

Case Study

Mammal detection sonar solution for SeaGen

Products: Gemini sonar
SeaTec software

Clients: Sea Mammal Research Unit
Marine Current Turbines

Location: Northern Ireland, UK

Background

Marine Current Turbines Ltd (MCT) is an industry pioneering developer of tidal stream generation technology. The company is committed to research, design, manufacture and support of tidal energy systems. Currently, MCT has an agreement to supply SeaGen devices globally including to the Minas Basin Pulp & Power site at FORCE in the Bay of Fundy, Canada's leading research centre for in-stream tidal energy, located in the Bay of Fundy, Nova Scotia.

In 2008 MCT deployed SeaGen, the world's first commercial scale tidal energy turbine, at Strangford Lough (150km²). Regarded as "A most beautiful landscape of international importance" (NT, 2016), MCT required a sonar system to safeguard marine mammals in this area. Previously at Strangford Lough MCT implemented a solution based upon human observers, in conjunction with a mechanical scanning Trittech Super SeaKing sonar, to monitor mammal activity. However this system was perceived to have inadequacies, and MCT set upon finding a more advanced solution.

In collaboration with The Sea Mammal Research Unit (SMRU) MCT committed to source a more accurate and efficient sonar based system. SMRU carried out trials on a number of commercial sonars to detect and track marine mammals located at offshore renewable developments. From these trials Trittech's Gemini sonar was found to produce the best results [Hastie et al; 2012]

Project

SMRU and Trittech have worked in partnership to develop a sonar based solution to support SeaGen. After extensive development and testing Trittech created SeaTec, a software package supporting the Trittech Gemini multibeam imaging sonar.



SeaTec has the capacity to report real-time monitoring and data about marine wildlife and environment. The data generated by SeaTec (size, shape and movement) allows automated determination of the probability that the target/object is a marine mammal, therefore allowing for an immediate decision to be made on what action should be taken.

Additionally, SeaTec logs data for vital post hoc analysis of marine mammal behaviour and environmental impact assessment (current and future).

Solution

Over a three month period the SeaTec system was deployed at Strangford Lough, alongside the SeaKing sonar, where the system's imaging and detection capabilities were systematically evaluated. It has been established the high-resolution imaging and automated target detection provided by the SeaTec system offers effective and efficient data analysis of the marine environment. Thus, the SeaTec system has been found to be more accurate and consistent than previous techniques, allowing detailed analysis of marine mammals behaviour in the surrounding area of Strangford Lough.



References:
SMRU - Environmental Interactions of Marine Renewable Energy Technologies 2012.
National Trust (www.nationaltrust.org.uk/strangford-lough)
Marine Current Turbines Ltd. (www.marineturbines.com)

