

25th Numerical Towing Tank Symposium (NuTTS 2023)

Ericeira, Portugal
15 - 17 October 2023

ISBN: 978-1-7138-9965-5

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571

Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2023) by Numerical Towing Tank Symposium
All rights reserved.

Printed with permission by Curran Associates, Inc. (2025)

For permission requests, please contact Numerical Towing Tank Symposium
at the address below.

Numerical Towing Tank Symposium
c/o Volker Bertram
121 Erdkampsweg
22335 Hamburg, Germany

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

List of Extended Abstract

P01	Peter Horn	Database structure for CFD, model test and sea trial results and correlation possibilities based on that ... 1
P02	Vladimir Krasilnikov and Lucia Sileo	Prediction of integral and local aerodynamic loads on wind turbine blades using high-fidelity CFD... 6
P03	Vladimir Krasilnikov and Vegard Skjefstad	SOBC-1 – an open science validation dataset for conventional and wind-assisted ship propulsion... 12
P04	Dmitriy Ponkratov	JoRes Joint Research Project - the largest global community developing benchmark for ship scale CFD... 18
P05	Scott Terry	Statistical analysis between CFD simulations and sea trial acceptance tests... 24
P06	Sasha (Oleksandr) Zverkhovskiy	Using CFD for a ship drag reduction study by air lubrication... 30
P07	Hanna Pruszkó, Maciej Reichel, Krzysztof Czerski, Marek Necel and Sören Brüns	Comparison of the propulsive efficiency of the ULCS with standard single screw propulsion with twin screw propulsion and podded contra-rotating propulsion... 34
P08	Anders Ostman, Vegard Skjefstad and Anders Alterskjær	Calculation of Flettner rotor forces using lifting line and CFD methods... 40
P09	Auke van der Ploeg	On the balance between robustness and accuracy in finite-volume codes... 46
P11	João Baltazar, Bart Schuiling, and Maarten Kerkvliet	Modelling of laminar-to-turbulent flow transition on a marine propeller using a RANS solver... 52
P12	Hans Bihs, Widar Wang, Ronja Ehlers, Fabian Knoblauch and Ahmet Soydan	An efficient non-hydrostatic numerical wave tank using σ -grids... 58
P13	Ahmet Soydan, Widar W. Wang, and Hans Bihs	Numerical applications of wave-structure interaction problems using a direct forcing immersed boundary method in REEF3D::CFD... 64
P14	Fabian Knoblauch, Hans Bihs, and Widar Wang	REEF3D::PTF – a fixed grid finite differences potential flow solver for three dimensional fluid structure interaction... 70
P16	Philipp Mucha, Shawn Aram, Dejan Radosavljevic, Jaswinder Pal Singh, Miles Wheeler	Comparison of propeller models in CFD for propulsion and manoeuvring tests... 75
P18	Martim Andrade, Tiago Gomes, Guilherme Vaz and Fernando Lau	Uncertainty quantification for model-scale wind turbines... 81
P20	Dmytro Dehtiarov and Guilherme Beleza Vaz	PINNS for underwater noise propagation... 87
P21	Robinson Perić and Milovan Perić	Increasing the efficiency of wave-structure interaction simulation by coupling 2D and 3D computations using forcing method (<i>online</i>)... 93
P23	Asiye Karakus, Stephen Turnock, Phillip Joseph and Chaitanya Paruchuri	Investigation of the effect of compressibility on acoustic radiation in low-Mach-number flows using CFD... 99
P24	Lahbib Zentari, Guillermo Chilcce, and Bettar Ould el Moctar	Turbulence modelling effects on captive manoeuvring forces in shallow waters... 104
P26	Qais Khraisat, Rui Lopes, Martin Persson, Marko Vikstrom and Rickard E. Bensow	Scaling effects on a propeller in uniform inflow condition... 110
P29	Lucas Legagneux and Benoit Mallol	Cavitation prediction using RANS? Unleashing adaptive grid refinement to reach the mesh convergence... 116
P30	Tomas L. T. M. Carreira, Leigh Stuart Sutherland, and José Manuel C. Pereira	FSI analyses of a high-performance solar boat's composite T-hydrofoil... 122

P31	Rui Lopes, Arash Eslamdoost, Rikard Johansson, Seemontini RoyChoudhury and Rickard E. Bensow	Crossflow transition modelling for a marine propeller at model scale... 128
P33	Themistoklis Melissaris, Ian Hubbard, Iulia Oprea	On the accuracy of predicting cavitation impact loads on the nozzle surface of marine thrusters ... 134
P34	Lucia Sileo, Tiago Gomes, Vladimir Krasilnikov and António Maximiano	CFD validation and analysis of aerodynamic loads acting on the rotor of a floating wind turbine subject to forced motions... 140
P36	Niklas Kuhl	Archiving local high-fidelity simulation data using incremental model order reduction strategies... 146
P37	Merrick Stanley and Richard Pattenden	CFD simulation of wakes compared to SPIV measurements... 152
P38	João Muralha, Luís Eça, and Christiaan M. Klaij	Simulation of a wave impact using ReFresco pressure-based compressible-incompressible flow solver... 158
P40	Andreas Peters, Udo Lantermann, and Ould el Moctar	A multi-scale Euler-Lagrange method to predict cavitation erosion... 164
P41	Jakob Rzeszutko and Ould el Moctar	Influence of shallow water on rudder induced forces... 168
P43	Osama Ahmed, Aaron Godfrey, Stefan Harries, and Miles Wheeler	Parametric design and optimization of planing hull; a comparison of optimization methods... 174
P44	Chiara Wielgosz, Laura Marimon Giovannetti, Jakob Kутtenkeuler and Sofia Werner	Atmospheric boundary layer in wind propulsion and CFD... 180
P45	Matija Vasilev, Milan Kalajdžić and Aleksa Suvačarov	A practical approach to bulbous bow retrofitting for enhanced energy efficiency... 185
P46	Jarle Vinje Kramer and Sverre Steen	Actuator line for wind propulsion simulations... 191
P47	Andro Bakica, Šime Malenica and Nikola Vladimir	Hydroelastic effects on energy saving device... 197
P48	Jorge Lopez and Aitor Juando	Development of standardized series of counter-rotating propellers with special interest in hydrofoil navigation... 202
P49	Ivan Sulovsky, Simon Mewes, Ould el Moctar and Jasna Prpić-Oršić	URANS-based simulation of ship propulsion in seaways... 208
P50	Paweł Dymarski and Ewelina Ciba	Numerical analysis of the influence of the floater geometry on the dynamics of a TLP type floating wind turbine... 213
P51	Alban Leroyer, Nicolas De Pinho Dias, Olivier Castelnau and Anne Mangeney	CFD simulations of iceberg calving... 219
P52	T. Gomes, N. S. Lagopoulos, D. Lopes and G. Vaz	Pitching stability analysis of a displacement hull with cetacean-inspired propulsion... 225
P55	Nicolaos Charalambous and Ian Eames	The numerical study and solution verification of unsteady cavitation of a three-dimensional NACA hydrofoil with tubercles... 231
P56	Clement de Geyer d'Orth, and Tahsin Tezdogan	Investigating aerodynamic behavior of a frigate in waves using CFD... 237
P57	Alex Shiri, Sofia Werner and Keunjae Kim	Hull roughness importance in full-scale ESD's performance prediction... 243
P58	Andriarimina Daniel Rakotonirina, Diederik Westerkamp, Yannick Pham, Bruno Sainte-Rose and Ton van den Bremer	The wave-induced drift floating plastic spheres and plastic discs... 249
P59	Ahmet Yusuf Gurkan, Uğur Oral Ünal, Batuhan Aktas, Çağatay Sabri Köksal and Mehmet Atlar	Comprehensive investigation of the form design of the gate rudder for propulsive performance using design of experiment method... 255
P60	Gem Rotte, Maarten Kerkvliet and Tom van Terwisga	The unresolved issues and phenomena in numerical modelling of air cavity closure using a scale-resolving method... 261

P61	Marcus Döscher and Carl-Uwe Böttner	Free running manoeuvres of DTC in deep and shallow water – A detailed study using RANSE calculation... 267
P63	Çagatay Sabri Köksal, Ahmet Yusuf Gürkan, Batuhan Aktas, Noriyuki Sasaki and Mehmet Atlar	Influence of gate rudder system (GRS) rudder angle(s) on propulsive efficiency... 273
P64	Susana Caetano, Elana Araújo, Catarina Guerreiro and João Pagaime	Access to European Supercomputing – more than a tool, an opportunity... 279