

Department of Ocean and Resources Engineering

Seminar

The Use of Advanced Computational Fluid Dynamics in the Marine Sector

by

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Abstract

The Marine industry has historically used empirical and analytical techniques in the design and analysis of hulls, propellers, rudders and other marine components. With the advent of high speed computing, flow solutions generated by potential-type codes were introduced and are still used today. The use of Navier-Stokes type flow solvers was limited due to the large numerical requirements of effectively modeling the free-surface and its deformation and movement around a floating body.

However, new numerical techniques, including algorithm development and new meshing strategies have been introduced in Navier-Stokes solvers, which are showing great promise in allowing realistic calculations of complex marine flows. Dr McIlwain will present examples of the application and validation of these tools in various areas of the marine industry and will discuss the benefits that the tools will bring to this industry.