



## Master thesis proposals from Berg Propulsion Technology AB

Berg propulsion is designing, constructing, selling and serving secure and reliable propeller and propulsion system to the shipping industry all over the world. We have production facilities in Sweden and in Singapore, sales offices in Sweden, Singapore, Shanghai, Dubai and Turkey and a technology office in Sweden, on Hönö just outside Gothenburg. In total are about 300 persons employed, and the number is continuously increasing. Most of the major technical developments within the company are gathered under the technology office named Berg Propulsion Technology AB. Berg Propulsion Technology is working with areas such as Hydrodynamics, Mechanics, Automation and IT to support the sales and production offices. Below a number of master thesis proposals from Berg Propulsion Technology is presented.

### Development of CFD methods for propellers

In the hydrodynamics group advanced computational methods (CFD) are being implemented and developed to support the design of both propellers as well as other propulsion related geometries affected by hydrodynamic forces. Within this work a number of considerations need to be performed regarding level of complexity of the computations, (single rotating frame of reference, multiple rotating frame of reference, sliding mesh or even overlapping mesh), meshing strategy (tetra, hexa, polyhedrals), mesh resolution, level of accuracy and more. We need to set a strategy for the future and a possible task could be to perform an advanced CFD computation, with descriptions of why different choices are made regarding the considerations mentioned above. We are today using modern CFD software's such as Ansys ICEM-CFD, OpenFOAM and Fieldview.

For specific questions contact Tobias Huuva, 031-3010741, tobias.huuva@bergpropulsion.com

### Propulsion performance and life cycle analysis

Berg propulsion is today developing propellers with a strong focus on environmental friendliness and efficiency and this concept needs further development. Bergs latest concept involves twin screw propellers with large diameters for all major vessels including a feathering propeller hub for further increased efficiency. This type of systems needs development and analysis regarding propulsion performance over the whole life cycle of the vessel, with a focus on both environmental and economical factors.

For specific questions contact Anders Thoresson, 031-3010732, anders.thoresson@bergpropulsion.com

### Analysis of the azimuthing propulsion concept

Berg Propulsion has currently a large series of propulsion concepts to offer the costumers, with the controllable pitch propeller as the main product. We are currently increasing our product range with an azimuth thruster and the first model is at present under final design. To support the sales offices with information of thruster selection for different vessel types we need to perform a concept study. This analysis could include type of propellers, e.g. pusher or tractor units, contra rotating propellers, fixed pitch or controllable pitch and duct or no duct, but also considerations of engine type, gear box type giving the performance of the entire azimuth propulsion system.

For specific questions contact Emil Cerdier, 031-3010743, emil.cerdier@bergpropulsion.com

For general questions contact Anders Christofferson, 031-3010731, anders.christofferson@bergpropulsion.com,