

USBL for Tidal Energy Positioning



One of the latest renewable energy sources currently being investigated for future large scale commercial deployment is tidal energy that exploits the natural ebb and flow of coastal tidal waters. As with other energy sources offshore, innovations to harness tidal forces often throw up additional operational difficulties particularly to do with positioning of the devices on the ocean floor and their connections to shore. Triscom have recently added the latest USBL positioning system, the Applied Acoustics' Easytrak Nexus, to its equipment pool to meet the increasing requirement for accurate underwater positioning tasks.

Triscom is experienced in hydrographic/seabed survey and is recently involved in the installation and testing of a tidal energy test rig off the Orkney Isles in Scotland.

"We were required to inspect some subsea cabling in the area of a massive OpenHydro tidal turbine off the island of Eday in Orkney," stated Tristan Thorne, the senior surveyor, "because it was important to know what was happening in the deep inlet where surges of water are funnelled along a particular channel. As the turbine is mounted on the seabed, deep enough not to interfere with shipping traffic, its positioning is critical as are the cables in the vicinity that lead to shore."

"We carry out a lot of work like this mapping inshore cable routes which are often in shallow and dynamic environments," said Tristan, "and very often we find damage or anomalies that must be accurately marked for reporting to clients. The Nexus is the perfect design to perform very well in this capacity as the results achieved are accurate and repeatable in the most challenging acoustic environments."

In initial trials this summer the Easytrak system was deployed firstly with a small ROV used to visually inspect and verify a cable route for a seabed-mounted current profiler, then again with a towed sidescan sonar for a salvage contract.

"We were looking for a very small seabed asset in a difficult tidal site, and towing the sonar in a straight line was impossible, but we were able to track it with the Nexus and this gave us an accurate fix on our targets. After the sonar sweeps, the Nexus guided the ROV to these targets and enabled us to locate the missing asset, survey it and report its position to our client."

Since the trials, Triscom has continued its use of the Nexus in a range of contracts including the ongoing support of the major tidal generator trial. Demand is also high for this Nexus outside Triscom's traditional operational area as the company has successfully hired its system to other industries in between its own contracts.

"Easytrak Nexus is generally impressive," stated Tris, "We mount the system's transceiver on a pole aboard our survey vessel and track the ROV's, divers, sonars, crane hooks and virtually anything underwater with a high degree of accuracy."

Tristan admits that the Nexus system has quickly become an essential piece of kit for this company because it greatly adds to its operational efficiency - particularly he says, as "its interoperability with industry standard beacon types is great too."

The Easytrak Nexus is the latest generation of USBL tracking systems from Applied Acoustics that has Spread Spectrum Technology incorporated into it to improve the accuracy of positioning information. This technology also rejects unwanted reflected signals that have made operations in challenging locations such as ports and harbours difficult in the past. It is a rack-mounted system with built in PC that displays positioning information on a separate monitor where the activity of up to ten subsea targets within a specified operating area can be viewed.

