



**F**ugro Seacore recently completed an exciting £2.5 million contract to install Oyster®, an innovative Wave Energy Converter. Aquamarine Power appointed the Company as principal contractor for this challenging project, which took place at the European Marine Energy Centre (EMEC) test site 400m offshore, west of the Orkney mainland, in 12m water and a 3m tidal range.

Martin McAdam, Chief Executive Officer of Aquamarine commented: “This is an important time for Aquamarine Power. We have installed a full scale demonstrator of our Oyster wave device. We wanted it to be installed correctly and carefully and we needed a world class contractor to do that - that is why we chose Fugro Seacore”.

The project was divided into several stages:

- Installation of a Pile Connector Frame (PCF) onto the seabed, creating a secure foundation to attach Oyster. Once lowered to the seabed by Deep Diver’s Kobelco crane, the 36t PCF was anchored in place by four 1m diameter piles grouted into sockets drilled 14m below the seabed. Resting on several adjustable legs, the PCF required accurate positioning & levelling to compensate for the rocky, uneven seabed. Once installed, the final connection to the piles was made by mixing & pumping Densit D4 grout.

The Power Capture Unit (PCU) was then lowered onto the PCF and 2 halves of Oyster bolted together. With dimensions 18m x 12m x 4m and weighing 200t, the PCU was towed to Orkney onboard a flat top barge and installed during a complex operation involving GPS Marine’s Apollo shearleg. Some 120t of seawater was pumped into

ballast tanks within the PCU to provide negative buoyancy to aid its descent, before being lowered under the guidance of divers.

- The third stage was to connect Oyster to its onshore generating station by installing three flexible subsea pipelines, a 600m long data umbilical cable and a variety of instruments to monitor Oyster’s performance. To stabilise and protect the flexible spools from the site’s harsh wave conditions, they were carefully covered with concrete mattresses, each weighing 15t.

Once tests of the hydraulic and electronic systems were completed, Oyster was brought to life in a deballasting operation to remove the seawater.

Despite the challenges of deploying a prototype device in a harsh, remote environment and simultaneously co-ordinating teams from 6 different companies, the project was a resounding success and has attracted widespread attention, culminating in Oyster being officially launched in November 2009 by Scotland’s First Minister Alex Salmond, who said.

“I’m delighted to see first-hand the full-scale Oyster now installed and operating offshore. This is a key milestone for Aquamarine Power and for Scotland’s marine renewables sector.”

Martin McAdam for Aquamarine Power stated, “Getting Oyster into the water and connected to the seabed was always going to be the most difficult step and its completion is a real credit to everyone who has worked hard on planning and executing this major engineering feat on schedule and without any complications”.

