

INTERNSHIP HYDRODYNAMIC FULL QTF DEVELOPMENT IN DIODORE™ AND POST DEVELOPMENT.



INTRODUCTION:

PRINCIPIA, is a team of specialised engineers who develops its own software's to design of all type of marine structures in terms of hydrodynamic behaviour, structural loads and mooring analysis.

With the new type of structure as floating wind structure, the second order hydrodynamic loads at high frequencies (Full QTF, mode sum) are required by some certification society.

PRINCIPIA develops and maintained specific software, particularly a hydrodynamic software based on the potential theory for the seakeeping analysis (Diodore™ software).

During previous research studies, specific tools like FULL QTF at low frequencies (2nd order hydrodynamic loads: quadratic transfer function) were developed. Some validations were made with analytical results or results issued from articles.

At this stage, only the reading of the full QTF+ are available in the software, the values shall be computed by another software.

To integrate the fact that More and more studies require a large number of simulations (>30000) and in this context, Principia has developed a tool, DIOSPEC, interfaced with DIODORE™ to generate input and post processing files according to the desired results.

This tool needs to be updated (modification/ redesign) with graphical output possibility

SCOPE OF WORK:

Objective: The development of the full quadratic function in mode sum that will be made shall be implemented in the Diodore™ software, and the post treatment tool updated

The scope of work includes the 4 following tasks with the fourth independent:

0. State of the art of hydrodynamic quadratic transfer function (high frequency). A specific study of the different hydrodynamic terms of the second order waves loads shall be made before to start the development.
1. Build a numerical tool based on necessary DIODORE procedure (Fortran ...) which can compute the FQTF+ and can be easily integrated in the software. A development note and specified equation shall be written
2. Validation note
3. Update of the input / post tool

DELIVERABLES:

Technical report including

- ✓ State of the art
- ✓ Numerical tools (FQTF+ and post treatment tool)
- ✓ Comparison of built tool with existing results for validation purpose

GENERAL:

- ✓ Duration: 6 months
- ✓ Start date: Early 2022
- ✓ Location: PRINCIPIA offices in La Ciotat (Bouches du Rhône).
- ✓ To apply : job@principia.fr