

## **MASTER THESIS INTERNSHIP**

### **“Fluid Structure Interaction: Co-simulation using STAR-CCM+ and ABAQUS for Marine applications”**

**Reference** : CH\_INTERN\_2023\_01\_FSI  
**Publication Date** : 2023-02-17  
**Activities** : Structural engineering and FSI using StarCCM+ & ABAQUS  
**Education Level** : Master level  
**Duration** : 6 months  
**Start date** : From March-May 2022  
**Location** : Valencia, Spain  
**Answer to** : [jobs@caponnetto-hueber.com](mailto:jobs@caponnetto-hueber.com)

#### **1. Caponnetto Hueber Presentation**

##### Background:

Caponnetto Hueber is an innovation and technological laboratory specialized in fluid dynamics and energy efficiency. The company provides naval architecture solutions, innovative concepts, fluid dynamics services and products for the maritime world.

Caponnetto Hueber main topics of expertise are hydrodynamics, aerodynamics, shapes optimization and numerical simulations (CFD i.e. Computational Fluid Dynamics)

Caponnetto Hueber has been involved with America's Cup for more than 2 decades and has won it in 2010 and 2013 and in 2021 has won the Prada Cup working for Italian Challenger, Luna Rossa Challenge, providing all the numerical simulations and responsible of the foils design.

Caponnetto Hueber brings advanced technologies and its creativity to the whole Maritime and Nautical industries.

##### Services:

Caponnetto Hueber provides innovative services in fluid dynamics, using high-end methodologies and tools for naval architects, yacht designers, shipyards, and ship owners to improve design, performances, and efficiency, to lower consumptions and emissions.

- Innovative Concepts
- Design
- Naval Architecture
- Foiling Yachts
- Computational Fluid Dynamics (CFD)
- Hydrodynamics
- Aerodynamics

##### Main current projects:

- Innovative concepts and solutions
- Flying boat design and flight control
- Yachts hydrodynamics and CFD
- Propellers design and hydrodynamics
- Racing and cruising sailing yachts hydrodynamics and CFD
- R&D

The design office is located in the former Swedish America's Cup base in the Marina of Valencia, Spain.

## 2. Project Description

### Project Title:

Fluid Structure Interaction: Co-simulation using STAR-CCM+ and ABAQUS for Marine applications

### Project Objectives:

- Develop and validate structural models on some applications of interest.
- Create a “standardized” procedure and workflow from CAD to Abaqus / Star-CCM+

### Applications:

- Foil FSI: deformed shape – static deformation
- Foil FSI: dynamic deformation
- Wind Turbine blade and tower FSI
- Ship Slamming Analysis

### Topics involved:

- Naval Architecture and Yacht Design
- Sailing, motor, and wind assisted ships
- Fluid dynamics
- Structural dynamics
- R&D
- Programming and coding

### Supervision:

You will be under the supervision of the company CFD & Design manager.

### Perspectives:

If the project is successful and the engineer shows his ability to learn, adapt, work autonomously and in a group of experienced engineers, develop his critical eye and is pro-active in finding solution, a long-term collaboration may be opened.

## 3. Collaborator Profile

### Profile:

- Master Thesis or equivalent in structural engineering

### Technical Requirements (“MUST”):

- Deep knowledge of Structural Engineering as applied to Naval Architecture
- Knowledge of Fluid Dynamics as applied to Naval Architecture
- Deep knowledge of Finite Element Analysis, specifically using ABAQUS
- Have access to ABAQUS licences through your university.

### Technical Skills Appreciated (“PLUS”):

- Good Knowledge in programming and automatization using Python
- Knowledge of Star-CCM+

### Other Requirements (“MUST”):

- English is compulsory as it is the working language at the office.
- Dynamic, rigorous, hard-worker, to maintain the quality standard of the group
- Autonomous, curious, passionate, eager to learn and to push your knowledge

# CAPONNETTO HUEBER

Due to the nature of our work and the level of excellency that we need to maintain and always increase as a group, we look for young engineers / scientists who are passionate, have a very strong academical background and clear understanding of the physical phenomena, eager to learn and develop new competences, who are pro-active and make things happens, are not afraid of challenge and are willing to push themselves to be the best individually and collectively, who are team players and are able to share their knowledge and their motivation with the group, are open-minded, creative, curious and responsible of their projects and tasks, who wants to push technology to the limits and who are willing to be part of an very international group who aim to be the leader in innovation and technology in the nautical and maritime industry.

Contact us at [jobs@caponnetto-hueber.com](mailto:jobs@caponnetto-hueber.com) using the offer reference in the title and include your **CV in English**.