, whereafter the light travels through air to a second lens where it is focused down into the receiving fibre. Meanwhile, laser light technology ensures, that the slightly higher signal attenuation (compared to a butt-joint connector) is rendered insignificant.

An OptoLink ball lens magnifies the signal carrying cone of light by 11 times compared to a butt-joint and this makes the signal pass much less sensitive than the narrow beam used by a butt-joint which is vulnerable to vibrations, temperature changes, dust and moisture ingress. Actually, butt-joint technology can only be used efficiently in a clean and controlled environment with good access to maintenance.

Needless to say, none of these preconditions are abundantly existent in harsh marine environments and therefore, expanded beam technology, which was originally contemplated for military applications, is MacArtney's optical technology of choice.



Expanded beam (above) vs. butt-joint (below):

The mainstay of the OptoLink expanded beam technology is the combination of laser light and spherical lenses which magnify the signal carrying cone of light, hereby rendering the process of signal transfer much less vulnerable.

MacArtney supplies connectivity for ambitious transnational water pipeline project

To provide a secure supply of fresh water from Turkey to Cyprus, an ambitious transnational water pipeline project been approved and is under construction. MacArtney was contracted by AES and I4O to provide the underwater connectivity solutions for various instrumentation systems mounted on the pipeline.

The world's largest drinking straw

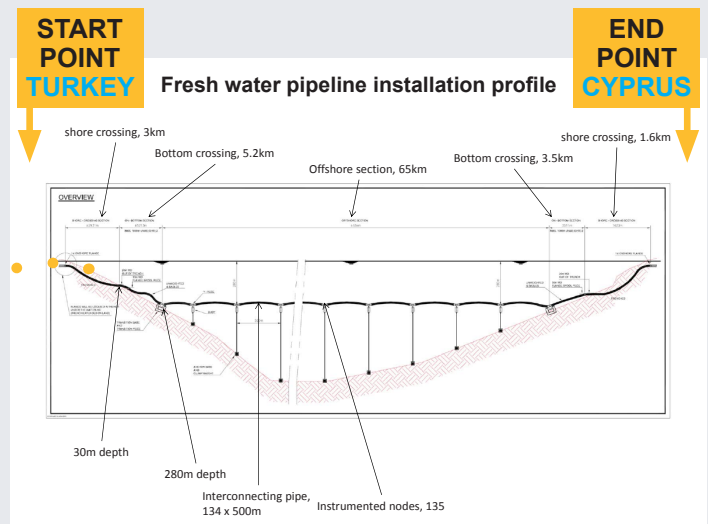
In the first such project in the world, Turkey will soon be able to pump water directly to northern Cyprus with the help of an 80-kilometre water pipe running under the Mediterranean Sea at a depth of up to 280 metres. The pipe will be buried for the first 3 km, lay on the bottom for the next 5 km, be suspended offshore for 65 km, lay on the Cyprus-side seafloor for 3.5 km and then be buried again for 1.6 km.

Symbolically named 'Baris Su' (Peace Water), the project will bring 75 million cubic metres of fresh water a year from the Turkish river of Anamur to Cyprus. About half of the water will be used for agricultural development and the other half as drinking water. While the immediate aim is to provide water for the Turkish sector of Cyprus, authorities in Turkey insist that the Greek Cypriot administration in the south of the island can also benefit from the fresh water pipeline - and this could prove to be a catalyst in the ongoing Cyprus peace talks. Furthermore, Ankara hopes the technical knowledge gained in the course of the project could enable Turkey to export water and even hydrocarbons to countries in the Middle East.

MacArtney scope of delivery: Connectors, assemblies and penetrators

MacArtney has supplied SubConn® connectors to interconnect 145 cables of approximately 1000 metres length which will be attached to the water pipe. At 1000 metre intervals, MacArtney have built special interconnect 'T' assemblies to interface the ends of the cable and to attach sensors for measuring water pressure and

The 'Baris Su' project represents an immense engineering challenge. On its way to Cyprus, the pipeline will cross land, seafloor and open water.



other parameters. In addition to the cable interconnects and assemblies, MacArtney also provided 50 water blocked SubConn® penetrators moulded to pipe-attached transponders intended to warn submarines of the presence of the pipeline.

Within the scope of the project, MacArtney technicians have had to perform complex and challenging moulding to two versions of cable - an armoured cable used for the shore crossing and a non-armoured cable used for balance. Both cables have Polyethylene (PE) and Polyurethane (PUR) jackets. The PE jacket requires the mastery of special moulding techniques to ensure a water tight bond. MacArtney designed and developed special bonding for SubConn® 10 pin Micro and Standard Circular connectors for this programme - with the terminations and assemblies being done at the workshop in Houston. Swift one-week delivery was the key to success for this project and with the help of a tremendous and dedicated work effort, MacArtney was not only able to meet - but to beat this steep time schedule.

Above: Sections of the 'Baris Su' pipeline are launched offshore Turkey.

Below: For the 'Baris Su' project, SubConn® connectors were moulded to subsea cables.



Connecting man and machine

Nuytco rely on SubConn® connectors for mission critical subsea connectivity

Operating out of Vancouver (Canada), Nuytco Research is a world leader in the development and operation of undersea technology. The company designs, builds, and operates a range of atmospheric diving suits, submersibles, remotely operated vehicles, lights, thrusters and other specialty equipment for underwater applications. Nuytco and its sister company, Can-Dive Construction, hold more than forty years of experience working around the world.

Pioneering benthic exploration technology

Nuytco is best known for the 'DeepWorker' series of 2000 feet (600 metre) depth-rated microsubmersibles. One and two-person DeepWorker submersibles have been used all over the world for scientific, survey, construction, oilfield, tourism, film and photography work. Recent additions to the series include 3000 feet (950 metre) depth rated models.

The latest development introduced by Nuytco is the 'Exosuit' atmospheric diving system (ADS). Based on the technology behind the path-breaking 'ADS Newtsuit' developed and

pioneered by Nuytco founder and President, Phil Nuytten, the Exosuit is a light-weight, one atmosphere, hard metal suit that allows divers to operate safely down to a depth of 1000 feet (300 metres) and yet still offer exceptional dexterity and flexibility to perform delicate work. The Exosuit is able to maintain the cabin pressure of the surface and still allows the suit limbs to bend due to a unique rotary joint system.

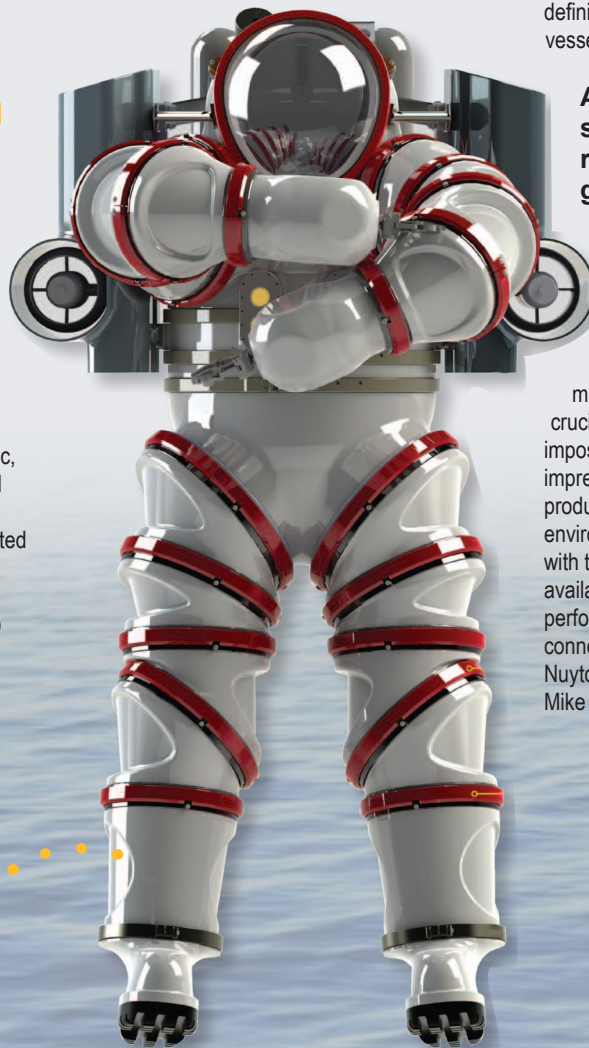
Connecting man and machine to the bottom of the sea

Efficient and reliable connectivity solutions comprise a mission critical constituent of high-tech underwater systems. For this reason, SubConn® bulkhead connectors and cable assemblies, in a variety of designs and body materials, are used extensively on both the Nuytco manned submersibles and on the Exosuit. On the latter, SubConn® 13 pin Power and Ethernet and 8 pin Ethernet cable assemblies allow for the transmission of high definition video imagery from the suit back to vessel or shore based operators.

A matter of high pressure subsea performance, reliability, availability and global support

According to Nuytco Lead Engineering Technologist, Mike Reay, "the last eighteen months for the company have been all about the production of manned submersibles and Exosuits.

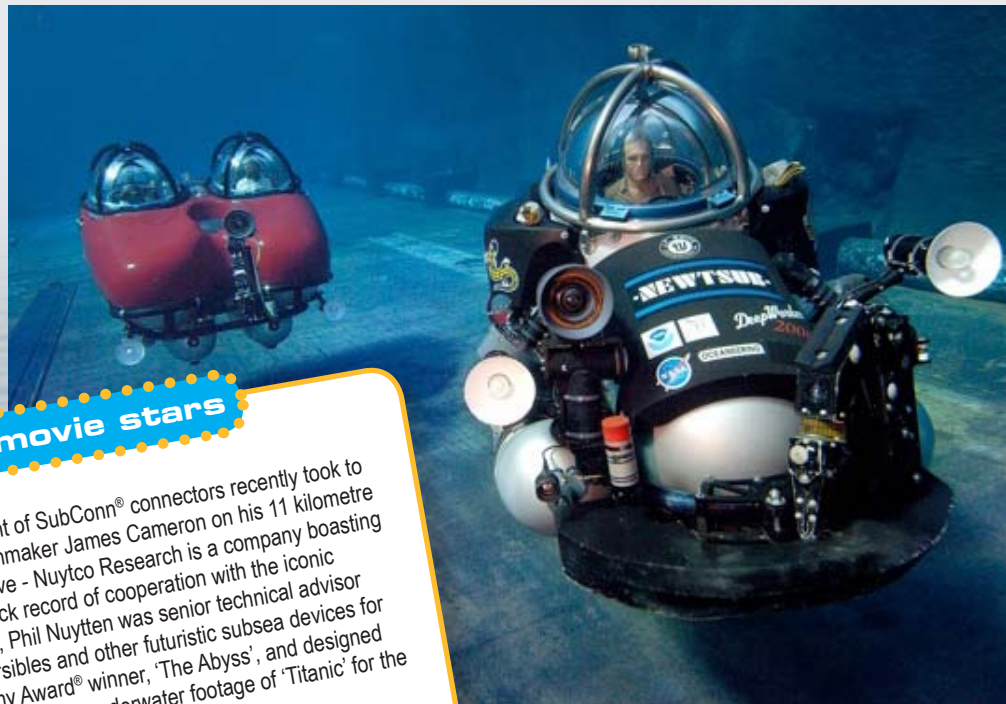
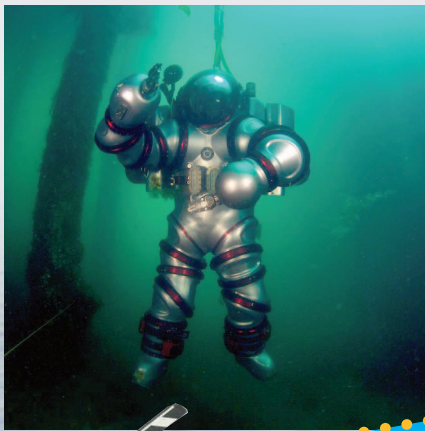
So on-time and reliable delivery of mission critical system components is crucial in order for Nuytco to meet its customer imposed deadlines". Mike has been particularly impressed with just how well SubConn® products perform in high pressure subsea environments and applications. "Coupled with timely local and global MacArtney availability and customer support, the excellent performance and reliability of SubConn® connectors make them an integral part of Nuytco's manned submersible product line" Mike Reay concludes.



The 'Exosuit' atmospheric diving system (ADS).

to the bottom of the sea

SubConn® bulkhead connectors and cable assemblies, in a variety of designs and body materials, are used extensively on both the Nuytco manned DeepWorker submersibles (above and below) and on the Exosuit (below, left).



Benthic movie stars

While a consignment of SubConn® connectors recently took to the depths with filmmaker James Cameron on his 11 kilometre Deepsea Challenger dive - Nuytco Research is a company boasting a significantly more extensive track record of cooperation with the iconic Hollywood explorer. For instance, Phil Nuytten was senior technical advisor and Nuytco provided the submersibles and other futuristic subsea devices for James Cameron's 1990 Academy Award® winner, 'The Abyss', and designed the thruster technology used to shoot the underwater footage of 'Titanic' for the blockbuster film of the same name.

Other notable Nuytco big screen and TV references include the subsea sci-fi thriller 'Sphere', featuring Dustin Hoffman, Sharon Stone and Samuel L. Jackson, IMAX movie 'Flight of the Aquanaut' and acclaimed documentaries such as 'Dark Secrets of the Lusitania', 'Mighty Machines' and recently, the popular Discovery Channel TV show 'Deadliest Catch'.

MacArtney revs up service offerings in response to growing industry demand

Fuelled by intensive growth in industry demand for ever more advanced underwater technology systems to be supplied complete with dedicated service and support packages, MacArtney has opted to further bolster and expand its strategic focus on service offerings and global customer support.

New service department

As the cornerstone of this expansion and systematisation of service offerings, MacArtney has established a new dedicated service department headed by experienced Service Manager, Bo Tranholm, who brings more than two decades of experience in service and aftersales to the table.

"We are always looking to proactively accede to the currents within key maritime industries and to meet the requirements of our customers"



MacArtney is launching an extensive service programme featuring several standard and custom packages spanning everything from preventive and periodical inspection, maintenance, training, onsite and offshore service to full system overhaul and upgrade.

says MacArtney Operations Director Lars Jørgensen and continues; "at the moment, we are experiencing a clear trend regarding the demand for formalised service agreements and periodical maintenance packages in association with product and system sales."

Service packages and programmes are available for acquisition with all MacArtney products and systems and will always be supported by highly trained, fully certified and experienced technicians and offer access to the MacArtney 24/7 global support and ad-hoc service system.

The MacArtney service and support programme

"MacArtney will respond to this demand with an extensive and ambitious service programme featuring a range of standard and custom service and support packages spanning everything from preventive and periodical inspection, maintenance and service through basic and advanced training, onsite and offshore service and repair to full system overhaul and upgrade" says Bo Tranholm.

Focus on the core business

According to Bo Tranholm; "the ultimate goal of the MacArtney service programme is to minimise system downtime, extend system lifetime and allow customers and operators a sense of security and peace of mind with regards to system shape and performance - so that they may focus solely on their respective core business."

MacArtney offers a variety of basic and advanced winch training programmes which combine theory and practice. The successful participant will understand the capabilities of the winch and learn to make optimal use of the system.

Example of MacArtney service offerings:

Winch systems

Winch training programmes:

- Refresher training
- Operator training
- Advanced electrical training
- Superuser training
- Supervisor training

Winch service programmes:

- Preventive service
- Storage service
- 24/7 hotline service



Remembering Winnie - the mother of MacArtney

On the 9th of July, 2014, front woman, co-founder and board member of the MacArtney Group, Winnie MacArtney, peacefully passed away after a prolonged course of illness.

While this unbearable event has caused a feeling of great loss and grief across the entire global organisation, MacArtney colleagues stand united in remembrance and respect for this vital and beloved character, who was - and always will remain regarded as - the mother of MacArtney!

A 'born global' bearer of MacArtney culture

Over the years, Winnie held several crucial roles in relation to the MacArtney organisation. First of all, Winnie and her husband, Martin 'Mac' MacArtney (MacArtney founder) were both very internationally oriented and saw themselves as 'citizens of the world' rather than belonging to just one nation. Being a rather unusual feature for family company, this 'born global' mind-set helped propel the worldwide expansion of MacArtney that is still going on today. Generally, Winnie and Mac complemented each other excellently, also when it came to business matters. While Mac was a formidable and driven 'ideas man' who loved putting several balls in the air - Winnie always kept both feet firmly planted on the ground and made sure that only the right ones were caught. Even after the passing of Mac in 2002, Winnie continued to be involved in the running of the company where she worked closely with CEO, Niels Erik Hedeager, and acted as an inspiration for employees. Within all business and personal



Winnie MacArtney (1946 - 2014)

contexts, Winnie valued decency, honesty and good relations higher than anything else and spearheaded the transition of these internal values to core principles that still continue to govern the way MacArtney conducts business.

MacArtney Singapore opens slip ring service facility

MacArtney is pleased to announce the opening of a dedicated slip ring service facility in Singapore.

Operating out of a new and purpose designed in-house workshop equipped with the latest tools and equipment, the new service facility is capable of performing complete refurbishment, repair and maintenance of all standard Moog Focal slip ring models.

Trained technicians and state-of-the-art-equipment

All jobs at the MacArtney Singapore slip ring service facility are executed by fully trained and experienced technicians supported by the latest technology - including inductive soldering machinery and advanced test equipment. Whether performing basic slip ring maintenance or a complete system overhaul, MacArtney

technicians work to ensure that official manufacturer procedures and instructions are meticulously followed.

One-stop slip ring service for the Asia Pacific region

During its mere few months in operation, the MacArtney Singapore slip ring service facility has experienced a terrific amount of interest in the services offered, and numerous orders for complete slip ring refurbishment are already being processed.

While these orders originate from Singapore based Moog Focal slip ring users within subsea, survey, ROV and seismic sectors, the new facility is expected to serve as a one stop slip ring service hub for the entire Asia Pacific region. "This way, the new facility will provide local and regional slip ring users with short lead time system service without the constraints of time zone differences and complex logistics -



and at the end of the day, this will mean less system downtime" says MacArtney Singapore Managing Director, Steen Frejo and continues: "We have high expectations for the new facility which we will continuously expand alongside our Asia Pacific operations in general."

Global slip ring expertise

While the new MacArtney slip ring service facility is certainly among the first of its kind in the Asia Pacific region, MacArtney holds extensive experience, expertise and a profound track record as a Moog Focal slip ring service provider with dedicated workshops already in place at MacArtney Group operations in Denmark, Norway, the United Kingdom, USA, France and the Netherlands.

Cledirsa set to represent MacArtney in Uruguay and Paraguay

Cledirsa Ltda. (Montevideo, Uruguay) has put pen to paper on an exclusive agreement to represent, market and sell MacArtney underwater technology products and systems in Uruguay and Paraguay. As the ambition and global reach of the MacArtney Group continues to expand, the agreement marks a strengthening of MacArtney's strategic presence in South America.

Cledirsa

Founded in 1997, Cledirsa launched operations by selling navigational electronics and cartography to the regional shipping industry. With their existing product range spanning advanced electronic sea maps, navigational software, hydrographic and acoustic instruments from leading manufacturers - MacArtney's extensive underwater technology portfolio represents a natural extension of Cledirsa's business area.

"The timing could not have been better" says Adriana Duarte Eggel, Commercial Director of Cledirsa, and continues: "In all respects,

Cledirsa was feeling ready for a new business development challenge, and having just appointed a dedicated colleague responsible for business expansion into new markets, the agreement with MacArtney represents a great growth opportunity for our business. Undoubtedly, MacArtney solutions such as SubConn® connectors and marine winches will help solve the challenges faced by our clients. In Uruguay and Paraguay, key MacArtney markets are likely to include dredging and civil engineering contractors, harbour authorities, navies and the tentatively blooming regional oil and gas industry."

Global solutions and local expertise

According to MacArtney Sales and Marketing Director, Marco MacArtney, the partnership with Cledirsa is bound to be a rewarding venture for both companies: "MacArtney and Cledirsa share a first mover mentality and understand the need to sell and support products and systems locally - giving clients access to rapid response to enquiries and mobilisation of service. Coupled with an extensive network of good contacts within river authorities, national port organisation of ports and navies, this dedication to local presence will be of key importance to the success of Cledirsa representing MacArtney products and systems."

Dedicated representation from day 'three'

Just three days after having signed the agreement with MacArtney, Cledirsa was in place at the major 'Navegistic' maritime exhibition in Asuncion, Paraguay, to promote MacArtney products and systems to potential local clients. To support Cledirsa's efforts, MacArtney overnighed a large marketing package with catalogues and product data sheets directly to Cledirsa at the show site. "The show was a great success and several of our stand visitors expressed great interest in our involvement with MacArtney", says Adriana Duarte Eggel.



MacArtney welcomes

MacArtney A/S: Bjarke T. Ovesen, Hans Christian Clausen, René Jul Sørensen, Niels Ole Storm Nikolajsen, Zandra Guldhammer, Klaus Balzarsen, Brian Drejer Johansen, Lise Holmgaard, Camilla Jensen, Jonas Kuipers Haastrup, Ricky Stein, Thomas Holst Nørgaard, Flemming Jørgensen, Bo Høj Tranholm, Mikkel Bjerg Mogensen, Heidi Brodersen, Carsten Farving, Lene Hintz Zinkernagel Rasmussen, Mette Frey, Gitte Thomsen, Martin Fink Vang Jensen, Søren Beier, Morten Skøtt, Niels Andersen, Camilla Kümmel, Dorthe Brandsborg, Jesper Koch. **MacArtney Inc.:** Christina Wappelhorst, Todd Michael Parsons, Darrien L. Burnett, Shannon L. Lewis, Sergio Green, Melanie Sisavath, Nicholas Devoni. **MacArtney UK Ltd.:** Amy Le Mesurier, Kim Earland, Andrea Coakley, Tom Pettigrew, Adele Ashton, David Ellington, Connor Elrick, Pavel Walker, Martin Hale, Tobias Brown, Calum Adams, Stephen Urquhart, Hamish Forbes, Alison Wetherly, Arlene Wink, Michael Callaghan, Derek Woodrow, Paul Taylor, Steven Watson, Neil Reilly, Jordan Rose. **MacArtney Norway AS:** Agata Szmukala, Anja Arnevik Andersen, Jerzy Terpinski, Vaidas Pusinkas, Chris Moen, Maylin Goa Sivertsen. **MBT GmbH:** Markus Weber, Oliver Zenk. **MacArtney France S.A.S.:** Carine Faline-Bertrand, Marie-Laure Laville, Laurence Brosseau, Anthony Lecault. **MacArtney Benelux BV:** Rick Wewers, Michelle Johanna Bennik. **MacArtney Singapore Pte Ltd:** Lim Kar Man, Muhammad Ismail Bin Salam, Shaik Syawal Bin Shai Jamal. **MacArtney Australia Pty Ltd:** Tom Zezou.

MacArtney global highlights

United Kingdom

MacArtney UK Ltd.

David Buchan
Managing Director
Aberdeen, UK



"MacArtney UK Ltd. continues to enjoy the good business climate in the UK market and having recently achieved a turnover in excess of £ 18.2 million for the first time in the history of MacArtney UK - we look forward to continuing the positive trends as we move into 2015.

Since the last issue of In Depth we have been fortunate to secure 3 significant contracts for a total of 6 MERMAC AHC winch systems.

In response to the levels of business we are experiencing at the present time and with an eye firmly on the future growth of the company we are actively looking for new field sales staff to join our ever growing team."

Norway

MacArtney Norge AS

Mats Ekström
Managing Director
Stavanger, Norway



"Starting the new financial year with our 20 year anniversary feels good. Many of our key customers, suppliers and MacArtney colleges attended the celebrations here in Stavanger. I am sure that everyone had a good night and got a chance to get at good talk during the fabulous dinner and the subsequent festivities. The band struck up at 10 PM and last guests left at 3 AM in the morning. We have received very positive feedback from many of the guests thanking us for an excellent event.

After a successful 'strategy 2020' meeting, we are confident to be on track to realise even more system sales. This is reflected in a quite aggressive budget for the year to come.

Finally, I am proud to announce that following a spell of thorough preparation and hard work, we have now achieved ISO certification and anxiously await to receive our certificate."

North America

MacArtney Inc.

Lars F. Hansen
President
Houston, USA



"First of all, our workshop recently managed a truly impressive effort to churn out the large connectivity package for AES. Within this context, we generally see that the strategy of having a quick turnaround based on a large inventory is paying off. For instance, this has granted a major boost to our slip ring service facility and to maintain momentum, we will continue to invest in inventory as well as new and existing personnel.

From a sales standpoint, we are happy to report that interest in our systems is still going strong. This development is fuelled by large connectivity orders from OEMs and high interest in our standard MERMAC winches as well as bespoke handling systems for specific ROV models and other subsea applications.

We continuously strive to be locally present to provide support for- and share knowledge with our clients and we are happy to report that the new agent in GOM based offshore Mexico has had a good start. Finally, our 'lunch and learn' programme is continuing to prove a success with recent events held with Trendsetter Engineering and MBARI."

South East Asia

Singapore Pte. Ltd.

Steen Frejo
Managing Director
Singapore



"MacArtney Singapore is currently enjoying a good spell of performance with results surpassing expectations in all areas of business. Since its inauguration, our slip ring facility is well up and running with several rotary units being serviced every week. In extension of this, we have just opened a dedicated fibre optics workshop manned by expert technicians and outfitted with modern and efficient equipment. This workshop will provide full fibre optic service for clients within the entire region.

Following this successful first year with our new and expanded Asia Pacific setup, expectations for next year are sky high; however, we are ready to step up to the challenge and will continue to cultivate and expand our business, hereunder bringing in even more fresh faces in the time to come.

Finally, I think that our good cooperation with local MacArtney agents is worth a mention. I was impressed to see no less than 8 representatives make the journey to Denmark for the seminar and workshop event in November 2014."



Meet us in person at these exhibitions

Underwater Intervention, New Orleans, LA - USA, 10th - 12th February 2015 (stand no. 711)

Subsea Tieback 2015, New Orleans, LA - USA, 3rd - 5th March 2015 (stand no. 334)

AOG, Perth, Australia, 11th - 13th March 2015 (stand no. A29)

Ocean Business '15, Southampton, UK, 14th - 16th April 2015 (stand no. B1)

The full list of exhibitions and conferences is available at www.macartney.com/exhibitions