

Numerical simulation tools for the design of offshore structures

HYSMER project



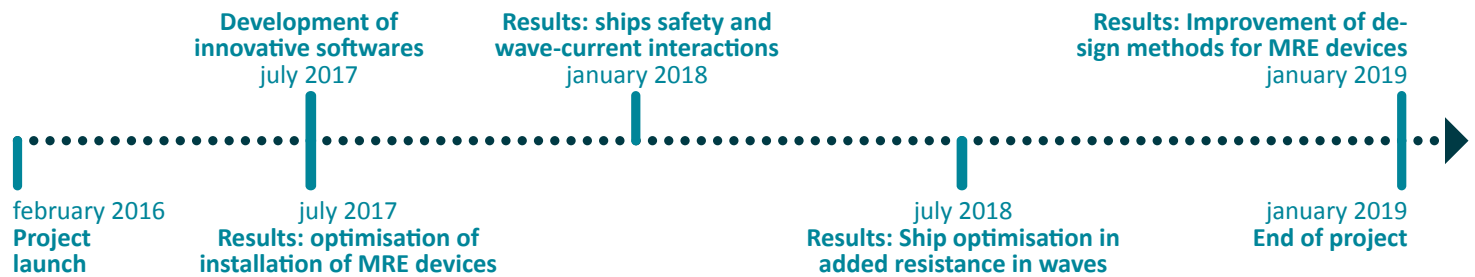
This project answers needs of industrial partners to improve the modelling accuracy of innovative industrial projects with a high added value (ships, wind turbines, tidal turbines...). These products are subject to complex and extreme environmental conditions such as waves, wind and current

Technical and economic impacts

- ▶ Ship optimisation: objective -5% on added resistance in waves
- ▶ To reduce the time for installation of MRE devices (cost of 100 k€/j)
- ▶ To reduce safety factors for design of MRE devices

Keywords

Numerical simulation // Hydrodynamics
Optimisation // Safety // Ships
Installation // MRE devices



INDUSTRIAL CONTEXT

The modelling of structures behaviour at sea represents a major difficulty for industry. Indeed, the modelling is complex since it mixes strong non-linear effects, complex physics and high coupling between fluid and structure. The industry needs to have access to efficient tools, existing but which need to be improved, coupled, with an easier set-up, and which interest should be proven to industrial partners. They can hence use these state-of-the-art tools to perform their modelling, improve their products and reduce their costs.

INNOVATIVES FEATURES

- ▶ Model complex phenomena, multi-scales: it is necessary to couple and interface tools (fluid-structure coupling, potential / CFD...)
- ▶ Model accurately and quickly waves in CFD: finalisation of developments, validation and demonstration test cases of SWENSE method
- ▶ Model accurately the optimisation in added resistance in waves and ship safety through manoeuvring in waves and extreme events modelling
- ▶ Model design and installation phases of MRE devices, more precisely through development of adapted software modules and the use of CFD coefficients to decrease safety factors

INDUSTRIAL APPLICATIONS

The results of the project will be of «knowing type», enabling to improve the modelling methods. The results type «software» will be available at the end of the project on a cluster, through licences contracts, with a privileged access to partners.



Partners

- ▶ IRT JULES VERNE
- ▶ BUREAU VERITAS
- ▶ HYDROCEAN
- ▶ NEXTFLOW
- ▶ ADWEN
- ▶ DCNS
- ▶ GE RENEWABLE POWER
- ▶ STX FRANCE

Budget

- ▶ 2 416 k€

Equipment

- ▶ Software licences on cluster

Sales contact
Philippe Piard
philippe.piard@irt-jules-verne.fr

Press contact
Sophie Péan
communication@irt-jules-verne.fr

www.irt-jules-verne.fr

