

**Proceedings of ASME 2023
42nd International Conference on
Ocean, Offshore & Arctic Engineering**

(OMAE2023)

Volume 1

**June 11-16, 2023
Melbourne, Australia**

**Conference Sponsor
Ocean, Offshore and Arctic
Engineering Division**

THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS

Two Park Avenue * New York, N.Y. 10016

© 2023 The American Society of Mechanical Engineers, 2 Park Avenue, New York, NY 10016, USA
(www.asme.org)

All rights reserved. Printed in the United States of America. Except as permitted under the United States Copyright Act of 1976, no part of this publication may be reproduced or distributed in any form or by any means, or stored in a database or retrieval system, without the prior written permission of the publisher.

INFORMATION CONTAINED IN THIS WORK HAS BEEN OBTAINED BY THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS FROM SOURCES BELIEVED TO BE RELIABLE. HOWEVER, NEITHER ASME NOR ITS AUTHORS OR EDITORS GUARANTEE THE ACCURACY OR COMPLETENESS OF ANY INFORMATION PUBLISHED IN THIS WORK. NEITHER ASME NOR ITS AUTHORS AND EDITORS SHALL BE RESPONSIBLE FOR ANY ERRORS, OMISSIONS, OR DAMAGES ARISING OUT OF THE USE OF THIS INFORMATION. THE WORK IS PUBLISHED WITH THE UNDERSTANDING THAT ASME AND ITS AUTHORS AND EDITORS ARE SUPPLYING INFORMATION BUT ARE NOT ATTEMPTING TO RENDER ENGINEERING OR OTHER PROFESSIONAL SERVICES. IF SUCH ENGINEERING OR PROFESSIONAL SERVICES ARE REQUIRED, THE ASSISTANCE OF AN APPROPRIATE PROFESSIONAL SHOULD BE SOUGHT.

ASME shall not be responsible for statements or opinions advanced in papers or . . . printed in its publications (B7.1.3). Statement from the Bylaws.

For authorization to photocopy material for internal or personal use under those circumstances not falling within the fair use provisions of the Copyright Act, contact the Copyright Clearance Center (CCC), 222 Rosewood Drive, Danvers, MA 01923, tel: 978-750-8400, www.copyright.com.

Requests for special permission or bulk reproduction should be addressed to the ASME Publishing Department, or submitted online at: <https://www.asme.org/publications-submissions/journals/information-for-authors/journalguidelines/rights-and-permissions>

ISBN: 978-0-7918-8683-0

TABLE OF CONTENTS

Creating a Realistic Piloted Simulation of Helicopter Recovery to an Offshore Platform	1
<i>Neale A. Watson, Mark Prior, Ieuan Owen, Mark D. White</i>	
Numerical Study of Wind Loads and Experimental Validation for a FPSO Vessel Model.....	11
<i>Baili Zhang, My Ha Dao, Xiuqing Xing, Jing Lou, Wei Siang Tan, Yongdong Cui, Boo Cheong Khoo</i>	
Wellhead and Well Casing Integrity During an Event of Drift-Off: A Study Case of an Integrated Riser Analysis Solution Using On-Site Conditions	20
<i>Acacio Sarnaglia do Amaral, Edmo Araujo das Virgens, Germain Venero, Thiago Mussel Dias Soares da Silva, Paul Bohan</i>	
Study on Robust Design for Navigation Dynamics Test for Small Catamaran	27
<i>Chun-Cheng Lin, Wei-Li Liang</i>	
Annotated Guidelines for the Simulation of Floating Offshore Wind Turbines in a Real Environment	30
<i>Francesco Papi, Alessandro Bianchini</i>	
Derivation of Adapted Soil Springs for the Buckling Analysis of Suction Caissons During Installation	42
<i>Juan Pablo Ramos, Viktor Widerspan, Dariya Heinrich, Manuela Bohm</i>	
Subsea Processing Optimization Considering Reliability and Maintenance	49
<i>Leonardo Sales, Thomas Stolpnes, Milan Stanko, Audun Faanes</i>	
Ship Performance Evaluation and Green Ship Type Scheme Under Complex Channel Conditions.....	58
<i>Zhengchen Lian, Lizheng Wang</i>	
Minimum Operating Pressure to Prevent the Onset of Wrinkling Tendency in MLP During Transient Shutdown Condition	74
<i>Venu Rao, Jens Fernandez-Vega</i>	
Aerodynamic Shape Optimization of Offshore Wind Turbine Blades.....	83
<i>Jichao Li, Quang Tuyen Le, My Ha Dao</i>	
Uncertainty of Virtually Sensed Stress Ranges in Offshore Wind Support Structures	92
<i>Johan F. Toftekaer, Jonas T. Vestermark, Michael Sandholm Jepsen</i>	
Predictions of Wind Loads on FPSO With POD-Based Discrete Empirical Interpolation Methods	102
<i>Xiuqing Xing, My Ha Dao, Baili Zhang, Jing Lou, Wei Siang Tan, Yongdong Cui, Boo Cheong Khoo</i>	
Motion-Based Wave Inference With Neural Networks: Transfer Learning From Numerical Simulation To Experimental Data	111
<i>Gustavo Alencar Bisinotto, Pedro Cardozo de Mello, Fabio Gagliardi Cozman, Eduardo Aoun Tannuri</i>	
Combining Model-Based and Data-Driven Methods to Estimate the Roll Motion of a Spread- Moored FPSO.....	121
<i>Lucas P. Cotrim, Alex S. Huang, Gustavo A. Bisinotto, Rodrigo Da S. Cunha, Rodrigo A. Barreira, Anna H. R. Costa, Edson S. Gomi, Eduardo A. Tannuri</i>	

Weakly Nonlinear Surface Wave Prediction Using a Data-Driven Method With the Help of Physical Understanding	129
<i>Jialun Chen, Wenhua Zhao, Ian A. Mline, David Gunawan, Paul H. Taylor</i>	
Modular Collision Avoidance Using Predictive Safety Filters	138
<i>Aksel Vaaler, Haakon Robinson, Trym Tengedal, Adil Rasheed</i>	
NeMo: A Multi-Draft Mooring Line Failure Detection System Based on FPSO Predicted Motion	148
<i>Amir Muhammed Sa'ad, Rodrigo Da Silva Cunha, Rodrigo Augusto Barreira, Eduardo Aoun Tannuri, Edson Satoshi Gomi, Anna Helena Reali Costa</i>	
Detection of Long-Term Changes in Mooring Stiffness Using Vessel Position Monitoring	158
<i>Adrian Eassom, Kanishka Jayasinghe, Clare Thomas</i>	
Developments of the Glen Lyon FPSO Digital Twin: Vessel Response and Structural Monitoring.....	166
<i>Jonathan Bailey, Richard J. Bamford, Suvabrata Das, Soma S. Maroju, Robert J. Barker</i>	
Quality Assurance of Digital Twins.....	175
<i>Kjell Eriksson, Christian Markussen</i>	
Offloading Operability of Near-Shore FLNG With Side-by-Side Moored LNG Carrier in Shallow Water Depth.....	185
<i>Mun Sung Kim, Jae Hwan Lim, Rae Hyoung Yuck, Hyun Joe Kim, Jae Kyung Heo</i>	
CFD Simulations of the DeepCwind Semi-Submersible in Bichromatic Waves and Validation With the Experiments From OC6 Phase 1B	194
<i>Yali Zhang, Harrif Santo</i>	
A Practical Approach for Wave Loads on Bilge Keels in Irregular Seas	202
<i>Jin Zhu Xia, Huaxing Liu, Hilmi Sukri</i>	
Dynamic Analysis of Launching and Recovering ROV	208
<i>Yulin Deng, Xiudi Ren, Martin Nuernberg, Longbin Tao</i>	
Experimental Study of the Draft on the Flow-Induced Motions (FIM) of a Semi-Submersible Platform With Four Square Columns	218
<i>Rodolfo Goncalves, Matheus Marques, Leandro Silva, Shinichiro Hirabayashi, Hideyuki Suzuki</i>	
Computational Fluid Dynamic Modelling of Vortex-Induced Motion of Wind Turbine Monopile Foundation During Installation.....	226
<i>Shengnan Liu, Petter Moen, Fabrizio Fiore</i>	
Frequency Domain Dynamic Response Analysis of Three Parallel Ships in a Twin Marine Lifter System	236
<i>Huan Zhang, Yanjun Teng, Shida Fan, Yuhan Wang, Chao Wang, Yan Yin</i>	
On the Development of Aft Body Hull Form for Ship-Type Offshore Structures	245
<i>Joo-Sung Kim, Gi Su Song, Hye-Jong Son, Bo Hee Kim, Jung Ki Park, Hyun Joe Kim</i>	
Study on Deformation Analysis and Prediction Method of Multi-Function FPSO Hull	260
<i>Hongtao Yuan, Huilong Ren, Gang Chen, Yan Yin, Chao Wang, Bin Wu</i>	
Study on Cantilever Weighing Technology of Jackup	268
<i>Hankun Yang, Yan Wen, Bo Zhou, Chunhui Li, Shida Fan, Yongsu Yan</i>	

An Efficient Time Domain Structural Assessment of a Floating Wind Turbine Structure	273
<i>Hyungtae Lee, Joongyu Kim, Jongoh Kim, Zhirong Shen, Johyun Kyoung, Aldric Baquet, Heejung Lee, Jang Whan Kim</i>	
Monitoring the Rotational Performance of a Weathervaning Mooring System.....	281
<i>Joerik Minnebo, Jiaying Chen, Haoyuan Gu</i>	
A Dry Monitoring System of Mooring Lines Utilizing Artificial Intelligence	291
<i>Djoni E. Sidarta, Nicolas Tcherniguin, Philippe Bouchard</i>	
Offset-Free Tracking Control for a Marine Autonomous Surface Ship.....	301
<i>Tanjil Islam, Syed Imtiaz, Salim Ahmed, Mohammad Islam, Hasanat Zaman, Robert Gash</i>	
Prediction of Short-Term Non-Linear Response Using Screening Combined With Multi-Fidelity Gaussian Process Regression.....	307
<i>Sanne van Essen, Thomas Scholcz, Harleigh Seyffert</i>	

Author Index