LISORE

Objective 2025: innovative and cost-effective offshore substations for ORE

FRANCE ENERGIES MARINES

FOWT

Studies | Design | Manu-facturing | Installation Construction | Operations Maintenance

DURATION: 15 months | LAUNCH: 2019
Total budget: 476 k€

OUR RELEVANT S&T PROGRAM

FARM OPTIMISATION

OBJECTIVE

Identify technological bottlenecks and potential solutions that will reduce the total cost of offshore substations for commercial floating wind projects by 2025.

SCIENTIFIC CONTENT

- Technical feasibility study of floating or subsea substations adapted to ORE.
- System reliability study and associated maintenance plan.
- Economic evaluation of their total cost of ownership.
- Identification of technological bottlenecks concerning components and processes required for innovative substations with a TRL of less than 5.

CONTEXT

Usually, offshore wind farms are connected to the land grid via offshore substations using regular topside design. This technology would connect 62% of France's potential. The remaining 38% represent a technical challenge.

Floating wind farms are installed in deeper waters that are too costly for topside design substations. A floating solution could be more relevant, in parallel with the development of dynamic cables supporting higher voltage levels than existing solutions. The latter are necessary for connection to machines and to the network.

The subsea substation also represents a plausible industrial alternative that has not yet been considered for high voltage connection.

EXPECTED RESULTS

- Design, feasibility studies and maintenance plan according to a reliability analysis of the substation.
- Sensitivity analysis of the key design parameters of the total cost of ownership (CAPEX and OPEX) regarding an offshore substation and the envisaged solutions (floating, subsea).
- Tool for modeling the overall cost of a substation, taking into account environmental parameters and associated impacts.
- Roadmap addressing key components to be developed and qualified and associated tests to be defined to reduce the total cost of substations by 2025.

PARTNERS

CHANTIERS DE L'ATLANTIQUE | comex | EDF | FRANCE ENERGIES MARINES | INNOSEA | NAVAL ENERGIES | RTE Le réseau de transport d'électricité | SIEMENS | SuperGrid Institute | UNIVERSITÉ DE NANTES

With the additional support of Ifremer and La Réunion region.

This project is supported by the French State, managed by the National Research Agency (ANR) as part of the Investments ofr the Future programme.

INVESTIR L'AVENIR

france-energies-marines.org

contact@ite-fem.org - T. +33(0)2 98 49 98 69