

STHYF

Seabad cable stability and hydrodynamics

DURATION: 34 months (2017-2019) | BUDGET: €426K

CONTEXT

The development of tidal turbine farms requires control of the costs of stabilising electrical cables on the sea bed in strong currents. Existing methodologies are adapted for sites where cable instability is mainly linked to swell. The very specific nature of flows at tidal sites requires their adaptation to take into account a turbulent current combined with swell and chaotic bathymetry.

OBJECTIVE

To define a new prediction model for stability of cables laid on seabed at tidal sites.

MAIN ACHIEVEMENTS

- Review of knowledge on cable stability at tidal sites
- Development of a modelling tool for a cable laid on the seabed
- Development and qualification of a numerical model configured to reproduce hydrodynamic constraints on a section of cable
- Proposal and application of a cable stability evaluation methodology
- Specification, monitoring and analysis of basin tests to characterise the hydrodynamic constraints on a cable in a tidal environment

CONCLUSION

STHYF has enabled the development of models to study the stability of cables in a tidal environment, which means on rocky ground and with high current speeds in the water column. These models have been integrated into software tools which are available to support the actors of the tidal sector in the design of future farms.



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TECHNOLOGIES



STAGES OF THE VALUE CHAIN



Preliminary studies



Design

GENERATED RESOURCES

- **Numerical tool:** calculation model for the stability of a cable laid on the floor
- **Database resulting from hydrodynamic tests in a basin:** forces on a cable in different roughness conditions for the cable and the bottom
- **Publication scientifique :** Kuznetsov *et al.* (2018) Modification of a Wake model for hydrodynamic forces on submarine cables with a rough seabed. *Proceedings from 20th EGU General Assembly (EGU2018)*, p.19847

PARTNERS



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