

Offshore Renewable Energy



When you need an installation contractor on your side delivering results safely and reliably, one with the right vessels and equipment, together with a highly experienced team ready for this demanding environment . . .

...COUNT ON **FUGRO**



Fugro bring their wealth of experience and expertise in Oil & Gas to the offshore renewables sector.

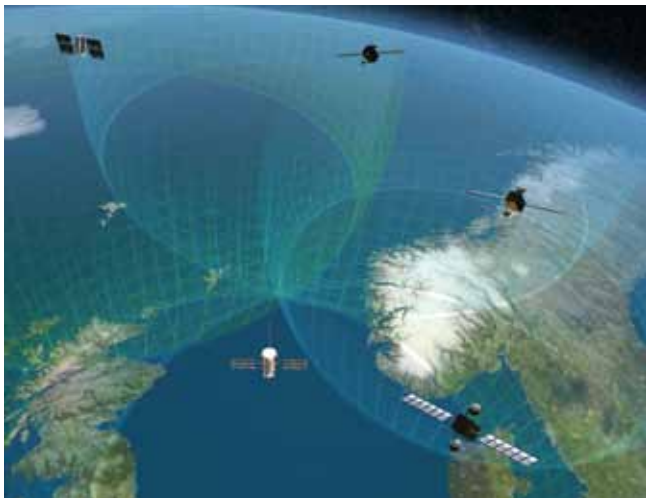
For over forty years Fugro has provided its offshore clients with skill, reliability, safety and innovation; all qualities that are essential in the harsh conditions encountered offshore.

Drawing from our expertise in positioning, survey, ROV and construction vessel services, Fugro have been supporting renewable projects offshore since 2004. So whether you require accurate positioning for an installation vessel, an ROV inspection of your cable array or an installation vessel package to construct a crossing.



“An installation support contractor on your side who understands this environment”

Positioning



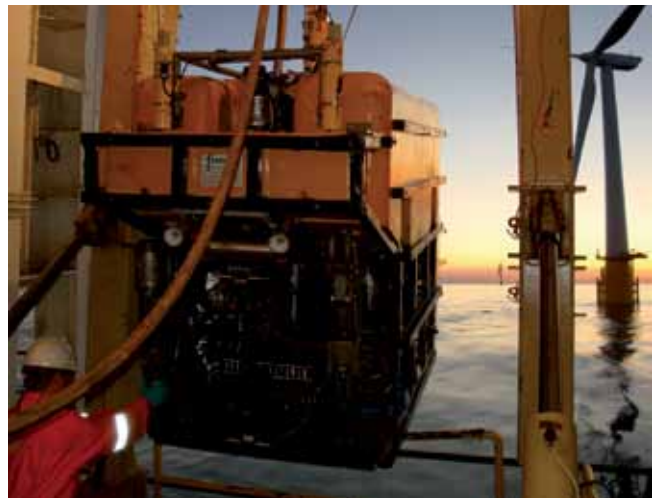
Precise positioning information is fundamental to all offshore activities. Fugro's Starfix long range high precision DGNSS services provide premium accuracies in elevation and plan without the requirement for project based reference stations. Accurate positioning is transferred subsea using a complete range of acoustic positioning products.

When used in combination with the Starfix Suite of navigation, data acquisition and reporting software, the Client is assured of accurate installation, survey and inspection data, delivered at the right time, tailored to dovetail into the Client's own information systems.

Count on Fugro Positioning for:

- Pile, Transition and Turbine Installation vessels
- Power Cable Installation barges, including Remote Tug management systems
- Pre-Lay Grapnel (PLGR) Vessels
- Diving, Rock Dumping, and Mattress Installation vessels

Survey



In order to overcome the impact on productivity of poor subsea visibility, in addition to digital video, Fugro employ a variety of acoustic based visualization equipment, either ROV or vessel mounted. Multibeam echosounders provide precise bathymetric data of cable routes and can define the extent of monopile scouring, sandwave movement and cable exposure.

Shorter range, more precise devices, have been used to image J tube cable hook ups, ducting condition assessment and provide real time excavation imagery to great effect. Equipment operation, data acquisition and processing is performed by specifically trained Fugro teams who may be deployed on Fugro or Client operated vessels. Data gathered is provided in a traditional, electronic or GIS format to link in transparently with the Client's or Operators own field information system.

Count on Fugro's survey services for:

- Bathymetric surveys
- Scour assessment
- Acoustic visualization
- GIS services and products



Vessels



Fugro's fleet of dynamically positioned Inspection, ROV support and construction support vessels are outfitted with the most up-to-date Fugro equipment and technology and operate around the Globe supporting subsea infrastructure projects.

Our fleet of ROV and construction support vessels are all fitted with Active Heave compensated cranes and permanently installed ROV systems, allowing quick and easy mobilisation. Our vessels also feature fully integrated communications and networking throughout their operating areas and further benefit from having both the Survey and ROV on-line and off-line control areas custom designed. Finally to ensure your project runs smoothly, all core Survey, Inspection, Engineering and ROV personnel onboard are Fugro personnel.

Count on Fugro Vessels for:

- Mattress Installation and Cable Crossing construction
- Burial and De-burial Operations
- Survey and Inspection including Cable Depth of Burial
- ROV and Trencher Operations
- Subsea Structures installation
- Construction operations
- Cable installation

ROV



Fugro are one of the world's largest manufacturers and operators of remotely operate vehicles (ROVs). These systems are operated from our strategically located bases around the world supporting our clients subsea construction projects.

Our fleet is comprised of a complete range of eyeball, inspection and full work-class systems that can be configured to suit both our clients vessel and the operational conditions of the work-site. Our ROVs utilise the best-in-class system components and standardise on sub-systems across the fleet. Our global approach ensures that critical long lead spares are stocked regionally and our Global ROV helpline provides 24-hour support to our Offshore teams and ensures that information updates are quickly relayed to all our ROV teams.

Count on Fugro ROVs for:

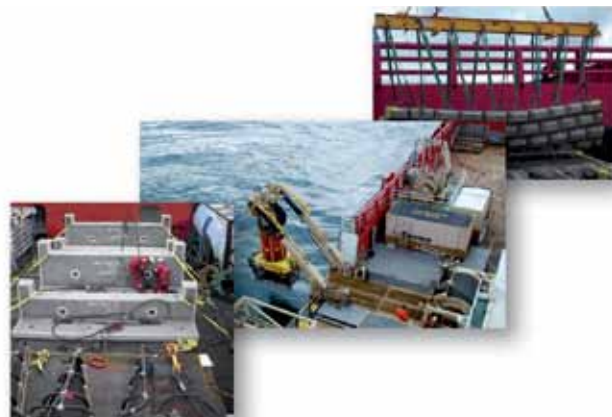
- Cable Installation monitoring
- Cable Burial
- J-Tube inspection and de-burial
- Subsea structure integrity
- Cable depth of burial survey
- Cable crossing installation
- Planned and unplanned remote intervention

Projects

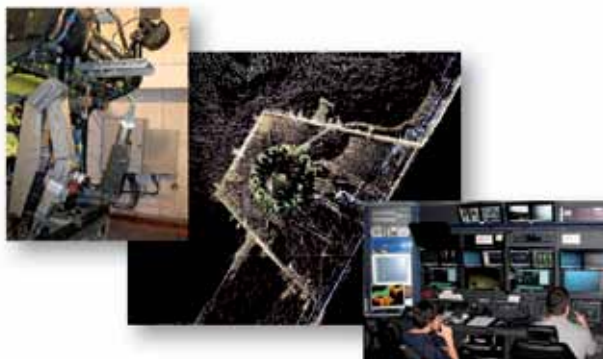
Crossing Construction

Location: Trinidad, Caribbean
Water Depth: 200m
Scope of Work: Install a series of crossing supports and mattresses to allow a pipeline to be laid over a subsea power cable.

- Rigging & back deck operations
- Pre-installation Survey
- Installation of Crossing
- Post-lay Survey



Fugro provided the Project Management, ROV Support vessel, ROVs, Survey team and installation procedures.



'J'-Tube de-burial

Location: North Sea, UK Sector
Water Depth: 30m
Scope of Work: De-burial of Tower 'J'-Tube and pre lay route excavation and seabed rectification allowing the lay barge to install Power cable without damage.

- ROV pre & post operations Survey
- De-burial using high Mass Flow Excavation Tooling
- ROV assistance during 'J'-Tube pull-in

Fugro provided Project Management, subsea engineering, DP2 ROV Support Vessel, ROVs, Survey and overall offshore operations management.

3D Survey in poor visibility

Location: North Sea, Danish Sector
Water Depth: 90m
Scope of Work: Produce a 3D measurable image of a subsea structure in poor visibility .

- Interfaced 3D Multi-beam Image Sonar with ROV
- Carried out subsea survey
- Processed all data onboard the vessel and produced the measurable structural image

Fugro provided Project Management, the DP2 ROV support vessel, ROVs and sonar imaging equipment.



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