The development of a modular ‘stepping locomotion’ system for installation on subsea trenching machines used for subsea energy cable burial

Fact Sheet

Project Information

HEXATERRA
Grant agreement ID: 605420

Funded under
FP7-SME

Status
Closed project

Overall budget
€ 1 571 697,20

EU contribution
€ 1 198 997,50

Coordinated by
INNORA PROIGMENA
TECHNOLOGIKA SYSTIMATA
KAI YPIRESIES AE

Greece

Objective

Offshore wind and tidal energy generation is becoming an increasingly important component of the world’s energy mix with Europe at the forefront of this technological revolution. Continued strong growth is predicted. However, a growing problem is manifesting itself within the industry.

The submarine cables that are an essential infrastructural component of offshore energy now account for 80% of insurance claims related offshore renewables. Unfortunately, current practice is to simply lay these cables on top of the seabed without burial or protection, as the traditional tracked trenching machines originally
developed for deep sea oil and gas applications are inadequate for the harsh coastal terrain. Cables are therefore exposed to numerous risks such as tidal forces, rock abrasion, snagging from fishing nets etc. Furthermore, unburied HV cables present serious environmental concerns related to local habitat & water temperature.

Existing technologies cannot address this growing problem. HexaTerra will develop a novel solution to the problem that builds upon recent advances made in ‘stepping’ locomotion systems for traversing undulated harsh terrain. This system will provide a robust solution for its environment, by achieving the following objectives: modular design suited to existing trenching machines; mechanical movement subsystem with <5% error in desired motion tracking & <1cm in actual tracking error; control subsystem capable of negotiating +/-0.5m 90° step in terrain & turn on-the-spot; complete simulated locomotion cycle in under 5mins, with <5% desired motion tracking error.

Using this solution the project expects to comprehensively address the problem of damage to subsea energy cables, thereby maximising offshore energy reliability, maintain renewable energy affordability, & minimise the marine environmental impact of cables. In turn, we will deliver a profit of €10.95m & 100 new high skill jobs to the SME partners after 5 years.

Field of science
/social sciences/economics and business/economics/sustainable economy
/engineering and technology/environmental engineering/energy and fuels/renewable energy
/engineering and technology/environmental engineering/energy and fuels/renewable energy/hydroelectricitymarine energy/tidal energy

Programme(s)

Topic(s)

Call for proposal

FP7-SME-2013

Funding Scheme

BSG-SME - Research for SMEs
Coordinator

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Private for-profit entities (excluding Higher or Secondary Education Establishments)

EU contribution
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