

Product solutions for the renewable energy sector

Renowned for its pioneering spirit, Balmoral has conquered many of the offshore energy industry's greatest challenges in terms of developing high technology buoyancy, protection and insulation product solutions that are in use around the world.

Patented cable protection systems (CPS)

Duraguard™ cable protection

Surface and subsurface buoyancy

Bend stiffeners (dynamic and static)

Bend restrictors (bolted and boltless)

Flexible and retrofit J-tubes



Our commitment to materials and product innovation has made us the 'go-to' company for projects that require intelligent collaborative supplier input. Our reputation as a problem solver is recognised throughout the industry and our technical and engineering teams frequently attend early project meetings with operators and installation companies to identify potential win-win cost saving solutions.

Offering fully integrated services from the R&D labs and engineering design, through unrivalled manufacturing capabilities and capacities – as well as in-house subsea and mechanical testing – such comprehensive levels of service have never been seen before in this sector of the offshore renewables industry.

With this depth of knowledge, financial strength, 'can-do' attitude, unrivalled manufacturing and testing facilities a hugely exciting future lies ahead for Balmoral and its renewable energy clients.

If you would like to learn more about how Balmoral can help maximise your project's potential, don't hesitate to contact us or, better still, come and see us in Aberdeen. We'd be glad to show you round our industry-leading facilities.



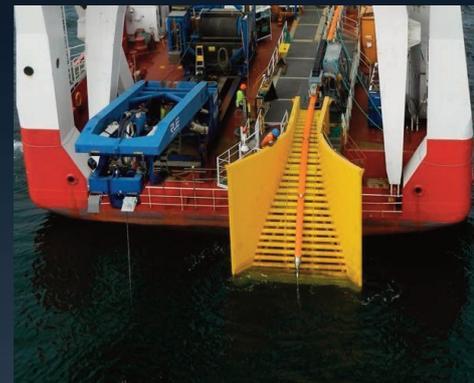
Patented cable protection systems (CPS)

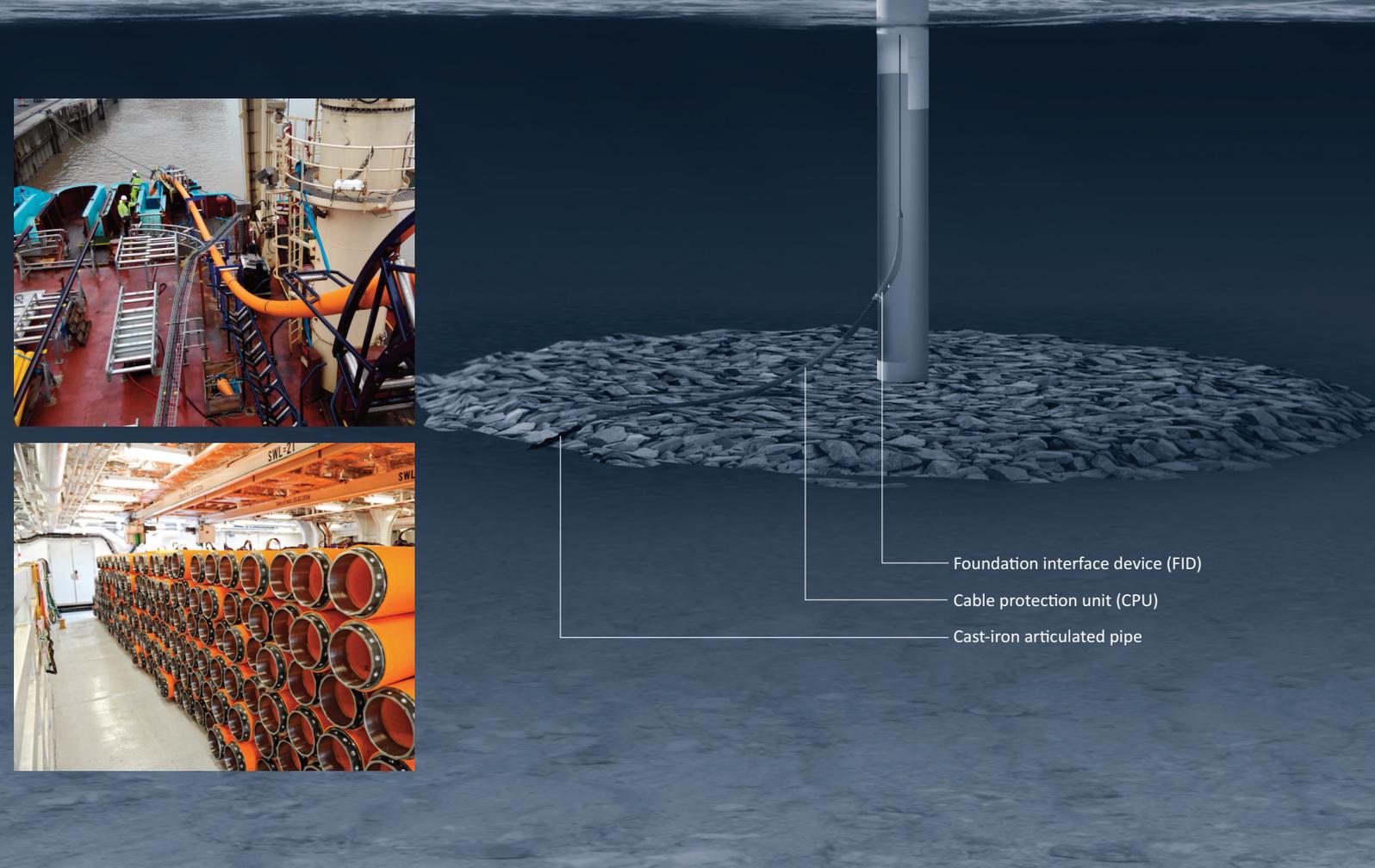
The CPS comprises three main elements; the foundation interface device (FID), cable protection units (CPU) and cast-iron articulated pipe.

The FID is typically 1m long and secures the CPS at the monopile foundation protecting the cable against overbending, sharp edges and pressure points.

Typically 4m long, the CPU modules are deployed in 8-20m configurations to protect against cable fatigue, overbending, impact and abrasion in the free span section.

The cast iron elements stabilise the cable along the seabed protecting against overbending, impact and abrasion and continue this protection below the seabed.





Foundation interface device (FID)

Cable protection unit (CPU)

Cast-iron articulated pipe



Duraguard™ cable protection

Duraguard provides protection for subsea cables, flexible jumpers and flowlines although many other applications have been identified.

It provides a cost effective localised impact and abrasion protection system and is supplied as pairs of interlocking half shells secured around the core product using circumferential straps.

In addition to providing mechanical protection, Duraguard HD is available in weighted form to enable its use as ballast or stabilising systems.

Surface and subsurface buoyancy

Providing a range of options including one-piece, modular and 'off-the-shelf' products with a variety of fittings and accessories, Balmoral offers a comprehensive range of surface/subsurface buoyancy solutions.

Bend stiffeners (dynamic and static)

Bend stiffeners are used to support cables and umbilicals when connected to rigid structures where there is a requirement to control the bend radius of the pipe.

In dynamic applications bend stiffeners require to have sufficient fatigue resistance to control the in-service bend radii and sustain the cyclic loads to the end of the specified life whereas in static applications they protect against gross over-bending.

Stiffeners are typically conically shaped polyurethane mouldings with a cylindrical bore that slips over the core product.

Bend restrictors (bolted and boltless)

Designed as interlocking elements, bend restrictors prevent over-bending at the interface between cables and rigid structures such as turbine connections, J-tube exits, rigid pipe crossovers, etc, by mechanically locking up.

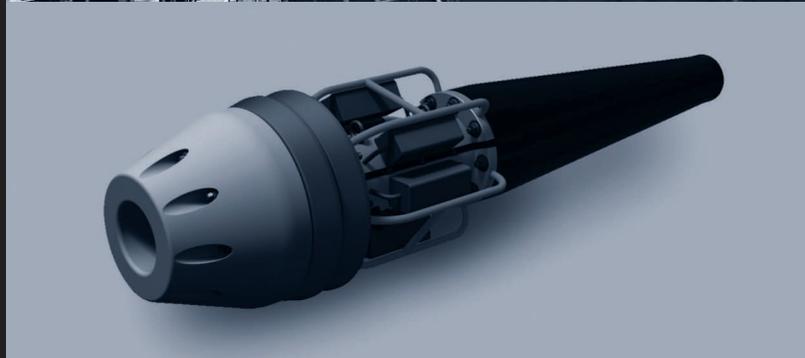
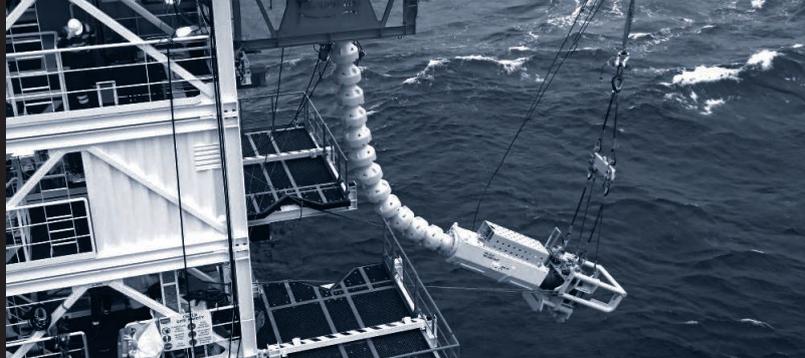
They are normally used in static applications but, unlike bend stiffeners, only provide protection once the pipe has achieved the desired bend radius.

Balmoral restrictors are manufactured in rigid structural polyurethane two piece units that are bolted together around the pipe. Alternatively, a boltless option is available to minimise installation time.

Flexible and retrofit J-tubes

J-tube seals are used to provide sealing and corrosion protection between cables and so-called J- or I-tubes found on offshore installations.

Balmoral provides diverless and diver-installed seals that are available in a range of sizes as pre- or retrofit options



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