



# MacArtney Medium Voltage Inline Terminations

## Connecting to nature

In the world of marine renewable energy - as several pathbreaking pioneer ventures are starting to materialise and produce viable results - the gathering of energy itself steadily becomes merely part of a larger equation.

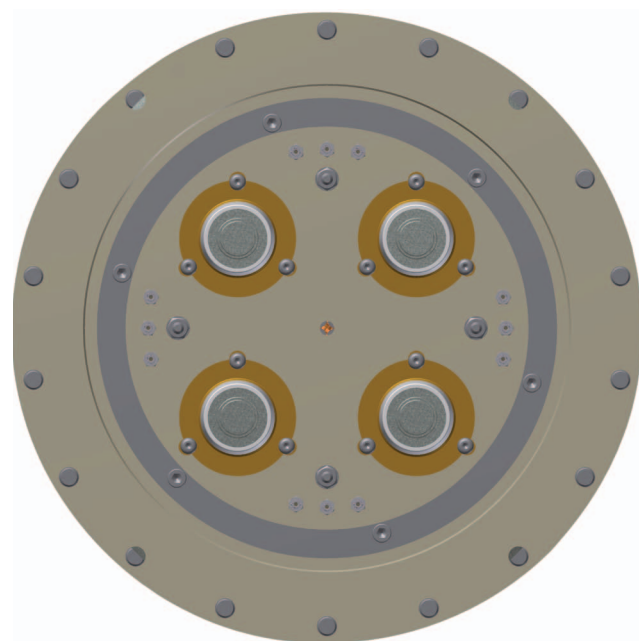
Within this context, as ocean energy promises to become an ever more important component of the global energy portfolio - the challenges presented by interconnecting energy production and converter units and wiring them to the grid, is bound to receive the undivided attention of developers and operators.

At the heart of this development, underwater connectivity solutions come to play an increasingly vital role.

In its capacity as an industry leading expert on underwater connectors, cables and terminations, MacArtney is fielding an extensive variety of solutions. These range from standard SubConn® and OptoLink connectors, subsea cables and penetrators to large scale solutions such as 11kV Wet Mate Connectors and Medium Voltage (MV) Inline Terminations.

## Beating downtime with MacArtney Medium Voltage Inline Terminations

The proven and dependable connectivity solution represented by MacArtney MV Inline Terminations promises to deliver multiple advantages to renewable energy operators within wind, wave and tidal energy sectors alike. MacArtney MV Inline Termination solutions are often used to connect dynamic cables from offshore renewable energy converters to static export cables. Moreover, they are used for interconnecting subsea units.



▲ Faceview of the MacArtney Medium Voltage Inline Termination displayed here on the stand. This specific +/- 5kV DC configuration features four power connectors and 12 single mode fibre optical passes, however, several alternative options are available

MacArtney MV Inline Terminations are engineered to make offshore inline connections faster, easier and more effective. Cables can be terminated on site ahead of deployment and the actual mechanical connection of the two halves takes less than an hour. This marks a significant improvement on the time it normally takes to cut and splice cables offshore and makes MacArtney MV Inline Terminations an ideal solution for applications with limited installation time windows - such as subsea tidal energy arrays.

In addition, the mechanical connection enabled by MacArtney MV Inline Terminations, makes it possible to connect and disconnect cables time and time again. MacArtney MV Inline Terminations also provide mechanical stress transfer between cables and are protected with bend stiffeners and optional bend limiters.

MacArtney Inline MV Termination solutions are designed to suit the specifications and requirements of each project and combine the benefits of custom engineering flexibility with fully tested technology and industry standard components.

## Flexible installation

In several instances, the assembly of marine renewable energy units and related underwater connectivity require installation work to progress in multiple stages. MacArtney MV Inline Terminations can be mounted onto cable ends and one half of the system left on the seabed with a protective pressure cap on the connector. This way, operators obtain flexibility to mate the second half at a later stage.

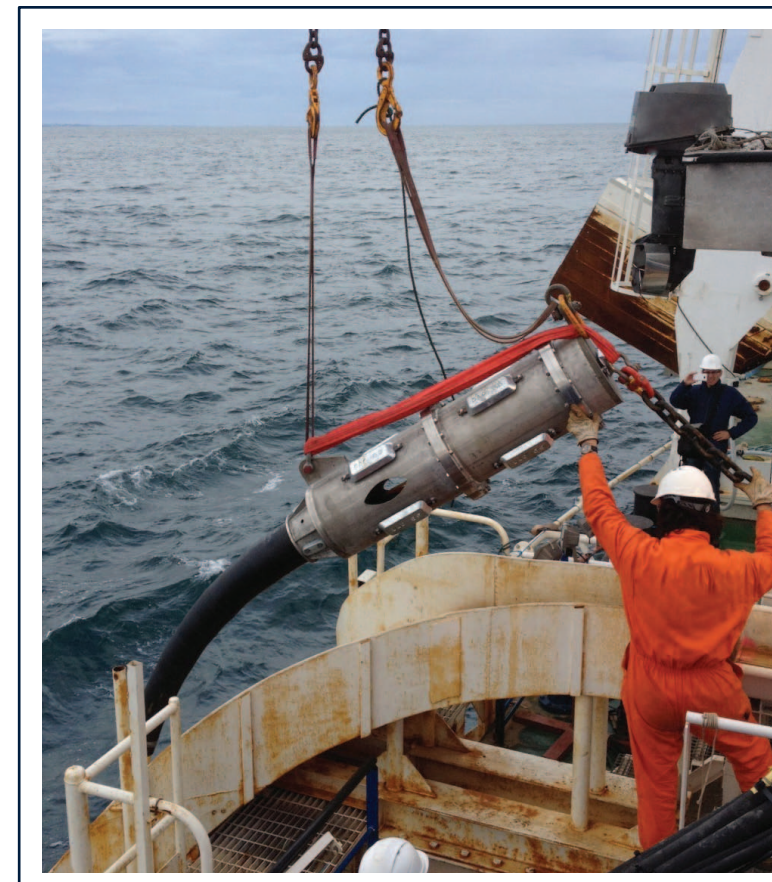
## A sea of potential

MacArtney MV Inline Terminations hold several useful applications within:

- Connecting to offshore wind applications
- Connecting to offshore tidal applications
- Connecting to offshore wave applications
- Connecting dynamic cables to export cables
- Connecting renewable energy applications to land cables
- Connecting to subsea MacArtney Medium Voltage Hubs
- Interconnecting renewable energy applications
- Interconnecting multiple energy converter units
- Subsea completion
- Sea cable splice kit

## Specifications

- Standard working voltage range of 6 to 36 kV
- Up to 1250 Amp
- Conductor range of 35 to 630 mm<sup>2</sup>
- 100 metre working depth (other working depths available)
- AISI 316 housing material (other materials available)
- 75 to 100 kN of straight pull SWL
- Pull out / lift SWL resembling 25 to 85 kN per pad eye



## MacArtney Inline Termination for EDF at the Paimpol-Bréhat offshore tidal farm

Off the coast of Brittany (France), a truly pathbreaking tidal energy project is rapidly approaching an operational stage of development.

Initiated and administered by EDF (Electricité de France), and powered by four OpenHydro (DCNS) tidal turbines, the Paimpol-Bréhat project is set to become the largest tidal array in the world, and the first large-scale tidal energy farm to be connected to the onshore power grid.

Within the scope of this project, MacArtney MV Inline Terminations are being widely applied to connect tidal turbines to a central subsea power conditioning unit.



◀ EDF (Electricité de France) launches one half of a MacArtney Medium Voltage Inline Termination on export cable ready to connect to a subsea power conditioning unit (image courtesy of EDF)

## Other termination options by MacArtney

While the MV Inline Termination marks the top of the range within MacArtney underwater termination solutions, MacArtney is able to supply terminations and penetrators to suit any purpose and requirement.

MacArtney termination and penetrator options include:

- Standard steel terminations
- Chamber terminations
- Oil compensated terminations
- Extension and fibre optical 'take-out' terminations
- Penetrators (including OptoLink fibre optical penetrators)
- FITA Field Installable Termination Assemblies
- Medium Voltage Hubs

## MacArtney renewable energy solutions

MacArtney has been actively working with renewable energy projects for over a decade, supplying state-of-the-art solutions to offshore wave, tidal and wind applications alike.

The MacArtney portfolio of underwater technology systems and products has proven itself to be an ideal basis for advising and supplying operators and developers with the rapidly growing renewable

► MacArtney Medium Voltage Inline Termination used for connecting to offshore wind turbines

energy sector. Several MacArtney products are directly applicable for offshore renewable energy applications, where especially our connectivity (SubConn®, OptoLink), termination and rotary solutions hold a successful track record.

What is more, MacArtney is also capable of supplying further developed and customised products as well as completely new system designs - tailor made to empower any particular purpose, project or specification.

