

*The 25th ISOPE Conference Anniversary*

June 21–27, Kona, Hawaii Big Island, USA

at Hilton Waikoloa Village: [www.isopec.org](http://www.isopec.org)

The Twenty-fifth (2015) International  
**Ocean and Polar  
Engineering Conference**

*Including additional ISOPE symposia:*

1st **Materials Reliability & Refinery**

3rd **High Manganese Steel**

4th **Tsunami & Safety**

4th **Asset Integrity**

6th **Arctic Science & Technology**

5th **Arctic Materials**

6th **Renewable Energy & Environment**

7th **Sloshing Dynamics & Design**

7th **Frontier Energy Tech**

9th **Strain-Based Design**

11th **Ocean Mining & Gas Hydrates**

13th **High-Performance Materials**

**ISOPE-2015**

Kona, Big Island, Hawaii, June 21–26

## Technical Program

(Updated **June 9, 2015**)

Refereed papers from 53 countries in 187 technical sessions  
9 plenary and keynote presentations

**Full Program** with Paper List, General Information, Reservations,  
Publications and Updates on

<http://www.isopec.org/publications/publications.htm>

ISOPE-2015 Conference proceedings

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ISOPE, P.O. Box 189

Cupertino, CA 95015-0189, USA

Fax: +1-650-254-2038

[meetings@isopec.org](mailto:meetings@isopec.org); [www.isopec.org](http://www.isopec.org)

# TECHNICAL PROGRAM

## The Twenty-fifth (2015) International Ocean and Polar Engineering Conference Hilton Waikoloa, Hawaii, June 21–26, 2015

The number at the end of the session title indicates the tentative number of the proceedings volume. Only the changes in titles or authors the ISOPE-2015 Technical Program Committee (TPC) received in writing before June 9, 2015 are reflected in this program. Final corrections will be updated in the Conference Proceedings of peer-reviewed papers and the Final Program. Conference proceedings (ISBN 978-1-880653-89-0; ISSN 1098-6189) will be available as a set of 4 volumes (5,806 pp.) from ISOPE during and after the Conference.

The 11th Ocean Mining and Gas Hydrates (OMS-2015 or OMSGH-2015) Symposium Proceedings is part of ISOPE-2015 Conference proceedings.

**All ISOPE publications are indexed by Engineering Index (EI), SCOPUS and others.**

FULL CONFERENCE PROGRAM WITH SESSION / PAPER  
LIST: Updated at

<http://www.isopec.org/conferences/conferences.htm>  
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**SUNDAY, June 21**

**Welcome Reception**

**17:00**

**Lagoon Lanai**

**MONDAY 08:30**

**1. OPENING GENERAL SESSION:**

**OCEAN AND ARCTIC REVIEW (V. 1)**

**Monday            July 16            08:30            Monarchy Ballroom**

**Chair:** H W Jin, ExxonMobil Research & Engineering, USA

**Co-Chair:** F. Vorpahl, Fraunhofer-IWES, Germany

**Introduction**

Jin S Chung, ISOPE-2015 Conference Co-chair, USA

**Conference Opening Address**

Nol Gresnigt, ISOPE President, Technical University of Delft, Netherlands

**Materials and Corrosion Technology Challenges in Upstream Projects [Oral presentation]**

Eric Wright, ExxonMobil Development Company, USA

**Safe Conduct of Arctic Offshore Pioneering Operations [Oral presentation]**

Arno Keinonen, AKAC Inc, Canada

**MONDAY 10:30**

**2. SAFEETY & RELIABILITY I:  
Slamming & Hydroelasticity (V. 4)**

Monday

June 22

10:40

Kohala 1

**Chair:** M Muskulus, NTNU, Norway

**Dynamic Strength of a Ship Based on 2D Hydroelasto-plasticity and FEM in Extreme Waves**

Wei Qin Liu, Weiguo Wu, Wuhan Univ of Tech, China; Katsuyuki Suzuki, Univ of Tokyo, Japan

**Shell Module-Boundary Element for Problems of Hydrodynamic**

Nikolay A. Taranukha, Komsomolsk-na-Amure State Tech. Univ, Russia

**On the Estimation Method of Slamming Pressure for Ship Structural Analysis in Combination of CFD with Heuristic Method**

Nobuhito Tahara, Tsutomu Momoki, Toichi Fukasawa, Osaka Prefecture Univ, Japan

**Hydroelastic Analysis of Effect of Various Nonlinear Factors on Load Responses**

Zhangyan Chen, Guochun Lu, Guanghua He, Harbin Inst of Tech at Weihai, China

**3. HYDRODYNAMICS I:  
Added Resistance, Wave Drift & Wind Forces 1 (V. 3)**

Monday

June 22

10:40

Kohala 2

**Chair:** Shukui Liu, National Technical Univ of Athens, Greece

**Co-Chair:** S Yan, The City Univ London, UK

**Numerical Estimation for Submersible Drift Forces Evaluated by Experimental Tests**

Helio Correa Silva Junio, Andre Mitsuo Kogishi, IPT; Mardel Bongiovanni De Conti, Hernani Luis Brinati, Univ of Sao Paulo; Valentina Domiciano, CTMSP, Brazil

**Numerical Analysis of Wind Load on Rectangular Block Cut into Different Shapes**

Linjia Yang, Dexing Zhang, Jian Cui, Dalian Maritime Univ, China

**Practical Approach to the Added Resistance of a Ship in Short Waves**

Shukui Liu, Apostolos Papanikolaou, George Zaraphonitis, National Technical Univ of Athens, Greece

**Experimental Investigation of Ship-Wave Added Resistance in Regular Head, Oblique, Beam and Following Waves**

Petri Valanto, YongPyo Hong, Hamburg Ship Model Basin (HSVA), Germany

**Estimating Quadratic Transfer Functions for Floating Structures Using Model Test Data for Irregular Sea States**

Bjarne Jensen, Hans Fabricius Hansen, Jens Kirkegaard, DHI, Denmark

**Experimental Investigation of Aerodynamic Characteristics of the Overwater Parts of Offshore Platforms [Proceedings only]**

Sergei Y. Solovyev, Victor V. Sokolov, Krylov State Research Centre, Russia

**4. REES OFFSHORE WIND TURBINE I:  
Foundations 1 (V. 1)**

Monday                  June 22                  10:40                  Kohala 3

**Chair:** M S Hossain, Univ of Western Australia, Australia

**Investigation on Monopiles Behavior under Cyclic Lateral Loads in Dense Sand**

Giulio Nicolai, Lars Bo Ibsen, Aalborg Univ, Denmark

**Design of Monopiles for Offshore Wind Turbines with Different Approaches to Estimate Characteristic Soil Properties from Cone Penetration Tests**

Lars V. Andersen, John D. Sørensen, Aalborg Univ, Denmark; Sun-Bin Kim, Jin-Hak Yi, Gil-Lim Yoon, KIOST, Korea; Lance Manuel, Univ of Texas at Austin, USA

**Lateral Behavior of Monopile for Offshore Wind Power using Centrifugal Model Tests on Sandy Soil**

Kyung-tae Bae, Daewoo E&C; Myungjae Lee, Hongik Univ; Kangkoo Rho, Jongpil Lee, Youseok Kim, Daewoo E&C; Heejung Youn, Hongik Univ; Daeyong Lee, POSCO, Korea

**Experiments on Sinking Composite Bucket Foundations for Offshore Wind Turbines in Silty Clay**

Puyang Zhang, Hongyan Ding, Conghuan Le, Jing Liu, Tianjin Univ, China

**5. RULES AND CODES (V. 1)**

Monday                  June 22                  10:40                  Kohala 4

**Chair:** Jin S Chng, ISOPE, USA

*Papers moved to session 96 and session 146.*

**6. ASSET INTEGRITY I:  
Structural Integrity (V. 4)**

Monday                  June 22                  10:40                  Kings 1

**Chair:** Cecilie A. Haarseth, ExxonMobil Development Co, USA

**Variability in Long-Term Corrosion of Mild Steel Tubular Sheet Piling**

Igor A Chaves, Robert E Melchers, Univ of Newcastle, Australia

**Effect of Zoning Corrosion on the Life-Time Structural Reliability of a Jacket Offshore Structure**

Eleni S Zve, Eva Loukogeorgaki, Demos C Angelides, Aristotle Univ of Thessaloniki, Greece

**A Study of Cryogenic-Temperature Structural Behavior for KC-1 Corner Insulation System**

Yong-Bum Cho, Kyo-Kook Jin, Ihn-Soo Yoon, Young-Chul Yang, Young-Gyeun Kim, Korea Gas, Korea

**Global Ultimate Strength Assessment (GUSA) for Lifetime Extension of Ageing Offshore Structures**

E. Mat Soom, Petronas Carigali; M.K. Abu Husain, N.I. Mohd Zaki, Universiti Teknologi Malaysia; M.N.K. Mohd Nor, M.S. Ayob, Petronas Carigali, Malaysia; G. Najafian, Univ of Liverpool, UK

**Lessons Learned from Long-term Testing of Steel in Reinforced Concrete**

Harovel G. Wheat, Univ of Texas at Austin, USA

**7. COASTAL HYDRODYNAMICS I:**

**Storm surge (V. 3)**

**Monday**                      **June 22**                      **10:40**                      **Kings 2**

**Chair:** Nunthawath Charusrojthanadech, King Mongkut's Inst of Tech, Thailand

**Numerical Simulation of Typhoon Waves in Waters of Qiongzhou Strait**

Qian Cheng, CCCC Highway Consultants; Yanan Xu, Tianjin Research Inst of Water Transport Eng; Gao Liu, CCCC Highway Consultants; He Xia, Beijing Jiao Tong Univ; Hongbo Wu, Shangyou Chen, CCCC Highway Consultants, China

**Siltation Calculation and Analysis of Alongshore Wharf Basin**

Lingshuang Kong, Estuarine & Coastal Science Research Center; Zude Cao, Tianjin Research Inst of Water Transport Eng; Dingman Qi, Fengfeng Gu, Yuanyang Wan, Wei Wang, Qi Shen, Estuarine & Coastal Science Research Center, China

**Storm Surge Simulations of Typhoon Haiyan 2013 Using a Parametric Wind and Pressure Model**

Sooyoul Kim, Tottori Univ; Nobuhito Mori, Yoko Shibutani, Tomohiro Yasuda, Hajime Mase, Kyoto Univ, Japan; J. H. Oh, Seoul National Univ, Korea

**Extreme Storm Surges on Lake Huron**

Ahmed "Jemie" A. Dababneh, Jeffrey A. Oskamp, RIZZO Associates, USA

**Storm Surge in a Harbor Protected by Double Long Submerged Breakwaters in Laizhou Bay of China**

Bing Yan, Tianjin Research Inst of Water Transport Engineering, China

**Research on the Effect of Radiation Stress on Storm Surge in Bohai**

Xiaotong Nie, Tianjin Research Inst of Water Transport Eng, China

**8. SBD I:**

**Strain Capacity & Demand (V. 4)**

**Monday**                      **June 22**                      **10:40**                      **Kings 3**

**Chair:** Huang Tang, ExxonMobil Upstream Research Co., USA

**Determination of Tensile Strain Capacity of Spiral Welded Pipelines**

Koen Van Minnebruggen, Stijn Hertelé, Ghent Univ; Philippe Thibaux, OCAS NV; Rudi Denys, Wim De Waele, Ghent Univ, Belgium

**Estimation of Compressive Strain Failure Probability due to Frost Heave [Oral presentation]**

Qishi Chen, C-FER Technologies, Canada

**The Strain Capacity of the Girth Weld Joint Cracked at “Near-seam Zone”**

Hongyuan Chen, Lingkang Ji, Qiang Chi, Peng Wang, Yalong Wang, Lihua Qi, Jicheng Ren, China National Petroleum Corp China

**Tensile Fracture of Wrinkled Cold Bend Pipes under Monotonic Loading Condition**

Nima Mohajer Rahbari, J.J. Roger Cheng, Univ of Alberta; Millan Sen, Enbridge Pipeline, Canada

**Effect of Internal Pressure on Tensile Strain Capacity and Constraint of Defective Pipes Using Damage Model**

Marcelo Paredes, Tomasz Wierzbicki, MIT. USA

**9. GEOTECH I:  
Computational Geomechanics 1 (V. 2)**

Monday June 22 10:40 Queens 4

**Chair:** H. Arslan, ExxonMobil Development Co., USA

**Different Modelling Assumptions in Numerical Analysis of a Nailed Wall**

Atefeh Asoudeh, Erwin Oh, Griffith Univ, Australia

**Numerical Modeling of Skirted Foundation in Alternating Layers of Sand and Clay**

Jeong-Seon Park, Duhee Park, Hanyang Univ; Hwa-Sup Jang, Se-Woong Yoon, Korea Register of Shipping, Korea

**Coupled CFD-DEM Simulation of Upward Seepage Flow in Granular Media**

Yin Wang, Dalian Univ of Tech, China; Jun Ai, INTECSEA, UK

**The Undrained Bearing Capacity of Shallow Foundations Subjected to Three-Dimensional Loading Including Torsion**

Saeed Dehghanpoor Abyaneh, Abiola Ojo, Alasdair Maconochie, Ali Haghghi, Technip, UK

**Mesoscale Modeling of Methane Hydrate Dissociation in Homogeneous Porous Media**

Wu-Yang Sean, Chung-Yuan Christian Univ; Ren-Yu Yeh, Pei-Yi Yu, Ray-Quan Hsu, National Chiao Tung Univ, Taiwan, China

**10. TSUNAMI & SAFETY I:  
Generation to Inundation 1 (V. 3)**

Monday June 22 10:40 Queens 5

**Chair:** Eva Loukogeorgaki, Aristotle University of Thessaloniki, Greece

**Development of Connecting Method between Two-dimensional and Three-dimensional Tsunami Numerical Model**

Kazuhiko Honda, Port and Airport Research Inst, Japan

**Numerical Modelling of Low Frequency Hydro-acoustic Waves Generated by Tsunamigenic Earthquakes**

Ali Abdolali, Claudia Cecioni, Roma Tre Univ, Italy; James T. Kirby, Univ of Delaware, USA; Paolo Sammarco, Univ of Roma Tor Vergata; Giorgio Bellotti, Leopoldo Franco, Roma Tre Univ, Italy

**Modeling of Tsunami Propagation in the Atlantic Ocean Basin for Tsunami Hazard Assessment along the North Shore of Hispanolia**

Annette R. Grilli, Stéphan T. Grilli, Univ of Rhode Island; Eric David, Christophe Coulet, Artelia, France

**Trans-Boundary Realization of the Nested-Grid Method for Tsunami Propagation Modeling**

Kensaku Hayashi, Alexander P. Vazhenin, Andrey G. Marchuk, Univ of Aizu, Japan

**Tsunami Propagation on a Transoceanic Scale in Antarctica**

Kyeong Ok Kim, Kyung Tae Jung, KIOST; Byung Ho Choi, Sungkyunkwan Univ, Korea

**Characteristics of Pressure Caused by Air Compression Acting on Underside of Bridges**

Susumu Araki, Shinji Nishiyama, Osaka Univ, Japan

**Tsunami-Tide Interaction in the Southern Sea of the Korean Peninsula**

Taemin Ha, Kangwon National Univ; Kwang-Soon Park, KIOST; Jung-Seon Cho, Yong-Sik Cho, Hanyang Univ, Korea

**A New Physical Flume of Tsunami-Inundation Flow**

Naoto Kihara, Kazuyuki Ota, Daisuke Takabatake, Masafumi Matsuyama, Central Research Inst of Electric Power Industry, Japan

**11. MATERIAL RELIABILITY IN PETROCHEMICALS V. 4)**

**Monday                  June 22                  10:40                  Queens 6**

**Chair:** Jae Woong Kim, SK Innovation, Korea

**Failure Analysis of a Stainless Steel Shaft for Pump [Oral presentation]**

Wonjon Yang, Jonghoon Lee, Jaedon Choi, Kyeongsik Cho, Korea Inst of Materials Science, Korea

**A Study of the Origin of High Temperature Embrittlement of 625LCF Expansion Bellows in a Fluid Catalyst Cracking Unit**

Jae-woong Kim, Young-su Ji, Ihho Park, Raghavan Ayer, SK Innovation, Korea

**A Case Study of Regenerator Cyclone Embrittlement in Fluid Catalyst Cracking Unit**

Jae-woong Kim, Jeung-gug Gong, Young-su Ji, Raghavan Ayer, SK Innovation, Korea

**The Effects of Weld Metallurgy and Passivation Treatment on the Corrosion of Austenitic Stainless Steel Weldment in Urea Service**

Jingak Nam, Junmo Yang, Sangmo Lee, Hyunsik Hwang, Ihho Park, SK Innovation, Korea

**Level 3 Fitness for Service Assessment of CUI Damage in a Deisobutanizer Tower**  
GangJoong Yoon, SK Innovation, Korea; David Osuna, Ohgeon Kwon, Quest Integrity Group, New Zealand

**Analysis of Cracking at 90° Elbow of the Level Gauge in Atmospheric Fractionator**  
Kon Yeon Lin, Hsien Tang Lin, Jun Yan Lai, Vinci Yeh, Jiann Cherng Chu, Formosa Petrochemical, Taiwan, China

**MONDAY 13:00**

**KEYNOTE I**

**Monday June 22 13:00 Queens 6**

**Introduction:** Huang Tang, ExxonMobil Upstream Research Co., USA

**Strain Based Design of Pipelines - The Important Role of Numerical Modelling in Fracture Assessments**  
Erling Østby, DNV GL, Norway

**MONDAY 14:00**

**12. SAFETY & RELIABILITY II:  
Product Reliability (V. 4)**

**Monday June 22 14:00 Kohala 1**

**Chair:** D.C. Angelides, Aristotle Univ of Thessaloniki, Greece

**Risk Analysis of Annular Preventer Performance in Multiplexed Submarines BOP Based on ISO 31.000 and API 581 Standards**

Nikolas Lukin, Gilberto Francisco Martha de Souza, Univ of Sao Paulo, Brazil

**Structural Reliability Analysis of Deep-water SDPSO Platform**

Jiarui Shi, Jin Wang, Wenyong Tang, Hongxiang Xue, Shanghai Jiao Tong Univ, China

**Identification of Dominant Failure Modes of a Jacket Offshore Structure**

Konstantinos K. Keremidis, Vasileios A. Mamatsopoulos, Demos C. Angelides, Aristotle Univ of Thessaloniki, Greece

**13. HYDRODYNAMICS II:  
Added Resistance, Wave Drift & Wind Forces 2 (V. 3)**

**Monday June 22 14:00 Kohala 2**

**Chair:** M. Kashiwagi, Osaka Univ, Japan,

**Co-Chair:** Petri Valanto, Hamburg Ship Model Basin, Germany

**Development of an Experimental Methodology for Self-Propulsion Test with a Marine Diesel Engine Simulator, the Fourth Report: Direct Measurement of Actual Ship Speed in Waves by Model Tests**



Yasushi Kitagawa, Katsuji Tanizawa, Yoshiaki Tsukada, National Maritime Research Inst, Japan

**Modelling Mean Forces and Moments Due to Waves Based on RANS Simulations**

Sebastian Uharek, Andrés Cura-Hochbaum, TU Berlin, Germany

**Numerical Study of Hydrodynamic Characteristics of a Gliding-Hydrofoil Craft in Steady Flow**

S. L. Chen, Z. D. Wang, Jiangsu Univ of Science & Tech, China; Q.W. Ma, City Univ London, UK

**IRF - AR Model for Short-Term Prediction of Ship Motion**

Wen-yang Duan, Li-min Huang, Yang Han, Rui Wang, Harbin Engineering Univ, China

**An Optimization Process for Propeller Design and its Application Based on CFD**

Jeong-yong Park, Hyundai Heavy Industries, Korea; Milovan Peric, CD-adapco; Daehwan Park, Friendship Systems, Germany

**14. REES OFFSHORE WIND TURBINE II:  
Foundations 2 (V. 1)**

**Monday                  June 22                  14:00                  Kohala 3**

**Chair:** Lars V Andersen, Aalborg Univ, Denmark

**Co-chair:** F. Vorpahl, Fraunhofer-IWES, Germany

**Numerical Prediction for the Stability of Wind Turbine Foundation under Complex Load in Hangzhou Bay**

Xiyuan Sun, Chaoyang Heng, Zhi Zhou, Inst of Foundation Engineering, CAS, China

**Wave Induced Seabed Liquefaction around the Composite Bucket Foundation of Offshore Wind Turbines**

Jin-Feng Zhang, Cong Yu, Dong-Sheng Su, Qing-He Zhang, Tianjin Univ, China

**The Study of Geotechnical Parameters and Risk Assessment for the Supported Foundation Design of Offshore Wind Farm**

Lien-Kwei Chien, Shu-Yi Chiu, Ruan-Ruey Lee, Chia-Chi Wu, National Taiwan Ocean Univ; Meng-Hsiu Hsieh, Yuan-Chieh Wu, Inst of Nuclear Energy Research Atomic Energy Council, Taiwan, China

**Study on Foundation Anchorages of Offshore Wind Turbines under Severe Environmental Condition**

Junwon Seo, South Dakota State Univ; Monique Head, Morgan State Univ; Ishtiaque Tuhin, South Dakota State Univ, USA

**15. OCEAN TECHNOLOGY I:  
Subsea 1 (V. 1)**

**Monday                  June 22                  14:00                  Kohala 4**

**Chair:** Alan M. Wang, Offshore Oil Engineering Co., China

**Research on Flow Assurance of PY 35-2/35-1 Gas Field in South China Sea**

Kai Zhou, Peilin Liu, Hao Ni, Pengpeng Ju, Feng Su, Dong Wang, Feilong Liu, China Offshore Oil Engineering, China

**Buckling of Domes with Localized Imperfections**

J. Blachut, Univ of Liverpool, UK

**Analysis of Motion of Underwater Platform Interfered by Moving Vehicle**

Chang Meng, Xian Zhou Wang, Da Kui Feng, Peng Zhang, Zhi Guo Zhang, Huazhong Univ of Science. & Tech, China

**16. ASSET INTEGRITY II:  
Condition-Based Maintenance (CBM) (V. 4)**

**Monday June 22 14:00 Kings 1**

**Chair:** Ho-Jin Hwang, KRISO, Korea

**Development of Maintenance System for Equipments of Offshore Plant**

Jong-Wang Kim, Soon-Sup Lee, Jong-Hyun Lee, Gyeongsang National Univ ; Ho-Jin Hwang, KRISO, Korea

**Design Considerations for the Condensate Stabilization and Liquefaction Units in LNG FPSO**

Jaebeom Lee, Ara Jo, Hyunjin Lee, Kwangpil Park, Daewoo Shipbuilding & Marine Engineering, Korea

**Using Engineering Data Comparison Method for Condition Based Maintenance System of Offshore Platform**

HwanSeok Gim, DuckYong Song, JinSang Hwang, PartDB Co ; Hojin Hwang, KRISO, Korea; YC Park, The Williams Companies, USA

**Introduction to a Condition-based Maintenance Solution for Offshore Platforms**

Ho-Jin Hwang, Korea Research Inst of Ships & Ocean Engineering, Korea

**A Study on the Development of Prognosis System for Offshore Plant Equipment**

SangJe Cho, Hong-Bae Jun, Hongik Univ ; Jong-Ho Shin, UNIST; Ho-Jin Hwang, KRISO ; ChungHun Ha, Hongik Univ, Korea

**17. COASTAL HYDRODYNAMICS II:  
Waves I (V. 3)**

**Monday June 22 14:00 Kings 2**

**Chair:** Ray-Yeng Yang, National Cheng Kung Univ, Taiwan  
China

**Co-Chair:** Soo Youl Kim, Tottori Univ, Japan

**A Numerical Model for the Temperate Storm Surge in Bohai Bay of China**

Yanan Xu, Tianjin Research Inst of Water Transport Engineering, China

**Storm Surge and Seiche in Tokyo Bay Observed by HF Radar**

Kojiro Suzuki, Port and Airport Research Inst, Japan

**Hurricane Risk Rapid Assessment and Cyber-Implementation**

A.A. Taflanidis, G. Jia, T.L. Kijewski-Correa, A.B. Kennedy, Univ of Notre Dame, USA

**Study on Safety to a Storm Surge at Sangchan Beach**

Sawatwong Doungpan, Nunthawath Charusrojthanadech, King Mongkut's Inst of Tech, Thailand

**Verification of Infragravity Waves Generated at Harbor Entrance by Using a Boussinesq Model**

Katsuya Hirayama, Junya Naganuma, Port and Airport Research Inst; Yoshiyuki Uno, ECOH Corp, Japan

**The Numerical and Experimental Simulations of Wave Evolution near Islands**

Xiaolong Liu, Xuekang Gu, Peng Yang, China Ship Scientific Research Center; Zhidong Wang, Jiangsu Univ of Science & Tech, China

**18. SBD II:  
Pipeline Material Properties (V. 4)**

Monday June 22 14:00 Kings 3

**Chair:** Erling Østby, DNV GL, Norway

**Understanding the  $J$ -CTOD Relationship in SE(T) Specimens and Implications for Crack Growth Resistance Curves in Pipeline Girth Welds**

Diego F. B. Sarzosa, Rodolfo F. de Souza, Claudio Ruggieri, Univ of Sao Paulo; Eduardo Hipert Jr., Petrobras Research Center, Brazil

**Comparison of  $J$ -integral from Single Specimen SE(T) Tests on API-5L X100 Line Pipe Steel**

T S Weeks, National Inst of Standards & Tech; D T Read, FFS Materials, USA

**Numerical Study of the Tangential Inelastic Effect of the Subloading Surface Model on the Non-proportional Loading Condition**

Riccardo Fincato, Seiichiro Tsutsumi, Osaka Univ, Japan

**Numerical Validation of Tensile Strain Capacity of X80 Line Pipe Based on the GTN Model**

Woo-Yeon Cho, Ki-Seok Kim, POSCO; Jae-Hyuk Lee, Daehung Future Technology; Young-Cheol Yoon, Myongji College, Korea

**Corrected Stress Intensity Factor for BS 8571 Single Edge Notched Tension (SENT) Specimens**

Xian-Kui Zhu, Tom McGaughy, EWI, USA

**19. GEOTECH II:  
Computational Geomechanics 2 (V. 2)**

Monday June 22 14:00 Queens 4

**Chair:** Yun W Choo, Kongju National Univ, Korea

**Installation of Spudcan Foundations in Layered Soils: Centrifuge Test and Numerical Analysis**

Muhammad Shazzad Hossain, Jingbin Zheng, Stefanus Safinus, Youngho Kim, Univ of Western Australia, Australia; Jonghwa Won, Jong-Sik Park, Min Jung Jun, Daewoo Shipbuilding & Marine Engineering, Korea

**Numerical Study of Spudcan Penetration Induced Loading on an Adjacent Jacket Pile in Soft Clays**

Ya Li, Yangrui Zhou, Jinghua Tao, Chao Zhang, CNOOC Research Inst, China

**Analysis on the Load Capacity of Waveform Micropile by Centrifuge Test**

Young-Eun Jang, Univ of Science & Tech; Jin-Tae Han, Korea Inst of Civil Eng & Building Tech, Korea

**Imperfection Effects on the Buckling of Hydrostatically Loaded Cylinders**

Rodney Pinna, Aker Solutions, Australia; Søren Madsen, Aalborg Univ, Denmark

**Bulging Issues for Drilled Shafts in Coastal Areas**

Moon S. Nam, Jong-Nam Do, Jong-Hong Jung, Korea Expressway Corp, Korea

**Investigation of Spudcan Continuous Penetration in Multi-layer Sediments with Interbedded Sand-overlaid-clay Soil Profile**

Jun Zhao, Beom Seon Jang, Seoul National Univ, Korea; Menglan Duan, China Univ of Petroleum-Beijing, China

**20. TSUNAMI & SAFETY II:  
Generation to Inundation 2 (V. 3)**

Monday

June 22

14:00

Queens 5

**Chair:** K. Honda, Port & Airport Research Inst, Japan

**Numerical Modelling of Mass Failure Processes and Tsunamigenesis on the Rockall Trough, NE Atlantic Ocean**

Dimitra M Salmanidou, Aggeliki Georgiopoulou, University College Dublin, Ireland; Serge Guillas, Univ College London, UK; Frederic Dias, Univ College Dublin, Ireland

**Characteristics of Sea Ice floes Run-up caused by Tsunami Considering Ice Jams and Ice Pile-ups around Structures**

Shinji Kioka, Civil Engineering Research Inst of Hokkaido; Takahiro Takeuchi, Hachinohe Inst of Tech; Yasunori Watanabe, Hokkaido Univ, Japan

**Estimation of the Occurrence Condition of Sediment Resuspension in Osaka Bay by Tsunami**

Mitsuru Hayashi, Soto Suzuki, Satoshi Nakada, Kobe Univ; Shunichi Koshimura, Tohoku Univ; Ei-ichi Kobayashi, Kobe Univ, Japan

**High Density Predictions of Ground Motion during Nankai Trough Earthquake**

Fumihiro Minato, Yoshiya Hata, Osaka Univ; Masayuki Yamada, NEWJEC; Ken-ichi Tokida, Osaka Univ; Yasuko Kuwata, Kobe Univ; Masaki Uotani, Osaka Univ, Japan

**The Development of a Fully-Coupled Moving-Solid Algorithm for Rock-Slide Generated Tsunamis**

Tso-Ren Wu, Mei-Hui Chuang, Chung-Yue Wang, Chia-Ren Chu, National Central Univ, Taiwan, China

**21. UNDERWATER SYSTEMS I:  
Acoustics & Imaging (V. 2)**

Monday

June 22

14:00

Queens 6

**Chair:** Min Yu, Wuhan Univ of Tech, China

**Co-chair:** L.-K. Chien, National Taiwan Ocean Univ, Taiwan  
China

**Experimental Methodologies for Noise Source Diagnostics in Marine and Naval Engineering**

Mario Felli, Massimo Falchi, Giulio Dubbioso, CNR INSEAN, Italy

**Observations of Cetacean Vocalisation by a Four-channel Underwater Passive Acoustic Monitoring System and Sound-source Analyses**

Masakazu Arima, Yuki Kosuga, Osaka Prefecture Univ; Noriko Funasaka, Shinji Sakamoto, Taiji Whale Museum; Hiroya Minakuchi, Cetus, Japan

**Applications of Acoustic Positioning Technique in Construction of the Immersed Tunnels**

Min Yu, Qiongfang Qi, Tingqiu Li, Wuhan Univ of Tech, China

**Throughput Analysis of Radio Communication under Water**

Akihiro Hayami, Masayoshi Ozawa, Etsuro Shimizu, Tokyo Univ of Marine Science & Tech, Japan

**An Optical Visualization Technology Applied to Unmanned Underwater Vehicles**

Shojiro Ishibashi, Hiroshi Yoshida, JAMSTEC, Japan

**Simultaneous Underwater Image Gathering by Using Wireless Stationary and Movable Camera Nodes**

Kuniaki Kawabata, RIKEN; Fumiaki Takemura, Okinawa National College of Tech; Tsuyoshi Suzuki, Tokyo Denki Univ; Shuta Kobashigawa, Okinawa National College of Tech; Kei Sawai, Tokyo Denki Univ; Satoru Takahashi, Kagawa Univ, Japan; Jianru Xue, Xi'an Jiaotong Univ, China

**MONDAY 16:20**

**22. SAFETY & RELIABILITY III:  
Risk Analysis (V. 4)**

Monday                  June 22                  16:20                  Kohala 1

**Chair:** Nikolas Lukin, Univ of Sao Paulo, Brazil

**Co-Chair:** M Fujikubo, Osaka Univ., Japan

**Development of Fire Risk Analysis Procedure for Semi-Submersible Drilling Rig**

Yanlin Jin, Jeong Du Kim, Beom Seon Jang, Seoul National Univ, Korea

**Service Life Assessment of Fatigue Crack Growth for Offshore Jacket Platform**

Shilun Zhao, Chaohe Chen, Yijun Shen, South China Univ of Tech, China

**Risk Evaluation against Main Accidental Events for a Semi-Submersible Drilling Rig**

SeungJae Yoo, WooRam Lim, HanByul Kim, SunIl Won, ByungKi Choi, Hyundai Heavy Industries, Korea

**Comparison of Reliability Index Obtained from Limit State Equations of Different Limit Equilibrium Methods**

Yonghua Cao, Chuanzhi Huang, CCCC Tianjin Port Engineering Inst, China

**Study on Risk Evolution Model Based on Complex Networks for Fire Risk of Offshore Floating Platforms**

Xu Bai, Jiangsu Univ of Science & Tech, China; Wei Qin, Genesis Oil & Gas Consultants, Malaysia; Xiaofang Luo, Jiangsu Univ of Science & Tech, China

**23. HYDRODYNAMICS III:  
Hydroelasticity, Slamming, Whipping, Impact 1 (V. 3)**

Monday June 22 16:20 Kohala 2

**Chair:** Sa-Young Hong, KRISO, Korea

**Characteristics of Bow-flare Slamming Loads on an Ultra-large Containership in Irregular Waves**

Sa Young Hong, Kyong-Hwan Kim, Byoung Wan Kim, Young-Shik Kim, Korea Research Inst of Ships & Ocean Engineering, Korea

**Impact Loads and Whipping Responses on a Large Container Ship**

Yongwon Lee, Nigel White, Neil Southall, Michael Johnson, Lloyd's Register, UK

**Characteristics of Stern Slamming Loads on an Ultra-large Containership in Regular and Irregular Waves**

Kyong-Hwan Kim, Byoung Wan Kim, Sa Young Hong, Young-Shik Kim, Korea Research Inst of Ships & Ocean Engineering, Korea

**Parametric Study on Numerical Prediction of Slamming and Whipping and an Experimental Validation for a 10,000-TEU Containership**

Jung-Hyun Kim, Yonghwan Kim, Seoul National Univ, Korea

**Numerical Simulations of WILS Experiments**

J. de Lauzon, A. Benhamou, S. Malenica, Bureau Veritas, France

**Extrapolation of Model Tests Measurements of Whipping to Identify the Dimensioning Sea States of Container Ships**

Gaute Storhaug, DNV GL, Norway; Ingrid Marie Vincent Andersen, Technical Univ of Denmark, Denmark

**Statistical Analysis of Fatigue Damage Due to Springing Effect for Large Container Carries**

Fenglei Han, Chunhui Wang, Ankang Hu, Yachong Liu, Harbin Engineering Univ, China

**Experimental Investigation on the Springing Response of a River-Sea Going Container Ship**

Sheng Peng, Weiguo Wu, Ziyu Xia, Wuhan Univ of Tech, China

**24. REES OFFSHORE WIND TURBINE III:  
Support Structures 1 (V. 1)**

Monday June 22 16:20 Kohala 3

**Chair:** F. Vorpahl, Fraunhofer-IWES, Germany

**Weight Optimisation of Steel Monopile Foundations for Offshore Windfarms**

Nils Fog Gjersøe, Erik Bouvin Pedersen, Brian Kristiansen, Niels-Erik Ottesen Hansen, LICengineering; Lars Bo Ibsen, Aalborg Univ, Denmark

**Numerical Investigations on the Deformation Behaviour of Horizontal Loaded Injection Piles**

Stefan Herion, Oliver Fleischer, KoRoH GmbH; Rüdiger Ernst, Fraunhofer-IWES; Claas Bruns, Vallourec Deutschland, Germany

**Fatigue Assessment of High Strength Bolts with Very Large Diameters in Substructures for Offshore Wind Turbines**

Peter Schaumann, Rasmus Eichstädt, Leibniz Univ Hannover, Germany

**Experimental and Numerical Investigations on Grouted Joints in Monopiles Subjected to Early-age Cycling to Evaluate the Influence of Different Wave Loadings**

Ludger Lohaus, Peter Schaumann, Dario Cotardo, Sebastian Kelma, Michael Werner, Leibniz Univ Hannover, Germany

**25. OCEAN TECHNOLOGY II:**

**Subsea 2 (V. 1)**

**Monday**

**June 22**

**16:20**

**Kohala 4**

**Chair:** H. H. Wang, ExxonMobil Development Co, USA

**Parameters Influencing Birdcaging Mechanism for Subsea Flexible Pipe**

Alireza Ebrahimi, Memorial Univ of Newfoundland; Shawn Kenny, Carleton Univ; Amgad Hussein, Memorial Univ of Newfoundland, Canada

**Detailed Simulation of Interference between Clump-Weight and Subsea Pipelines**

Odd Martin Lyngsaunet, Pål Foss, IKM Ocean Design; Svein Sævik, NTNU, Norway

**Damage Assessments of a Free-fall Dropped Object on Sub-seabed in Offshore Operation**

Jonghwa Won, Daewoo Shipbuilding & Marine Eng, Korea; Youngho Kim, Univ of Western Australia, Australia; Jong-Sik Park, Hyo-dong Kang, YoungSeok Joo, Mincheol Ryu, Daewoo Shipbuilding & Marine Eng, Korea

**26. ASSET INTEGRITY III:  
Corrosion Management (V. 4)**

**Monday**

**June 22**

**16:20**

**Kings 1**

**Chair:** J. Jennings, Edison Welding Inst., USA

**Microstructure and Corrosion in Simulated Marine Environment of CVD Multilayer Coatings**

Jin Zhang, Cheng Yang, Li, Cai Yuan, Sun, Jun Wei, Song Xia, Li, Qi Xue, Southwest Petroleum Univ, China

**Study on Corrosion and Wear Resistance of Titanizing Coating on Steel Surface**

Qi Xue, Jiayi Li, Ping Fan, Rong Xin, Jin Zhang, Southwest Petroleum Univ, China

**Development of Fe(II) Fluorescent Indicator for Underfilm Corrosion Monitoring of Water Ballast Tank**

Naoki Osawa, Osaka Univ ; Ryuji Kojima, Atsushi Takada, National Maritime Research Inst ; Sho Takano, Seiru Takeno, Shino Katayama, Osaka Univ, Japan

**Effect of Sacrificial Anodes and Marine Growths on Hydrodynamic Coefficients of Rigid Cylinders**

V J Kurian, A M Al-Yacoubi, A A Sebastian, M S Liew, Universiti Teknologi PETRONAS, Malaysia ; V G Idichandy, IIT Madras, India

**27. COASTAL HYDRODYNAMICS III:  
Lagrangian Particle Methods (V. 3)**

**Monday June 22 16:20 Kings 2**

**Chair:** A Khayyer, Kyoto Univ, Japan

**Co-Chair:** L Qian, Manchester Metropolitan Univ, UK

**Mesh-free Lagrangian Modelling of Fast Flow Dynamics**

Mostafa S. Shadloo, David Le Touzé, Guillaume Oger, Ecole Centrale Nantes, France

**Improvement of Energy Conservation in Particle Methods with Enhanced Schemes**

Hitoshi Gotoh, Abbas Khayyer, Yuma Shimizu, Kyoto Univ, Japan

**A Multi-Phase Compressible-Incompressible Particle Method for Wave Slamming**

Abbas Khayyer, Hitoshi Gotoh, Kyoto Univ, Japan

**MPS Simulation of Wave Forces Acting on a Cylinder**

Xuemin Song, Kazuya Shibata, Seiichi Koshizuka, Univ of Tokyo; Yasunori Nihei, Osaka Prefecture Univ, Japan

**Simulations of Incompressible Fluid Flow-Elastic Structure Interactions by a Coupled Fully Lagrangian Solver**

Sungchul Hwang, Korea Research Inst of Ships and Ocean Engineering; Abbas Khayyer, Hitoshi Gotoh, Kyoto Univ, Japan; Jong-Chun Park, Pusan National Univ, Korea

**Numerical Simulation of Ship Transient Behavior Coupled with Water Flooding**

Hirota Hashimoto, Kobe Univ; Kouki Kawamura, Osaka Univ; Makoto Sueyoshi, Kyushu Univ, Japan

**28. SBD III:  
Strain-Based Design and Assessment (V. 4)**

**Monday June 22 16:20 Kings 3**

**Chair:** Eiji Tsuru, Nippon Steel & Sumikin Technology, Japan

**Modelling of Anisotropic Hardening in High Strength Steel Line Pipes for Strain-Based Design Applications**

Francesco Iob, Tommaso Coppola, Andrea Fonzo, Centro Sviluppo Materiali; Carlo Maria Spinelli, ENI, Italy

**Strain-based and Stress-based Assessment Comparison for a Buried Gas Transmission Pipeline Caught in a Slow Ground Movement**

Charles Fernandez, Nicolas Herchin, GDF SUEZ; Mickaël Metzger, Bruno Raguin, GRTgaz; Alain Pecker, Ecole Nationale Ponts et Chaussées, France

**Strain Hardening and Plastic Instability of Dual-Phase Steels for Strain Based Design**

Kyono Yasuda, Hitoshi Sueyoshi, Nobuyuki Ishikawa, JEF Steel; Tatsuya Morikawa, Kenji Higashida, Kyushu Univ, Japan



**Procedure to Establish Critical Threshold Strain Value for Strain Based Design in Fracture Mechanics Assessment for Ductile Material**

Antonio Carlucci, SAIPEM, France; Nicola Bonora, Andrew Fuggiero, Univ of Cassino; Gianluca Iannitti, Techdyn of Engineering, Italy

**Development of X60 and X100 Linepipe Steels with High Deformation Capacity for Strain-Based Design**

Jin-ho Bae, Yun-Jo Ro, Seung-hwan Chon, POSCO; Hyo Kyung Sung, Sunghak Lee, Pohang Univ of Science & Tech; Chang-Sun Lee, POSCO, Korea

**Local Buckling Resistance of Sand-Filled Spirally Welded Pipes**

A M Gresnigt, Delft Univ of Tech; D J Peters, Royal HaskoningDHV; E J Broos, Port of Rotterdam Authority; S J H van Es, Delft Univ of Tech, Netherlands

**Numeric Assessment for Low-Cycle Fatigue Loading with X80 Line Pipe**

Mark D Lower, Oak Ridge National Lab; John D. Landes, Univ of Tennessee; Charles B Oland, XCEL Engineering, USA

**Numeric Modeling for Tensile Plastic Collapse in X80 Line Pipe**

Mark D Lower, Oak Ridge National Lab; John D. Landes, Univ of Tennessee; Charles B Oland, XCEL Engineering, USA

**29. GEOTECH III:  
Geohazards (V. 2)**

Monday

June 22

16:20

Queens 4

**Chair:** Dat Vu Khoa Huynh, Norwegian Geotechnical Inst, Norway

**Co-Chair:** Haydar Arslan, ExxonMobil Development; USA

**Elastic Shear Moduli and Nonlinear Deformation during Creep for Weathered Residual Soil in Korea**

Ka-Hyun Park, Choong-Ki Chung, Seoul National Univ; Young-Hoon Jung, Kyung Hee Univ, Korea

**SPH Study of Rapid Landslides of Cut Slopes**

Xuzhen He, Univ of Cambridge, UK; Dongfang Liang, Shanghai Jiao Tong Univ, China

**Development of Performance Evaluation Methodology and Criteria of Rockfall Barriers**

Jai-Wook An, Yong-Soo Kim, Hong-Kyoon Kim, Jong-Gun Lee, Jae-Wook Suk, Korea Infrastructure Safety & Tech, Korea

**Identification of Slopes with Higher Risk to Sediment Disasters due to Localized Torrential Rains based on Artificial Neural Networks and Mathematical Statistics**

Shinichi Ito, Kazuhiro Oda, Keigo Koizumi, Yohei Usuki, Osaka Univ, Japan

**Investigation of the Erosion of In-Situ Capping Materials by Sea Waves**

Janguen Lee, Jinyoung Kong, Youngtak Kim, Jaemo Kang, Korea Inst of Civil Engineering & Building Tech, Korea

**Scour Development around Bucket Foundations**

Ionut-Emanuel Stroescu, Peter Frigaard, Aalborg Univ; Morten Fejerskov, Universal Foundation, Denmark

**Relationship between Slope Displacement and Warning Rainfall Value Setting**  
Ching-Jiang Jeng, Guen-Han Lin, Chia-Yu Yang, Huafan Univ, Taiwan, China

**30. TSUNAMI & SAFETY III:  
Generation to Inundation 3 (V. 3)**

**Monday June 22 16:20 Queens 5**

**Chair:** Tso-Ren Wu, National Central Univ, Taiwan China

**Co-Chair:** Yusong Cao, Marintek USA, USA

**Tsunami Risk Map-a Case Study of Gongliao District**

Yong-Jun Lin, Hsiang-Kuan Chang, Kuo-Chen Ma, National Taiwan Univ; Tso-Ren Wu, National Central Univ; Jihn-Sung Lai, Yih-Chi Tan, Tsang-Jung Chang, National Taiwan Univ, Taiwan, China

**A Study on Tsunami Vulnerability Assessment in South Korea**

Gyumin Lee, Sungkyunkwan Univ; Byoung-II Min, Kyung-Suk Suh, Korea Atomic Energy Research Inst; Kyoung-Soo Jun, Sungkyunkwan Univ, Korea

**Tsunami Simulation Generated the Greatest Scenario Earthquake along the Nankai Trough under Consideration of Tidal Current in Large Bay**

Satoshi Nakada, Mitsuru Hayashi, Kobe Univ; Shunichi Koshimura, Tohoku Univ; Syouta Yoneda, Eiichi Kobayashi, Kobe Univ, Japan

**31. UNDERWATER SYSTEMS II:  
ROV Design & Navigation (V. 2)**

**Monday June 22 16:20 Queens 6**

**Chair:** Shojiro Ishibashi, JAMSTEC, Japan

**Co-Chair:** M Nakamura, Kyushu Univ, Japan Japan

**Experimental Study on the Cross-coupling Hydrodynamic Coefficients of ROV**

Shi Jing Xu, Duan Feng Han, Harbin Engineering Univ, China; Qing Wei Ma, City Univ London, UK

**Research of Gliding Performance of the Plesiosaurs**

Koji Matsuoka, Masahiko Nakamura, Kyushu Univ; Hiroshi Nishi, Tohoku Univ; Sunao Mochizuki, ITOCHU Mineral Resources Development; Tsuyoshi Ueda, Kenichro Sawada, Kyushu univ, Japan

**Research and Development of User Friendly ROV with High Maneuvering Control System**

Ikuo Yamamoto, Daisuke Kawabata, Nagasaki Univ; Naohiro Inagawa, Nippon Bunri Univ; Yo Ito, Univ of Kitakyushu, Japan

**TUESDAY 08:00**

**32. SAFETY & RELIABILITY IV:  
Collision & Impact (V. 4)**

**Tuesday June 23 08:00 Kohala 1**

**Chair:** Kangsu Lee, KRISO, Korea

**A Novel Ship-Bridge Collision Avoidance System Based on Monocular Computer Vision**

Yuan-zhou Zheng, Wuhan Univ of Tech; Ya-fei Chen, Zhejiang International Maritime College; Fu-cai-Jiang, Ting-xuan Wang, Jin-xian Liu, Jing-hen Luo, Wuhan Univ of Tech, China

**Collision Analysis of a Cylindrical Offshore Structure with Fluid Region Due to Impact**

Kangsu Lee, Keyyong Hong, Korea Research Inst of Ships and Ocean Engineering, Korea

**An Analytical Method on the Elastic-Plastic Response of Clamped Plates Subjected to Blast Loads**

Cheng Zheng, Xiang-shao Kong, Wei-guo Wu, Fang Liu, Wuhan Univ of Tech, China

**Collision Risk Analysis of Chittagong Port in Bangladesh by Using Collision Frequency Calculation Models with Modified BBN Model**

Mohammad Ehsan Khaled, Yasumi Kawamura, Yokohama National Univ, Japan

**Ultimate Shear Strength of FPSO Stiffened Panels after Supply Vessel Collision**

Nicolau Antonio dos Santos Rizzo, Petrobras; Marcelo Caire, SINTEF do Brasil; Carlos Alberto Bardanachvilli, Petrobras, Brazil

**Design and Simulation of Ship Protection Structure**

Xiaobo Zhao, Langxiong Gan, Hui Li, Lei Zhang, Yuanzhou Zheng, Wuhan Univ of Tech, China

**33. HYDRODYNAMICS IV:  
Hydroelasticity, Slamming, Whipping, Impact 2 (V. 3)**  
Tuesday      June 23      08:00      Kohala 2

**Chair:** Bjarne Jensen, DHI, Denmark

**Co-Chair:** Sa Young Hong, KRISO, Korea

**A VBM Research Based on Segmented Model Tests and Numerical Simulations for a River-to-sea Ship**

Chi Zhang, Jingxia Yue, Zhengguo Liu, Zheng He, Wuhan Univ of Tech, China

**Coupling MPS and Modal Superposition Method for Flexible Wedge Dropping Simulation**

Zhe Sun, Jing T. Xing, K. Djidjeli, Univ of Southampton; Fai Cheng, Lloyd's Register, UK

**Numerical Investigation of Water Entry of a Horizontal Circular Cylinder in Waves**

Xiaozhou Hu, Shaojun Liu, Central South Univ, China

**34. REES OFFSHORE WIND TURBINE IV:  
Support Structures 2 (V. 1)**  
Tuesday      June 23      08:00      Kohala 3

**Chair:** S. Herion, Karlsruhe Inst of Technology, Germany

**Influence of Joint Flexibility on Local Dynamics of a Jacket Support Structure**  
Wojciech Popko, Sofia Georgiadou, Fraunhofer-IWES, Germany; Eva Loukogeorgaki, Aristotle Univ of Thessaloniki, Greece; Fabian Vorpahl, Fraunhofer-IWES, Germany

**Influence of Soil-Structure Interaction on the Dynamic Properties of Offshore Wind Turbines Supported by Jacket Foundations**

Jin-Hak Yi, Sun-Bin Kim, Gil-Lim Yoon, Korea Inst of Ocean Science & Tech, Korea; Lars Vabbersgaard Andersen, Aalborg Univ, Denmark

**A Study on Low-Cost Gravity Base Foundations for Offshore Wind Turbine in Taiwan**

Yun-Chih Chiang, Tzu Chi Univ; Pei-Yu Lee, Po-Chen Chen, National Taiwan Univ; San-Shen Lin, Sung-Shan Hsiao, National Taiwan Ocean Univ, Taiwan, China

**A New Fixed Offshore Wind Turbine Foundation and Its In-situ Responses to Winds and Waves in East China Sea**

Ling Chen, Inst of Mechanics; Jie Li, Shanghai Investigation, Design & Research Inst; Jifu Zhou, Inst of Mechanics; Yifeng Lin, Jianying Li, Shanghai Investigation, Design & Research Inst, China

**Ultra-Fast Analysis of Offshore Wind Turbine Support Structures Using Impulse-Based Substructuring and Massively Parallel Processors**

Sebastian Schafhirt, NTNU Norway; Niels Verkaik, Yilmaz Salman, Keppel Verolme BV, Netherlands; Michael Muskulus, NTNU, Norway

**35. OCEAN TECHNOLOGY VI:**  
**Subsea 3 (V. 1)**

**Tuesday                  June 23                  08:00                  Kohala 4**

**Chair:** H. V. Wang, ExxonMobil Development Co, USA

**Design and Installation of Subsea Jumper with CRA Liner**

Weixiu Hao, CNOOC, China; Kevin Huang, DMAR Engineering, USA; Zhuangchun Yang, Yinglian Lin, CNOOC, China

**Installation of Infield Umbilical with Compliant UTH**

Yinglian Lin, CNOOC, China; Kevin Huang, DMAR Engineering, USA; Xiaqi Hu, Weixiu Hao, Taiyuan Liu, CNOOC, China

**Fall Pipe Rock Dumping Technology for Protection of Subsea Pipeline in Deepwater**

Jing Hou, Weirong Wei, Yu Liang, Qiwei Sun, Shijun Chang, CNOOC; Yuan Gao, COOEC Subsea Tech, China

**Integration Methodology of Separation Units Using Steady-State Particle Size Approach**

Eduardo J. Pereyra, Ovadia Shoham, Luis E. Gomez, Ram S. Mohan, Univ of Tulsa, USA

**36. ASSET INTEGRITY IV:**  
**Marine Integrity (V. 4)**

**Tuesday                  June 23                  08:00                  Kings 1**

**Chair:** Cecille Haarseth, ExxonMobil Development Co, USA

**Co-Chair:** S. Damasceno, Petrobras, Brazil

**Experimental Study on Fatigue Strength of Ship's Welded Joint under Intermittently High Frequency Superimposed Loads Considering Actual Encountered Condition**

Naoki Osawa, Osaka Univ ; Tetsuya Nakamura, Japan Marine United ; Norio Yamamoto, Nippon Kaiji Kyokai ; Junji Sawamura, Osaka Univ, Japan

**Reliability-Based Low-Cycle Fatigue Assessment for Crack-Stopping Hole**

Nian-Zhong Chen, Newcastle Univ, UK

**Development of Advanced Fatigue Strength Improvement Method for Ship's Out-of-Plane Gusset Welded Joints Using Low Transformation Temperature Welding Material**

Chiaki Shiga, Kazuo Hiraoka, Osaka Univ ; Hiroshi Yajima, Tadakazu Tanino, Nagasaki Inst of Applied Science ; Hidekazu Murakawa, Seiichiro Tsutsumi, Naoki Osawa, Osaka Univ, Japan

**Characterization and Numerical Simulation of Corroded Surface of Coated Steel Plates in Water Ballast Tank**

Yasumi Kawamura, Yasuhide Kanou, Yokohama National Univ ; Naoki Osawa, Osaka Univ ; Norio Yamamoto, Nippon Kaiji Kyokai ; Kazuhiko Shiotani, JFE Steel ; Kazuyuki Kashima, Nippon Steel & Sumitomo Metal ; Shinji Sakashita, Kobe Steel ; Kenji Katoh, Lloyd's Register ; Sho Takano, Osaka Univ, Japan

**Onboard Study on Deterioration of Coated Steel in Water Ballast Tank**

Shinji Sakashita, Kobe Steel ; Kazuhiko Shiotani, JFE Steel ; Kazuyuki Kashima, Nippon Steel & Sumitomo Metal ; Satoshi Murakoshi, Mitsui OSK Lines ; Keita Fukunaga, NYK Line ; Tsutomu Baba, Chugoku Marine Paints ; Akira Takai, Nippon Paint Marine Coatings ; Atsushi Takada, National Maritime Research Inst ; Naoki Osawa, Osaka Univ, Japan

**37. COASTAL HYDRODYNAMICS IV:**

**Waves 2(V. 3)**

**Tuesday**

**June 23**

**08:00**

**Kings 2**

**Chair:** S. Araki, Osaka Univ, Japan

**Numerical Study for Waveform Inversion as an Internal Solitary Wave over a Permeable Trapezoidal Topography**

Chih-Min Hsieh, National Kaohsiung Marine Univ; Ming-Hung Cheng, National Kaohsiung Marine Univ; Robert R. Hwang, Academia Sinica; Wen-Chang Yang, National Applied Research Laboratories, Taiwan, China

**Oscillatory Flows through Porous Media: Influence of the Specific Surface on the Wave Behavior**

Gwendoline Arnaud, Julien Touboul, Damien Sous, Univ de Toulon; Fabrice Gouaud, ACRI-IN; Vincent Rey, Univ de Toulon, France

**A Numerical Study of Nonlinear Wave Transformation and Harmonic Generation over a Submerged Step: The Effect of Step Height**

Wei-Ting Chao, Chih-Chieh Young, Choa-Lung Ting, National Taiwan Univ, Taiwan, China

**Numerical Simulation of Waves and Runup Generated by Sliding Masses**

Kezhao Fang, Zifeng Jiao, Dalian Univ of Tech; Zhongbo Liu, Dalian Maritime Univ, China; Zhili Zou, Dalian Univ of Tech, China

### **A Proposed Approach for Two-dimensional Run-up Modeling**

Jeffrey A. Oskamp, Ahmed "Jemie" A. Dababneh, RIZZO Associates, USA

### **38. SBD IV: Full-Scale Testing (V. 4)**

**Tuesday**

**June 23**

**08:00**

**Kings 3**

**Chair:** Andrea Fonzo, Centro Sviluppo Materiali, Italy

### **Updates on Flaw Tolerability and Life of Offshore Double Joints in Strain-Based Loading Conditions**

Giorgio Melis, Jan Ferino, Andrea Fonzo, Centro Sviluppo Materiali, Italy; Israel Marines-Garcia, Tenaris Tamsa R&D, Mexico; Philippe Darcis, Tenaris; Furio Marchesani, Luigino Vitali, Saipem, Italy

### **Assessment of Strain-based Pipeline Dents Containing Girth Welds [Oral Presentation]**

Huang Tang, ExxonMobil Upstream Research, USA; Sergey Makarov, Heider Suarez, Exxon Naftegas, Russia; Doug Fairchild, Wentao Cheng, ExxonMobil Upstream Research, USA

### **39. GEOTECH IV: Soil Properties (V. 2)**

**Tuesday**

**June 23**

**08:00**

**Queens 4**

**Chair:** Julie Q. Shang, Univ of Western Ontario, Canada

**Co-Chair:** M S Hossain, Univ of Western Australia, Australia

### **Experimental Study on the Coefficient for Predicting the Adfreeze Bond Strength**

Joonyong Lee, Jae-Mo Kang, Changho Choi, Korea Inst of Civil Engineering and Building Tech, Korea

### **Gravity-Based Structure Foundation Design and Optimization Opportunities**

Joar Tistel, Gudmund R. Eiksund, NTNU; Jon Hermstad, Kvaerner; Anders Bye, Cornelius Athanasiu, Multiconsult, Norway

### **Consideration for End Shape of a Pile for Prebored Pile Construction Method**

Sena Miyazaki, Hideto Sato, Nihon Univ; Katsuhiko Kanuka, Kanuka Design; Yuuki Harigaya, Noix Co, Japan

### **Enlarging Effects and Economical Optimum Design of Inclined-type Core Structure for Heightening Reservoir Dam**

Young-Hak Lee, Ken-ichi Tokida, Osaka Univ, Japan; Dal-Won Lee, Chungnam National Univ, Korea

### **Rheological Characteristics of High-Activity Clays at Different Salinities**

Sueng Won Jeong, Korea Inst of Geosciences & Mineral Resources, Korea

### **Effects of Several Particular Soils on Consistency Limits**

Masanori Tanaka, Yoichi Watabe, Port and Airport Research Inst; Miyoko Makajima, Ryuzo Tomita, Koa Kaihatsu Co, Japan

### **CPtu-Based Cyclic Resistance of Clay-Like Soils**

Chih-Sheng Ku, I-Shou Univ; Der-Her Lee, National Cheng Kung Univ, Taiwan, China; C. Hsein Juang, Clemson Univ, USA

**Impact of Waves and Currents on the Soil near Gravity-Type Offshore Platform Foundation: Numerical and Experimental Studies [Proceedings only]**

Konstantin K. Semenov, Vladimir V. Lebedev, Igor S. Nudner, State Design Inst of Special Construction; Nazim A. Geidarov, Konstantin S. Ivanov, Yury N. Zakharov, Kemerovo State Univ; Nikolay D. Belyaev, Anastasy V. Mishina, State Design Inst of Special Construction; Leonid G. Schemelinin, Krylov State Resesarch Center, Russia

**40. TSUNAMI & SAFETY IV:  
Tsunami Power (V. 3)**

**Tuesday June 23 08:00 Queens 5**

**Chair:** Hua Liu, Shanghai Jiao Tong Univ, China

**Co-Chair:** Ian N Robertson, Univ of Hawaii; USA

**Large Scale Experiments on Response of RC Tide Wall to Tsunami Debris Impact**

Atsushi Shibayama, Naoto Kihara, Yoshinori Miyagawa, Daisuke Takabatake, Hideki Kaida, Central Research Inst of Electric Power Industry, Japan

**Experiments of Tsunami Wave Forces Acting on Offshore Structures by the 2011 Tohoku Earthquake Tsunami Waveform**

Takako Fukuyama, Tsuyoshi Ikeya, Nobuyuki Iwamae, Kajima Corp; Yukinari Fukumoto, Tokyo Electric Power, Japan

**Influence of Wave Shapes to Tsunami Wave Force Acting on a Bridge Superstructure**

Rikuma Shijo, Mitsubishi Heavy Industries; Keiichi Aoki, Yasuyuki Hirose, Nexco Research Institute Japan; Toshimitsu Suzuki, MM Bridge Co; Shunichi Koshimura, Tohoku Univ, Japan

**A Study on Fender Piles Installed around a Tsunami Evacuation Building**

Kanako Hasumi, Kazunori Ito, Yukinobu Oda, Takahide Honda, Hirotohi Obi, Taisei Corp, Japan

**Instability of Breakwater Foundation during Tsunami in a Drum Centrifuge**

Junji Miyamoto, Michio Miyake, Kazuhiro Tsurugasaki, Hiroko Sumida, Toyo Construction; Yutaka Sawada, Kobe Univ; Kenichi Maeda, Nagoya Inst of Tech; Tatsuya Matsuda, Toyohashi Univ of Tech, Japan

**41. UNDERWATER SYSTEMS III: Robotics & Control 1 (V. 2)**

**Tuesday June 23 08:00 Queens 6**

**Chair:** B.J. Buckham, Univ of Victoria, Canada

**Co-Chair:** N. Sakagami, Tokai Univ, Japan

**New Simple Design Method of Ceramic Pressure-tight Housings with Metal Caps**

Yosaku Maeda, Kenichi Asakawa, JAMSTEC, Japan

**Hardware in the Loop Simulation on Micro Electro Mechanical System Attitude Heading Reference System for Small Unmanned Underwater Vehicle**

Arom Hwang, Koje College; Seonil Yoon, Jonghyon Hwang, LIG Nex1, Korea

**Dynamics of REMUS AUV in Ocean Current**  
Bo Li, Tsung-Chow Su, Florida Atlantic Univ, USA

**Development of Guidance, Navigation and Control System Software for Autonomous Unmanned Vehicle Based on LabVIEW**  
Moon Hwan Kim, Sang Young Lee, Tae Yeong Kim, LIGNex1, Korea

**TUESDAY 10:30**

**42. SAFETY & RELIABILITY V:  
System Design (V. 4)**

**Tuesday June 23 10:30 Kohala 1**

**Chair:** M Fujikubo, Osaka Univ., Japan

**Offshore Requirements for Turbine Exhaust System Analysis and Design**  
Agron E Gjinolli, Elden F Ray, Cary D Bremigan, Bruce J Morris, Universal Acoustic & Emission Technologies, USA

**High Fidelity Dropped Object Nonlinear Simulations of a Turning Point System for TOTAL Girassol Installation Campaign**  
Arya Majed, INTECSEA, USA; Antoine Dutertre, TOTAL, France

**Analysis of Actual Situation of Waiting Ship Using AIS Data**  
Xinjia Gao, Kobe Univ; Hidenari Makino, Osaka Univ; Masao Furusho, Kobe Univ, Japan

**Application of Finite Element Simulation to Damage on Ship Structures during Ship Collisions**  
Hui Li, Langxiong-Gan, Jingxian-Liu, Yuanzhou-Zheng, Xiaobo-Zhao, Limin-Deng, Wuhan Univ of Tech, China

**Research on Minimizing Scheme of Hull Damage in Ship Collision**  
Limin Deng, Langxiong Gan, Lei Zhang, Hui Li, Xiaobo Zhao, Wuhan Univ of Tech, China

**Numerical Simulation and Trail Validation of the Shock Response of Hull Piping System under Impact Load**  
Fulin Yu, Harbin Engineering Univ; Jianjun Ding, Shanghai Marine Diesel Engine Research Inst; Jun Guo, Xiongliang Yao, Harbin Engineering Univ, China

**An Absolute Magnetic Rotary Encoder Based on Kalman Filter [Proceedings only]**  
Qi Wang, Bo Zhang, Yue Tian, Ming Ming Sun, Univ of Science & Tech-Beijing, China

**43. HYDRODYNAMICS V:  
Stability & Roll Motion (V. 3)**

**Tuesday June 23 10:30 Kohala 2**

**Chair:** Decheng Wan, Shanghai Jiao Tong Univ, China

**Analysis of Viscosity on the Rolling Motion of Ship Transverse Section**  
Tian Luo, Decheng Wan, Shanghai Jiao Tong Univ, China



**An Application of a Free Surface Type Anti-Rolling Tank on Ultra Large Container Ships**

Sungkyun Lee, Min-Kyu Jung, Hyun-Ho Lee, Dong-Bum Huh, Hyundai Heavy Industries; Jae-Moon Lew, Chungnam National Univ, Korea

**Studies on the Snap Roll Modeling for a Submarine**

Jong-Yong Park, Nakwan Kim, Seoul National Univ; Yong-Ku Shin, Agency for Defense Development, Korea

**Stability Assessment of a Semi-Submersible over a Gas Plume**

Mustafa C Kara, Vivek Jaiswal, Robert B Gordon, Partha P Sharma, DNV GL, USA

**The Influence of Sidehull Hydrodynamics on the T-Craft Seakeeping Motion**

Zhiqun Guo, Harbin Engineering Univ, China; Qingwei Ma, City Univ London, UK; Dongmei Yang, Harbin Engineering Univ, China

**Non-linear Roll Damping, a Numerical Parameter Study**

Babak Ommani, Trygve Kristiansen, Reza Firoozkoobi, MARINTEK, Norway

**44. REES OFFSHORE WIND TURBINE V:  
Floating Turbines 1 (V. 1)**

**Tuesday                  June 23                  10:30                  Kohala 3**

**Chair:** J. M. Niedzwecki, Texas A&M Univ, USA

**Co-Chair:** Changhong Hu, Kyushu Univ, Japan

**CFD Simulations on Tension Leg Buoy Platforms for Offshore Wind Turbines and Comparison with Wave Tank Experiments**

Luca Oggiano, IFE, Norway; Emile Arens, CD-adapco, UK; Anders Myhr, Dr.techn. Olav Olsen AS; Tor Anders Nygaard, IFE, Norway; Steve Evans, CD-adapco, UK

**Sub-harmonic Motion of a Buoy Tethered to Seabed**

Chong Ma, Kazuhiro Iijima, Masahiko Fujikubo, Osaka Univ, Japan

**Collective Pitch Feedforward Control of Floating Wind Turbines Using Lidar**

David Schlipf, Univ of Stuttgart, Germany; Eric Simley, Univ of Colorado, USA; Frank Lemmer, Univ of Stuttgart, Germany; Lucy Pao, Univ of Colorado, USA; Po Wen Cheng, Univ of Stuttgart, Germany

**Development of a Motion Stabilizer for a Shallow Sea Area Spar Buoy in Wind, Tidal Current and Waves**

Toru Katayama, Kazuki Hashimoto, Osaka Prefecture Univ; Hiroshi Asou, Shigenori Komori, Zeni Lite Buoy, Japan

**45. OCEAN TECHNOLOGY IV:  
Installation 1 (V. 1)**

**Tuesday                  June 23                  10:30                  Kohala 4**

**Chair:** Bor-Feng Peng, Oil Field Development Engineering, USA

**DP Time Domain Analysis for HLV Loaded with Topsides in Float-over Installation**

Huailiang Li, Weiwei Xie, Jingkuo Xu, Alan M. Wang, Offshore Oil Engineering; Xiufeng Liang, Haiyang Tan, DNV.GL Oil&Gas China, China

**Parametric Sensitivity Studies for Floatover Installation Analyses of Lufeng 7-2 Topsides Using Low-deck Floatover Method**

Chen He, Wentai Yu, Licheng Qin, Alan Minglun Wang, Offshore Oil Engineering; Bichun Zhu, Haiyang Tan, DNV GL China, China

Weight Monitoring and Reporting Considerations of Liwan 3-1 Mega Jacket [Proceedings only]

Tui Deng, Baojie Chen, Zhengrong Song, Yi Lv, Shanhui Xu, Wenhao Zhang, Jiantao Pang, Offshore Oil Engineering, China

**46. ASSET INTEGRITY V:  
Pipeline & Riser Integrity (V. 4)**

Tuesday

June 23

10:30

Kings 1

**Chair:** Robert E Melchers, Univ of Newcastle, Australia

**Hydrogen Embrittlement under Cathodic Protection for X100 and X120 High Strength Line Pipes**

Takuya Hara, Nippon Steel & Sumitomo Metal, Japan

**Vortex-Induced Vibration Fatigue and Integrity Management of Risers and Spools in Shallow Water**

Abe Nezamian, Craig Rodriques, WorleyParsons, Australia

**Research for Distance Measurement of Offshore Pipeline Defects**

Xiaolong Li, Shimin Zhang, Shuhai Liu, Quan Jiao, Youliang Chen, China Univ of Petroleum-Beijing, China

**47. COASTAL HYDRODYNAMICS V:  
Beach & Estuary I (V. 3)**

Tuesday

June 23

10:30

Kings 2

**Chair:** P. Ruol, Univ of Padova, Italy

**Coastal Geomorphology Model using Boussinesq Equation Considering Undertow Effect**

Dae-Hong Kim, Univ of Seoul; Sangyoung Son, Univ of Ulsan, Korea

**Dynamic Response of Seabed under Different Waves**

Jun-Jie Guo, Xiang-Lian Zhou, Jun Zhang, Feng Xu, Guan-Lin Ye, Jian-Hua Wang, Shanghai Jiao Tong Univ, China

**Diffusion Model Identification for Long-Term Coastal Profile Evolution**

Mikhail M. Lavrentiev, Novosibirsk State Univ, Russia; Renato Spigler, Univ "Roma Tre", Italy; Eldar Goryunov, Alexey A. Romaneko, Novosibirsk State Univ, Russia

**Morphodynamic Shoreline Boundary Conditions: A Preliminary Validation from Laboratory Experiments**

Maurizio Brocchini, Matteo Postacchini, Univ Politecnica delle Marche, Italy

**Experimental Studies on Sandy Beach Profile Evolution in 2D Wave Flume**

Zhengtong Yang, Bingchen Liang, Dongyong Lee, Huajun Li, Ocean Univ of China, China

**Numerical Modeling on the Hydrodynamics of Surf Zone over Movable Beach Profiles**

Hyun-Doug Yoon, Min-Sang Cho, Myongji Univ; Sungwon Shin, Kwangwoo Cho, Chonnam National Univ; Korea; Daniel T Cox, Oregon State Univ, USA

**Large Eddy Simulation of Sediment Transport for the Pulsating Flow past a Cylinder over a Horizontal Bed**

Efstratios N Fonias, Dimokratis G E Grigoriadis, Univ of Cyprus, Cyprus

**Comparative Study on Role of Schmidt Number in Suspension Modeling**

Minwoo Son, Ji-sun Byun, Chungnam National Univ; Eun-Sung Chung, Seoul National Univ of Science & Tech; Jin-Tae Han, Korea Inst of Civil Engineering & Building Tech, Korea

**Analysis of COD Transport in Qinhuangdao Coastal Waters**

Xiaodan Mao, Cuiping Kuang, Chengfei Hu, Tongji Univ; Jie Gu, Shanghai Ocean Univ; Jianle Zhang, Yongfeng Zhang, Wanlei Zhang, Marine Environmental Monitoring Center, Hebei-Province, China

**48. SBD V:  
Pipeline Collapse & Fatigue (V. 4)**

Tuesday

June 23

10:30

Kings 3

**Chair:** David McColskey, NIST, USA

**Ultra-Low-Cycle Fatigue Behavior of Pipeline Steels Based on Theory of Critical Distances**

J.C.R. Pereira, A.M.P. de Jesus, A.A. Fernandes, Univ of Porto, Portugal

**Reel-ability of HF-ERW Pipes on DCV Aegir for Deep Water Pipeline Applications**

Erwan Karjadi, Harm Demmink, Helen Boyd, Heerema Marine Contractors, Netherlands; Eiji Tsuru, Nippon Steel & Sumikin Tech, Japan; Taro Muraki, NSSMC, Germany; Kenichiro Tomioka, Nippon Steel & Sumitomo Metal, Japan

**Collapse Resistance of HF-ERW Line Pipe Installed in Deep Water by R-lay**

Eiji Tsuru, Nippon Steel & Sumikin Tech; Kenichiro Tomioka, Hidenori Shitamoto, Masakazu Ozaki, Nippon Steel & Sumitomo Metal, Japan; Erwan Karjadi, Helen Boyd, Harm Demmink, Heerema Marine Contractors, Netherlands

**Research on CTOD for Low-Cycle Fatigue Analysis of Central-through Cracked Plates Considering Accumulative Plastic Strain**

Junlin Deng, Ping Yang, Qin Dong, Dan Wang, Wuhan Univ of Tech, China

**Study on Low-Cycle Fatigue Crack-Initiation Life of Ship Plate Based on Accumulative Plastic Damage**

Junlin Deng, Ping Yang, Qin Dong, Dan Wang, Wuhan Univ of Tech, China

**Research on Low-Cycle Fatigue Crack-Propagation Life of Ship Plate Based on Accumulative Plastic Damage**

Qin Dong, Ping Yang, Junlin Deng, Dan Wang, Wuhan Univ of Tech, China

**49. GEOTECH V  
Soil Dynamics (V. 2)**

Tuesday

June 23

10:30

Queens 4

**Chair:** Carlos de O Cardoso, Petrobras, Brazil

**Co-Chair:** H. Arslan, ExxonMobil Development Co., USA

**Numerical Study of Dynamic Soil Compaction at Different Degrees of Saturation**

Javad Ghorbani, Majidreza Nazem, John P Carter, Univ of Newcastle, Australia

**Cyclic Triaxial Loading of Cohesionless Silty Sand**

Tomas Sabaliauskas, Lars Bo Ibsen, Aalborg Univ, Denmark

**Stability of Breakwater Foundation Reinforced with Steel Sheet Piles under Dynamic Loading**

Babloo Chaudhary, Hemanta Hazarika, Naoya Monji, Kyushu Univ; Tadashi Hara, Kochi Univ; Kengo Nishimura, Ryohei Ishikura, Kiyonobu Kasama, Kyushu Univ, Japan

**Study on Liquefied Soil-Cement Using PVA Fiber and PP Fiber**

Mamoru Fujii, Ken Watanabe, Naoto Okuzumi, Tokai Univ, Japan

**50. TSUNAMI & SAFETY V:  
Monitoring & Warning (V. 3)**

**Tuesday**

**June 23**

**10:30**

**Queens 5**

**Chair:** S Grilli, Univ of Rhode Island, USA

**Co-Chair:** Y S Cho, Hanyang Univ, Korea

**Real-time Monitoring System of High Waves Using HF Ocean Radar in the East Coast of Korea [Oral presentation]**

Kyuhun Kim, Bumshick Shin, Catholic Kwandong Univ, Korea

**Modeling of Tsunami Detection by High Frequency Radar Based on Simulated Tsunami Case Studies in the Mediterranean Sea**

Stéphan T. Grilli, Univ of Rhode Island, USA; Samuel Grosdidier, Diginext Ltd; Charles-Antoine Guérin, Univ de Toulon, France

**Development of Gap Filling Algorithm Applicable to Tsunami Warning System**

Jun-Whan Lee, Sun-Cheon Park, National Inst of Meteorological Research, Korea

**Visual Tsunami Warning System**

Masayuki Hayashi, Peter Schirling, Lakewood Consulting, USA

**51. UNDERWATER SYSTEMS IV: Robotics & Control 2**

**Tuesday**

**June 23**

**(V. 2)**

**10:30**

**Queens 6**

**Chair:** S. Yamaguchi, Kyushu Univ, Japan

**An Examination of Autonomous Underwater Docking Procedures**

Frank H Fan, Shojiro Ishibashi, JAMSTEC, Japan

**Modeling of Ventilated Supercavity and Control Strategy in Initial Phase**

Seonhong Kim, Nakwan Kim, Seoul National Univ, Korea

**Attitude Control Mechanism for Underwater Robot with Flexible Plastic Film Body**

Mizuho Shibata, Kindai Univ; Norimitsu Sakagami, Tokai Univ, Japan

**Towards Automated Thruster Control in a Small Observation Class ROV**

Amos Buchanan, Alison A Proctor, Bradley Buckham, Colin Bradley, Univ of Victoria, Canada

**Dynamic Attitude Measurement of Underwater Parallel Robot Based on Integrated Measurement Method**

Han Xu, Yingkai Xia, Guohua Xu, Gang Liu, Guanxue Wang, Huazhong Univ of Science & Tech, China

**The MDO Method of Rapidity and Maneuverability for Flat UUV**

Mengyun Wang, Songlin Yang, Zifan Wei, Jiangsu Univ of Science & Tech, China

**TUESDAY 13:00**

**2015 Jin S Chung Award Lecture**

Tuesday                  June 23                  13:00                  Kohala 2

**Vortex Dynamics in Flow Instabilities and Biomimetic Flows  
[No! presentation: Paper in IJOPE]**

Prof. Michael Triantafyllou, Massachusetts Inst of Technology, USA

**TUESDAY 14:00**

**52. SLOSHING & LNG SHIP DYNAMICS I:  
Coupled Sloshing and Ship Dynamics I (V. 3)**

Tuesday                  June 23                  14:00                  Kohala 1

**Chair:** Yusong Cao, Marintek USA, USA

Brief Review of Sloshing Symposium  
J S Chung, ISOPE;

**SPH Modelling of Long-term Sway-Sloshing Motion in a Rectangular Tank**

Murat Özbulut, Nima Tofighi, Mehmet Yıldız, Sabanci Univ; Ömer Gören, Istanbul Technical Univ, Turkey

**An Increment Harmonic Balance Based Identification Technique for Periodic Oscillations of Sheltered Riser Vessel**

Zhanglan Chen, Ye Jiawei, South China Univ of Tech, China

**Numerical Simulation of Interfacial Sloshing in the SDPSO's Storage Tank**

Dongxi Liu, Wenyong Tang, Jin Wang, Shanghai Jiao Tong Univ, China

**53. HYDRODYNAMICS VI:  
Fluid-Structure Interactions (V. 3)**

Tuesday                  June 23                  14:00                  Kohala 2

**Chair:** Shuxue Liu, Dalian Univ of Technology, China

**Co-Chair:** Il-Hyoung Cho, Jeju National Univ, Korea

**Twice Expansion Analysis Method in Time-Domain for Wave-body Interaction**  
Ruijia Jin, Bin Teng, Dalian Univ of Tech, China

**Squall in Mid-latitude Regions and its Effect on Offshore Operations**  
Yongjian Lu, Masahiko Ozaki, Univ of Tokyo, Japan

**Sensitivity Analysis of Non-linear Air Gap and Wave Slamming Load with Respect to Current for Semi-submersible Platform Design**  
Fali Huo, Huixin Zhang, Deqing Yang, Shanghai Jiao Tong Univ; Jin Cui, Grenland Group (China), China

**Numerical Investigation of Wave-Body Interaction Based on Desingularized Boundary Integral Equation Method**  
Gang Xu, Jiangsu Univ of Science & Tech, China

**Berth Influence on Wave Loads on the Moored Ship Near It - Analysis Using Eigenfunction Expansion Method [Proceedings only]**  
Viktor A Leontev, Igor S Nudner, Baltic State Tech Univ; Konstantin K Semenov, St Petersburg State Polytech Univ; Leonid G Shchemelinin, Krylov State Research Center, Russia

**54. REES OFFSHORE WIND TURBINE VI:  
Floating Turbines 2 (V. 1)**

**Tuesday                  June 23                  14:00                  Kohala 3**

**Chair:** [In-Sung Jang](#), KIOST, Korea

**Hydrodynamic Analysis of a Semi-Submersible FOWT by a Hybrid Panel-Stick Model**

Yingyi Liu, Changhong Hu, Makoto Sueyoshi, Kyushu Univ; Hidetsugu Iwashita, Hiroshima Univ, Japan

**Hydrodynamic Simulation of the Semi-Submersible Floating Wind System for Phase II of OC4**

Ping Cheng, Decheng Wan, Shanghai Jiao Tong Univ, China

**Sensitivity of Estimated Tower Fatigue to Wind Modeling for a Spar Floating Wind Turbine**

Harald Ormberg, Erin E Bachynski, MARINTEK, Norway

**Fatigue Life Evaluation for Mooring Line and Tower of Floating Wind Turbine**

Byoung Wan Kim, Sa Young Hong, Hong Gun Sung, Seok Won Hong, KRISO, Korea

**Coupled MBS-CFD Simulation of the IDEOL Floating Offshore Wind Turbine Foundation Compared to Wave Tank Model Test Data**

Friedemann Beyer, Univ of Stuttgart, Germany; Thomas Choynet, IDEOL, France; Matthias Kretschmer, Po Wen Cheng, Univ of Stuttgart, Germany

**CFD Simulations for the Design of Offshore Floating Wind Platforms Encompassing Heave Plates**

Pauline Bozonnet, Adrien Emery, IFP Energies Nouvelles, France

**Numerical Modeling of the Aero-Hydro Coupling of a Floating Offshore Wind Turbine**

Wei-ting Hsu, Krish P. Thiagarajan, Univ of Maine; Shan Shi, Offshore Dynamics, USA

**55. OCEAN TECHNOLOGY V:  
Installation 2 (V. 1)**

**Tuesday          June 23          14:00          Kohala 4**

**Chair:** Bo Woo Nam, KRISO, Korea

**Research on the Formation Mechanism of Suction Force during Uplift of Jack-up**  
Ruilong Tan, Menglan Duan, Zhiming Wang, China Univ of Petroleum-Beijing, China

**Optimization for Jacket Buoyancy Tank on Launching and Uplifting Stage**  
Won-Hyuk Choi, Yong-Sun Baik, Jin-Tae Kim, Daewoo Shipbuilding & Marine Engineering, Korea

**Feasibility Analysis and Application for Cantilever Beam Extension of Self-elevating Drilling Unit**

Jianjun Wang, Weiliang Dong, Jianbo Li, Linsong Song, Wenli Chen, China Oilfield Services, China

**56. HPM I:  
Advanced Materials & Offshore Structures 1 (V. 4)**

**Tuesday          June 23          14:00          Kings 1**

**Chair:** S. Herion, Karlsruhe Inst of Technology, Germany

**Evaluation of Buckling Strength for Design Consideration of Offshore Structures**  
Seung-Jung Lee, Gukgwon Choi, Ilhwan You, Korea Univ; Min Han Oh, Nayoung Kim, Hyundai Heavy Industries; Goangseup Zi, Soye Kim, Korea Univ, Korea

**Application of Plasma Electrolytic Oxidation for Repair of Details of Marine Technique**

Sergey Gnedenkov, Sergey Sinebryukhov, Inst of Chemistry; Alexander Minaev, Dmitry Mashtalyar, Far Eastern Federal Univ; Vladimir Egorkin, Andrey Gnedenkov, Konstantine Nadaraia, Inst of Chemistry, Russia

**Mechanical Properties of the Clamping Pressure Type Joint for Steel Pipe Pile**  
Chol-Ho Kim, Hokoku Engineering; Masato Majima, Soil-Design; Masahiro Ogawa, Hokoku Engineering, Japan

**57. COASTAL HYDRODYNAMICS VI:  
Beach & Estuary 2 (V. 3)**

**Tuesday          June 23          14:00          Kings 2**

**Chair:** Tingqiu Li, Wuhan Univ of Technology, China  
**Co-Chair:** Eva Loukogeorgaki, Aristotle Univ of Thessaloniki, Greece

**The Role of Surface and Subsurface Processes on the Morphodynamics of a Vegetated Mudflats**

Chuang Jin, Zheng Gong, Chang-kuan Zhang, Hohai Univ, China; Zeng Zhou, Univ of Cantabria, Spain; Huan Li, Hohai Univ, China

**Retrogressive Breach Failure Events at Amity Point, Australia and their Interaction with Built Defences**

Konrad Beinsen, David T Neil, Univ of Queensland, Australia

**Mor-Merge Approach with Multi-Discharge for Morphodynamic Modeling of the Yangtze Estuary**

Ao Chu, Jiaai Tai, Hohai Univ, China

**Numerical Modeling of Waves, Currents, and Sediment Transport at Pillar Point Harbor, CA**

Lihwa Lin, Honghai Li, US Army Engineer Research and Development Center; James Zoulas, US Army Corps of Engineers, USA

**Depth Change Characteristics in Kanmon Waterway**

Masaki Yokota, Masaru Yamashiro, Noriaki Hashimoto, Mitsunari Hirasawa, Yuki Aihara, Kyushu Univ, Japan

**Numerical Simulations of Deep Currents on Steep Bathymetry [Proceedings only]**

Victor Rosales-Sierra, Instituto Mexicano del Petroleo; Coral Garcia-Govea, Univ Autonoma Metropolitana, Mexico; Ma Cristina Garcia-Govea, Saipem Energies, France

**58. SUBSEA-Umbilicals-PIPELINE-RISER-CABLE I:  
Pipeline Design.1 (V. 2)**

**Tuesday June 23 14:00 Kings 3**

**Chair:** Mason Wu, DMAR, USA

**Co-Chair:** Ping Liu, INTECSEA, Netherlands

**Multi-Objective Optimization of Submarine Pipeline Routes Considering On-Bottom Stability, VIV-Induced Fatigue, and Multiphase Flow**

Juliana S Baioco, Carl H Albrecht, Breno P Jacob, COPPE/UFRJ; Djalene Maria Rocha, Petrobras, Brazil

**Experimental Investigation on Ship Anchor Impact on Subsea Pipelines Considering Seabed Flexibility**

Yi Wang, Menglan Duan, Tongtong Li, Miaozi Zheng, China Univ of Petroleum, China

**Mechanical Characteristics Analysis of Pig's Sealing Disc in Offshore Pipeline**

Hang Zhang, Shimin Zhang, Li Lin, China Univ of Petroleum-Beijing; Biao Tang, CNPC Offshore Engineering, China

**Seabed Intervention Challenges of the Lan Do Flowline**

Ping Liu, Ozturk Aktan, INTECSEA, Netherlands

**59. GEOTECH VI:  
Ground Improvement (V. 2)**

**Tuesday June 23 14:00 Queens 4**

**Chair:** Kouki Zen, Kyushu Univ, Japan

**Co-Chair:** H. Arslan, ExxonMobil Development Co., USA

**Countermeasure for Liquefiable Ground beneath the Existing Structure by CPG**



Kouki Zen, Mitsunari Hirasawa, Kyushu Univ; Takashi Shinsaka, Masaki Adachi, Compaction Grouting Society of Japan, Japan

**In-situ Applicability Test of Soil Improvement for Housing Sites Using Micro-Bubbles against Soil Liquefaction in URAYASU**

Koichi Nagao, Sato Kogyo Co; Naoaki Suemasa, Tokyo City Univ; Motoharu Jinguuji, National Inst of AIST; Hiroshi Nakazawa, Fukken Co, Japan

**A Study on Infusion of Silica Microparticles into Soil Particles**

Kentaro Uemura, Tokyo City Univ; Takamitsu Sasaki, Syunsuke Shimada, Kyokado Engineering; Naoaki Suemasa, Tokyo City Univ; Koichi Nagao, Sato Kogyo Co, Japan

**Measured Ground Improvement after Low Mobility Grouting**

Jong-Nam Do, Moon-Seok Nam, Hong-Jong Kim, Young-Ho Park, Korea Expressway Corp; Byung-Sik Chun, Korea Construction Industry Research Inst, Korea

**Soil Improvement Using Electroosmosis with Suitable Operation Process: Field Test [Proceedings only]**

Shaochi Chien, Aletheria Univ; Fuchen Teng, Changyu Ou, National Taiwan Univ of Science & Tech; Piogo Hsieh, Hwa Hsia Univ of Tech, Taiwan, China

**60. TSUNAMI & SAFETY VI:  
Panel**

**Tuesday June 23 14:00 Queens 5**

**Chair:** Kazuhiko Honda, Port and Airport Research Inst, Japan

**Co-Chair:** H Liu, Shanghai Jia Tong Univ, China

*Panel Discussions*

**61. UNDERWATER SYSTEMS V: Navigation & Control (V.  
2)**

**Tuesday June 23 14:00 Queens 6**

**Chair:** Hiroyoshi Suzuki, Osaka Univ, Japan

**Co-chair:** Bradley Buckham, Univ of Victoria, Canada

**Design of a Newly Developed Hybrid Underwater Robotic Vehicle**

Mingjiu Zuo, Guohua Xu, Xianbo Xiang, Caoyang Yu, Ying Chen, Huazhong Univ of Science & Tech, China

**Research on Novel Improved Sliding Mode Control of Autonomous Underwater Vehicle (AUV)**

Ying Chen, Huazhong Univ of Science & Tech; Guohua Xu, Zengsheng Ji, Xianbo Xiang, Bin Yu, Central Southern Electric Power Design Inst, China

**Coordinated Motion Control of a 3-Link Dual-Arm Underwater Vehicle-Manipulator System Using Resolved Acceleration Control Method**

Radzi Ambar, Shinichi Sagara, Kyushu Inst of Tech; Fumiaki Takemura, Okinawa National College of Tech, Japan

**Configuration of Towed Cable during Ship Moving in Circular Path**

Tianyu Zhang, Keqiang Zhu, Ningbo Univ, China

**Comparison Analysis for Structure Strength of Composite Materials of Two Layer Forms for Underwater Vehicle [Proceedings only]**

Bin Li, Yongjie Pang, Xiaomeng Zhu, Harbin Engineering Univ, China

**TUESDAY 16:20**

**62. SLOSHING & LNG SHIP DYNAMICS II:  
Liquefaction & Sloshing (V. 3)**

**Tuesday June 23 16:20 Kohala 1**

**Chair:** Andre Baeten, Augsburg Univ of Science & Technology, Germany

**Co-Chair:** Decheng Wan, Shanghai Jiao Tong, Univ, China

**Development of LNG-FPSO pre-FEED with KSMR Process**

Byoung-hak Cho, Sang-gyu Lee, Chul-gu Lee, Kun-hyung Choe, Chang-won Park, Gyu-sang Cha, Yong-soo Gwon, Korea Gas, Korea

**Investigation of Excitation Period Effects on 2D Liquid Sloshing by MPS Method**

Yaqiang Yang, Zhenyuan Tang, Youlin Zhang, Decheng Wan, Shanghai Jiao Tong Univ, China

**A Study on the Sloshing Risk Reduction in Membrane-type LNG Tanks by Interchanging Liquid Cargo between Tanks**

Makoto Arai, Masaru Matsuo, Yokohama National Univ, Japan

**High Performance of the Sloshing Characteristics in Horizontal Elliptical Tanks with Baffles by Using SBFEM**

Jun Liu, Gao Lin, Wenyuan Wang, Dalian Univ of Tech, China

**Numerical Simulation of Interfacial Sloshing in the SDPSO's Storage Tank**

Dongxi Liu, Wenyong Tang, Jin Wang, Shanghai Jiao Tong Univ, China

**63. HYDRODYNAMICS VII:  
DP Control - Ship and floatoverc 1 (V. 3)**

**Tuesday June 23 16:20 Kohala 2**

**Chair:** Alan M Wang, Offshore Oil Engineering, China

**Co-Chair:** Vegard Aksnes, MARINTEK; Norway

**A Task Space Based Weathervaning Control for Offshore Vessels**

Young-Shik Kim, KRISO; Jinwhan Kim, KAIST; HGun Sung, KRISO, Korea

**Investigation on the Positioning Capability of Anchor Handling Vessels**

Xiaopeng Wu, Torgeir Moan, NTNU, Norway

**Advanced Computing Technologies Facilitate Operations of Dynamically Positioned Vessels**

Sue Wang, Ping Lu, ABS, USA

**Comparison of Time Domain Simulation and Steady State Capability Analysis of Dynamic Positioning**

Liping Sun, Xiaomeng Zhu, Bin Li, Weijia Ma, Harbin Engineering Univ, China

**Skipping Dynamic Forbidden Sectors in Thrust Allocation for Marine Vessels**

Shengwen Xu, Xuefeng Wang, Lei Wang, Shanghai Jiao Tong Univ, China; Bo Li, Florida Atlantic Univ, USA; Lijun Yang, Shanghai Jiao Tong Univ, China

**Optimal Constrained Thrust Allocation for Ship Dynamic Positioning System under Changeable Environments**

Xing Zhou, Haixiang Xu, Linkai Xu, Hui Feng, Wuhan Univ of Tech, China

**64. REES OFFSHORE WIND TURBINE VII:  
Floating Turbines 3 (V. 1)**

**Tuesday                  June 23                  16:20                  Kohala 3**

**Chair:** Amy Robertson, National Renewable Energy Lab, USA

**Study on Stress Monitoring Method in Supporting Structure of Floating Offshore Wind Turbine**

Chutatsu Hirao, Yosuke Anai, Shigesuke Ishida, Shunji Inoue, National Maritime Research Inst, Japan

**An Investigation of the Blade Tower Interaction of a Floating Offshore Wind Turbine**

Sean Quallen, Tao Xing, Univ of Idaho, USA

**Hydrodynamic Performance of Heave Plates on Floating Offshore Wind Turbine Platforms**

Javier Moreno, Matt Cameron, Krish P Thiagarajan, Univ of Maine, USA; Carlos A Garrido Mendoza, Technical Univ of Madrid, Spain

**Dynamic Modelling and Analysis of Three Floating Wind Turbine Concepts with Vertical Axis Rotor**

Zhengshun Cheng, Kai Wang, Zhen Gao, Torgeir Moan, NTNU, Norway

**65. OCEAN TECHNOLOGY VI:  
Installation 3 (V. 1)**

**Tuesday                  June 23                  16:20                  Kohala 4**

**Chair:** Bor-Feng Peng, Oil Field Development Engineering, USA

**An Experimental Study on Deepwater Crane Installation of Subsea Equipment in Waves**

B.W. Nam, N.W. Kim, Y.M. Choi, S.Y. Hong, Korea Research Inst of Ships & Ocean Engineering; J.W. Kim, Hyundai Heavy Industries, Korea

**Offshore Installation of Subsea Equipment Considering Elasticity of the Crane Boom in Harsh Environment**

Jeong-Woo Hong, Seung-Ho Ham, Luman Zhao, Xing Li, Sol Ha, Myung-Il Roh, Seoul National Univ, Korea

**Comparative Study of Lifting Operations of Offshore Wind Turbine Monopile and Jacket Substructures Considering Vessel Shielding Effects**

Lin Li, Zhen Gao, Torgeir Moan, NTNU, Norway

**High Position Fabrication Method of Topside Based on Transverse Loadout**

Chao Liu, Zhengrong Song, Ting Li, Shengnan Lu, Offshore Oil Engineering (Qingdao), China

**The Influence of Topside on Installation Design in Ultra-shallow Sea Water**

Xueping Bai, Da Li, Cong Yi, Dianfu Fu, China National Offshore Oil, China

**66. HPM II:**

**Advanced Materials & Offshore Structures 2 (V. 4)**

**Tuesday June 23 16:20 Kings 1**

**Chair:** N. Osawa, Osaka Univ, Japan

**Customized High Strength Seamless Pipes with Advanced Toughness for Offshore Constructions**

Andreas Jahn, Stephan Scherf, Bernhard Koschlig, Waldemar Wessel, Diana Toma, Guido Kubla, Ralf Hojda, Vallourec Deutschland, Germany; Rodolpho Nirello, Vallourec France, France

**Development of Advanced Laser Welded 13% Cr Steel Line Pipe**

Hiroyuki Sumi, Yasushi Kitani, Toshifumi Kodama, Yutaka Matsui, Takeshi Suzuki, Shigeto Sakashita, Shintaro Kumazawa, JFE Steel, Japan

**Metallurgical Reactions in Welding of Clad X60/X65 Pipelines**

Helena Bjaaland, NTNU; Odd M. Akselsen, Vigdis Olden, Bård Nyhus, SINTEF; Morten Karlsen, Jarle Hjelen, NTNU, Norway

**67. COASTAL HYDRODYNAMICS VII:**

**Beach & Estuary 3 (V. 3)**

**Tuesday June 23 16:20 Kings 2**

**Chair:** Jooyong Lee, Sungkyunkwan Univ, Korea

**Co-Chair:** Eva Loukogeorgaki, Aristotle Univ of Thessaloniki, Greece

**A Study for the Generation Mechanism of the Rip Current at the Enclosed Beach by the Groin**

Naoyuki Inukai, Hiroshi Ootake, Hiroshi Yamamoto, Tokuzo Hosoyoamada, Nagoka Univ of Tech, Japan

**Prediction of Surface Elevation Change in Mangrove Forest and Evaluation of Coastal Erosion Prevention by Mangrove Forest**

Puangpet Rattanarama, Nunthawath Charusrojthanadech; King Mongkut's Inst of Tech Ladkrabang, Thailand; Yoshimishi Yamamoto, Tokai Univ, Japan

**Application of Warning Decision Process System for Rip Current Generation at Haeundae Beach**

Jooyong Lee, Junglyul Lee, Sungkyunkwan Univ, Korea

**Monitoring of Yan-Liao Beach Nourishment in Northeast Coast of Taiwan**

Hui-Ming Fang, Sung-Shan Hsiao, Hsing-Yu Wang, National Taiwan Ocean Univ, Taiwan, China; Erwin Oh, Zuo-Dong, Liang, Griffith Univ, Australia

**68. SUBSEA-Umbilicals-PIPELINE-RISER-CABLE II:  
Pipeline Design.2 (V. 2)**

Tuesday June 23 16:20 Kings 3

**Chair:** A. Majed, IntecSea Inc., USA  
**Co-Chair:** Tomasz Tkaczyk, Technip, UK

**Reliability-Based Fracture Mechanics Approach to Fatigue Design of Julia Flowline**  
Xiangyu Wang, ExxonMobil Upstream Research; Guillaume Penel, Sean Swearingen, Robert Aune, Wan Kan, Lang Fu, ExxonMobil Development, USA

**Lay Method to Make Pipelines Conform to Uneven Seabed Topography**  
Geir Endal, Statoil; Per R Nystrom, Odd M Lyngsaunet, IKM Ocean Design, Norway

**Qualification of Reeled Mechanically Lined Pipes for Fatigue Service**  
Aurélien Pépin, Tomasz Tkaczyk, Technip, UK; Noel O'Dowd, Univ of Limerick, Ireland; Kamran Nikbin, Imperial College, UK

**Numerical Simulation of a Propagating Buckle for Pipe-in-pipe Systems**  
Gen Li, Shunfeng Gong, Zhejiang Univ, China

**The Application of Controlled Low Strength Materials as Conduit Backfill Materials**  
Jinyoung Kong, Korea Inst of Construction Technology; Hyuksang Jung, Dongyang Univ; Yoseph Byun, Korea Infrastructure Safety Corp; Byungsik Chun, Construction Industry Research Inst, Korea

**Technical Challenges in Piggy-back Bundle Pipeline EPCI Project in Chinese Costal Area**  
Facheng Wang, Yi Xie, Mingchen Ni, Xia Meng, COTEC Offshore Engineering Solutions; You Shi, Xuanze Ju, Gang Zhao, China Offshore Oil Engineering; Yiming Lang, CNOOC, China

**Velocity Profile Analysis around Submarine Flexible Pipes under the Combined Action of Waves and Currents**  
Lin Zhao, Junxian Wang, Ocean Univ of China, China

**Fatigue Crack Growth Rate of API 5L X65 Pipe in Sweet Environments for Riser and Flowline Applications**  
Robert Aune, Wan Kan, Guillaume Penel, Sean Swearingen, ExxonMobil Development; Hengliang Yuan, NES Global Talent; Ramgopal Thodla, Feng Gui, DNV-GL, USA

**69. GEOTECH VII:  
Soil-Structure Interactions (V. 2)**

Tuesday June 23 16:20 Queens 4

**Chair:** M S Hossain, Univ of Western Australia, Australia

**Pipeline Laying and Embedment in Soft Clayey Soils: Statistical Description and Field Observations**  
Carlos de Oliveira Cardoso, Rafael Familiar Solano, Bruno Reis Antunes, Vanessa Tieme Ochi, Petrobras, Brazil

**Experimental Study on Ultimate Anti-slide Capacity for a Partially-embedded Pipeline on the Sloping Sandy Seabed**  
Ning Wang, Fu-Ping Gao, Cun Hu, Inst of Mechanics, CAS, China

**Effect of Pile Head Restraint on Subsea Hybrid Foundation Response**

Jeong-Yun Won, Genesis; Jean ME Audibert, Sean F Swearingen, ExxonMobil Development; Hadi Suroor, Genesis; Florent Thioulouse, Technip, USA

**Experimental Study on Local Scour below Pipeline under Oblique Waves**

Yongzhou Cheng, Bailin Liu, Xiaoyun Huang, Lihong Chang, Changsha Univ of Science & Tech, China

**FEA-Based Design Approach for Hybrid Subsea Foundations**

M. Kabir Hossain, Han Shi, Basel Abdalla, Wood Group Kenny; Jean Audibert, Sean Swearingen, Lang Fu, ExxonMobil Development, USA

**Random Wave Induced Porous Seabed Response**

Jun Zhang, Jun-jie Guo, Feng Xu, Xiang-lian Zhou, Jin-jian Chen, Lu-lu Zhang, Shanghai Jiao Tong Univ, China

**Installation of Stiffened and Unstiffened Caissons in Clays: Case History, Centrifuge Test and Numerical Modelling**

Muhammad Shazzad Hossain, Youngho Kim, Mi Zhou, Yuxia Hu, Univ of Western Australia, Australia; Jonghwa Won, Jong-Sik Park, Min Jung Jun, Daewoo Shipbuilding & Marine Engineering, Korea

**Analytical, Experimental and Computational Modeling of Overloads above On-shore and Off-shore Buried Gas Transmission Pipelines [Proceedings only]**

Charles Fernandez, Nicolas Herchin, GDF SUEZ; Mickaël Metzger, Bruno Raguin, GRTgaz; Alain Pecker, Ecole Nationale Ponts et Chaussées, France

**70. ADVANCED SHIP TECH I:**

**Green Ship (V. 4)**

**Tuesday**

**June 23**

**16:20**

**Queens 5**

**Chair:** Suak Ho Van, Korea Research Inst of Ships & Ocean Engineering (KRISO), Korea

**Design and Performance Evaluation of Superstructure Modification for Air Drag Reduction of a Container Ship**

Yoonsik Kim, Kwang-Soo Kim Kim, KRISO; Seong-Wook Jeong, Seung-Gyu Jeong, Lloyd's Register Asia; Suak-Ho Van, Yoo-Chul Kim, Jin Kim, KRISO, Korea

**Development of an Air Circulating Tank to Reduce the Frictional Resistance of an Ultra Large Container Ship**

Kyohei Sugawa, Atsushi Furuo, Satowa Ibata, Yoshiho Ikeda, Osaka Prefecture Univ, Japan

**Development and Application of Energy Saving Devices to Improve Resistance and Propulsion Performance**

Hee Dong Lee, Chun Beom Hong, Hee Taek Kim, Soon Ho Choi, Jae Moon Han, Booki Kim, Samsung Heavy Industries; Joo Ho Lee, Daesun Shipbuilding & Engineering, Korea

**Design Strategy of Battery Powered Boat and its Evaluation**

Ayako Umeda, Etsuro Shimizu, Tsuyoshi Oode, Tokyo Univ of Marine Science & Tech, Japan

**71. UNDERWATER SYSTEMS VI:  
Oil Spill Tracking & Control (V. 2)**

**Tuesday June 23 16:20 Queens 6**

**Chair:** M Arima, Osaka Pref Univ, Japan

**Study on Spilled Oil Drifting Simulation Applying Data Assimilation with SOTAB-II**  
Hiroyoshi Suzuki, Satokai Tsutsukawa, Naomi Kato, Osaka Univ, Japan

**Numerical Prediction for the Methane Gas Rising from Seabed in Deep Water**  
Youhei Takagi, Yasunori Okano, Naomi Kato, Osaka Univ, Japan

**The Effect of Liquid-Gas Interaction on Plume Structure in Blowout Flow**  
T. Ochi, Y. Takagi, Y. Okano, N. Kato, Osaka Univ, Japan

**Estimation of Water Current profile in Deepwater using Autonomous Underwater Vehicle SOTAB-I**

Y. Yamaguchi, M. Ukita, M. Choyekh, N. Kato, H. Senga, Osaka Univ; M. Yoshie, T. Tanaka, Port and Airport Research Inst; E. Kobayasi, Kobe Univ; H. Chiba, Toyama College, Japan

**Vertical Water Column Survey of Komatsu-shima in Japan Using Autonomous Underwater Vehicle SOTAB-I**

M. Choyekh, M. Ukita, Y. Yamaguchi, N. Kato, H. Senga, Osaka Univ; M. Yoshie, T. Tanaka, Port and Airport Research Inst; E. Kobayashi, Kobe Univ, Japan

**Control Algorithm for Oil Spill Tracking Using ASV with Onboard Oil Detecting Sensor**

Swarn Singh Rathour, N. Tanabae, N. Kato, H. Senga, Y. Hirai, Osaka Univ; M. Yoshie, T. Tanaka, Port and Airport Research Inst, Japan

**WEDNESDAY 08:00**

**72. SLOSHING & LNG SHIP DYNAMICS III:  
Sloshing Damping (V. 3)**

**Wednesday June 24 8:00 Kohala 1**

**Chair:** Jun Liu, Dalian Univ of Tech, China

**Co-Chair:** Yusong Cao, Marintek USA, USA

**Investigation of Finite Water Depth Sloshing in a Tank in Presence of Slat Screens Using Model Tests and CFD**

Reza Firoozkoohi, MARINTEK; Odd Magnus Faltinsen, Tufan Arslan, NTNU, Norway

**Numerical Study on Liquid Sloshing in Three-dimensional Rectangular Tanks with Different Filling Rates and Fixed Baffle**

Chonghong Yin, Yaqiang Yang, Decheng Wan, Shanghai Jiao Tong Univ, China

**Numerical Study of Sloshing in Baffled Tanks by MPS**

Zhenyuan Tang, Youlin Zhang, Decheng Wan, Shanghai Jiao Tong Univ, China

**Study of Damping Effect of the Floodwater on a Damaged Ship Roll Motion**

Teemu Leander Manderbacka, Tommi Kristian Mikkola, Jerzy Edward Matusiak, Aalto Univ, Finland

**73. HYDRODYNAMICS VIII:  
DP Control - Ship and floatover 2 (V. 3)**

**Wednesday June 24 08:00 Kohala 2**

**Chair:** Wataru Koterayama, Open Univ of Japan, Japan

**L<sub>1</sub> Adaptive Control Used in Ship Control System when Encountering Slow Varying Disturbances**

Ruyi Ren, Zaojian Zou, Shanghai Jiao Tong Univ, China

**A Study on the Steering Angle Optimization Considering Thruster Interactions in a Semi-submersible**

Seihwan Kim, Jin woo Choi, Je-jun Park, Daewoo Shipbuilding & Marine Engineering, Korea

**On the Need for Calibration of Numerical Models of Large Floating Units against Experimental Data**

Vegard Aksnes, Petter Andreas Berthelsen, Nuno Miquel Magalhaes Duque Da Fonseca, MARINTEK; Svein-Arne Reinholdtsen, Statoil, Norway

**Development and Application of a DP Float-Over Analysis Program**

Da Li, CNOOC Research Inst, China; Tuanjie Liu, Hunter Ji, Alex Ran, OffshoreTech, USA; Moo-Hyun Kim, Heon-Yong Kang, Texas A&M Univ; USA

**Field Measurements of the Sea Environments and Barge Motions for the Floatover Installation of Kenli 3-2 Mega Topsides in Bohai Bay**

Hanbing Luo, Yuan Gao, Xuezhong Wan, Tianjin Univ; Huailiang Li, Alan M Wang, Offshore Oil Engineering, China

**Study on the Motion Monitoring of the Semi-submersible Vessel HYSY278 with the HZ25-8 Topside during the Transportation**

Weiwei Xie, Hanbing Luo, Tianjin Univ; Xinchao Li, Offshore Oil Engineering; Yue Zhang, Dongyan Li, Tianjin Univ, China

**A Sea Wave Height Measurement Method Based On 3-D Image Measurement Technique**

Cunwei Lu, Yu Wang, Lu Xu, Yaogang Tong, Hao Yi, Lixiang Song, Kazuhiro Tsunino, Fukuoka Inst of Technology, Japan

**74. REES OFFSHORE WIND TURBINE VIII:  
Analysis & Testing (V.1)**

**Wednesday June 24 08:00 Kohala 3**

**Chair:** M Muskulus, NTNU, Norway

**An Experimental Study on the Motion and Structural Characteristics of an Interlinked Spars' Array**

Yunho Kim, Jang Pyo Hong, Young Shik Kim, KRISO; Hyun Sung Kim, Korea Univ of Science & Tech; Sa Y. Hong, Seok W. Hong, KRISO, Korea

**A Simulation Model for Single and Multi-rotor Wind Turbine Performance**

Kirk A. Martin, John M. Niedzwecki, Texas A&M Univ, USA



**Features of Offshore Wind Farms in China and Deformation Analysis of Wind Turbine Foundation in Shanghai Donghai Bridge Wind Farm**

Zhang Haitao, Luo Xianqi, Bi Jinfeng, Shen Hui, Shanghai Jiao Tong Univ, China

**3D Nonlinear Beam Dynamics Time Domain Modeling of Offshore Wind Turbines**

Carsten Corte, Baustatik-Baudynamik-Numerische Modellierung, Germany

**Dynamic Analysis of a floating Wind Turbine with a Hydraulic Transmission System**

Limin Yang, DNV GL; Zhiyu Jiang, Zhen Gao, Torgeir Moan, NTNU, Norway

**Research on Proper Fins Designed for an Axial Flow Fan to Produce Homogeneous Wind for Model Test of Floating Wind Turbines**

Long Yu, Chao Huang, Yongsheng Zhao, Yanping He, Shanghai Jiao Tong Univ, China

**Lateral Behavior of Monopile for Offshore Wind Power using Centrifugal Model Tests on Sandy Soil**

Kyung-tae Bae, Daewoo E&C; Myungjae Lee, Hongik Univ; kangkoo Rho, Jongpil Lee, Youseok Kim, Daewoo E&C; Heejung Youn, Hongik Univ; Daeyong Lee, POSCO, Korea

**75. OCEAN TECHNOLOGY VII  
Decommissioning & Installation(V. 1)**

**Wednesday June 24 08:00 Kohala 4**

**Chair:** Andrew A. Small, Xodus Subsea, UK

**Co-Chair:** Alan Wang, COOEC, China

**Geotechnical Aspects of North Sea Decommissioning**

Andrew Small, Greg Cook, Xodus Subsea; Ronye Egborge, Afam Ejidike, Technocean Subsea, UK

**Hydrodynamic Simulation for a Large Self-propelled Cutter Suction Dredger Working at Sea**

Xinquan Chen, Qi Yang, Jiahua Tan, Shanghai Jiao Tong Univ, China

**Design and Installation of Subsea Foundation and Protection Frame**

Fei Wu, Hongsheng Ci, Xu Jia, Chunjie Yu, Jun Huang, CNOOC Research Inst, China

**76. HPM III:  
Advanced Materials & Offshore Structures 3 (V. 4)**

**Wednesday June 24 08:00 Kings 1**

**Chair:** H W Jin, ExxonMobil Research & Engineering, USA

**Research on the Optimal Process Parameters of Preparing Super-hydrophobic Surface by Ni-SiO<sub>2</sub> Nano-Composite Electro-deposition**

Ji Wang, Changyi Chen, Rui Li, Wenxuan Jiang, Xin Yu, Dalian Univ of Tech, China

**EBSD Quantification of Retained Austenite in 9 % Ni Steel Related to Thermal Treatments**

G. Jahrsengene, M. Wenn, M. Karlsen, I. Westermann, O.M. Akselsen, J. Hjelen, NTNU, Norway

**Possibility of Using Magnesium Alloys for the Equipment for Offshore Structures**

Andrey S Gnedenkov, Sergey V Gnedenkov, Sergey L Sinebryukhov, Inst of Chemistry;  
Alexander N Minaev, Far Eastern Federal Univ; Dmitry V Mashtalyar, Inst of Chemistry,  
Russia

**Development of Polyurethane Foam Insulator with High Thermal Insulating Performance for KC-1 LNG Carrier**

Yeongbeom Lee, Kunhyung Choe, Korea Gas, Korea

**Calcium Phosphate Cement Slurries for Thermal Production Wells [Proceedings only]**

Jianguo Zeng, Yuanbo Xia, Fuquan Sun, Aiping Liu, Haipeng Xin, Jianyao Wang, Boxing  
Co of China National Petroleum Offshore Engineering, China

**77. COASTAL HYDRODYNAMICS VIII:**

**Structures 1 (V. 3)**

**Wednesday      June 24      08:00      Kings 2**

**Chair:** P. Ruol, Univ of Padova, Italy

**Experimental Study of the Stability of Concrete Blocks Covering Mounds of Breakwaters for Overflow during Tsunami**

Kuniaki Oi, Giken Kogyo Co; Kenjiro Hayashi, Tsuyoshi Tada, Yoshihisa Miyata,  
National Defense Academy, Japan

**Development of a New Concrete Armor Unit for High Wave : R-A Block**

Young Hyun Park, Young-Min Oh, Taek Hee Han, Deokhee Won, Se-Chul Jang, KIOST,  
Korea

**Stability Coefficients of Tetrapod, Rakuna-IV and Dimple Depending on Placement Methods**

Eun Jong Min, Se-Hyeon Cheon, Kyung-Duck Suh, Seoul National Univ, Korea; Hiroshi  
Matsushita, Nikken Kogaku Co, Japan

**Physical Model Tests on a Very Large Floating Breakwater**

Luca Martinelli, Piero Ruol, Alberto Spiandorello, Settimo De Cario, Padova Univ, Italy

**Innovative Techniques of Hydraulic Sheet Pile Dike and Applications in Coastal Defense against Sea Hazards**

Furong He, Ziyu Chen, Defu Liu, Fengqing Wang, Ocean Univ of China, China

**Hydrodynamic Characteristics of Peforated Seawalls**

Yanqiu Meng, Chaofeng Tong, Guoping Chen, Shichang Yan, Hohai Univ, China

**The Role of Uncertainty in the Wave-Caisson Breakwater Interaction**

Leonardo Palomón-Arcos, Alec Torres-Freyermuth, Paulo Salles, Adrián Pedrozo-Acuña,  
Universidad Nacional Autónoma de México, Mexico

**78. SUBSEA-UMBILICALS-PIPELINE-RISER-CABLE III:**

**Pipeline Analysis 1 (V. 2)**

**Wednesday      June 24      08:00      Kings 3**

**Chair:** Dongfang Liang, Shanghai Jiao Tong Univ, China

**Co-Chair:** A Majed, INTECSEA, USA

**Computationally Efficient Flexible Pipe Mechanical Bench Test Simulations Using Nonlinear Dynamic Substructures**

Arya Majed, Luca Chinello, INTECSEA, USA

**Numerical Modeling of Drag Force on Submarine Suspended Pipelines Using Finite Element and Finite Volume Methods**

Sujan Dutta, Bipul Hawlader, Memorial Univ, Canada

**Numerical Analysis of Dynamic Response of Submarine Pipeline under Seismic Loading**

Wenran Cao, Xianfan Cao, CNPC Research Inst of Engineering Tech, China

**Failure-probability-based Analysis of Anchor Impact on Submarine Pipeline**

Wenran Cao, Zhenwen Liu, CNPC Research Inst of Engineering Tech, China

**Effects of Seabed Topography on Modal Analyses of Free Spanning Pipelines**

Håvar A. Sollund, Univ of Oslo; Knut Vedeld, DNV GL, Norway

**Back Analysis of Measured As-laid Pipeline Embedment in Soft Clay**

Liang Zhao, Sindhu Tjahyono, Eve Tan, INTECSEA, Singapore; Chang Ho Do, Hyundai Heavy Industries, Korea

**The Axial Force Analysis of Submarine Pipe-in-Pipe [Proceedings only]**

Xiaoxia Liu, Xu Jia, CNOOC Research Inst, China

**79. GEOTECH VIII:  
Suction Piles (V. 2)**

**Wednesday**

**June 24**

**08:00**

**Queens 4**

**Chair:** Ko-Min Tjok, Fugro GeoConsulting, USA

**Remaining Capacity of the Suction Pile due to Seabed Trenching**

Haydar Arslan, Breanna R. Peterman, Patrick C. Wong, ExxonMobil Development; Subir Bhattacharjee, ExxonMobil Production, USA

**Numerical Modeling of Suction Caisson Soil Reaction Behavior**

Xiaoyan Long, Ko Min Tjok, Kalaiarasi Vembu, Fugro GeoConsulting, USA

**Analyses on Deformation Procedure of Suction Anchor Foundations Subjected to Static and Cyclic Loads**

Jianhua Wang, Li Shuzhao, Tianjin Univ; Yang Yang, Tianjin Xince Electronics Apparatus Technology, China

**Evaluation of Vertical Pullout Behavior of an Embedded Suction Anchor II in Sand**

YouSeok Kim, Jinwook, Joung, KyoungO, Kim, JongPil, Lee, JinWoo Bak, Daewoo Engineering & Construction, Korea

**Numerical Simulation on Suction Anchor Installation based on a Coupled Eulerian-Lagrangian Finite Element Method**

Jong-Sik Park, Joonmo Lee, Jonghwa Won, Young Seok Joo, Mincheol Ryu, Daewoo Shipbuilding & Marine Engineering, Korea

**Experiential Study for Load Transfer Characteristics of Reinforcing Pile with Various Soil Densities**

Seonghun Cho, Korea Univ of Science & Tech; Jae-Mo Kang, Korea Inst of Civil Engineering & Building Tech; Changho Choi, Korea Univ of Science & Tech, Korea

**Centrifuge Study on Undrained and Drained Behaviors of a Laterally Loaded Bucket Foundation in Silty Sand**

Yun Wook Choo, Tae-Woo Kang, Ji-Hoon Seo, Kongju National Univ; Jun-Ung Youn, Dong-Joon Kim, Sung-Hyun Jee, Kyu-Yeol Lee, Hyundai Engineering & Construction, Korea; Muhammad Shazzad Hossain, Univ of Western Australia, Australia

**80. ADVANCED SHIP TECH II:  
Hull Form Optimization (V. 4)**

**Wednesday June 24 08:00 Queens 5**

**Chair:** Chi Yang, George Mason Univ, USA

**Development of Skeg-type Trawl Boat in Numerical and Experimental Approach**

Jiangtao Qin, Keqiang Chen, Wuhan Univ of Tech; Chenggang Liu, China Ship Development & Design Center; Lilan Zhou, Xiaoming Hu, Wuhan Univ of Tech, China

**Calculation of Added Resistance in Waves for KVLCC2 and its Modified Hull Form Using RANS-based Method**

Yoo-Chul Kim, Kwang-Soo Kim, Jin Kim, Yoonsik Kim, Suak-Ho Van, Korea Research Inst of Ships & Ocean Engineering; Young-Hun Jang, Daewoo Shipbuilding & Marine Engineering, Korea

**Hull Form Optimization for Reduced Drag and Improved Seakeeping Using a Surrogate-Based Method**

Fuxin Huang, Lijue Wang, Chi Yang, George Mason Univ, USA

**An Inductive Learning-based Intelligent Optimization Technology of Hull Form**

Baiwei Feng, Suzhen Dong, Zuyuan Liu, Wuhan Univ of Tech, China

**81. ENVIRONMENT I:  
Carbon Capture Sequestration(CCS) (V. 1)**

**Wednesday June 24 08:00 Queens 6**

**Chair:** C M Spinelli, ENI SpA, Italy

**Co-Chair:** KunSang Lee, Hanyang Univ, Korea

**Influence of Heterogeneous Capillary Pressure on CO<sub>2</sub> Sequestration in Different Wetting Conditions**

Sung Soo Park, Jooseon Park, Tae Hong Kim, Kun Sang Lee, Hanyang Univ, Korea

**Numerical Simulation of Fate of CO<sub>2</sub> Seeping from Seabed Considering Tidal and Ocean Currents**

Ryosuke Sakaizawa, Takaya Kawai, Toru Sato, Hiroyuki Oyama, Takero Yoshida, Univ of Tokyo; Daisuke Tsumune, Takaki Tsubono, Central Research Inst of Electric Power Industry, Japan

**Sub-CO<sub>2</sub> Joint Industry Project: Experimental Investigation of CO<sub>2</sub> Subsea Releases**

Carlo Maria Spinelli, ENI, Italy; Mohammad Ahmad, DNV GL, Netherlands

**WEDNESDAY 10:30**

**82. SLOSHING & LNG SHIP DYNAMICS IV:  
Fluid-Structure Interaction Loads (V. 3)**

**Wednesday      June 24      10:30      Kohala 1**

**Chair:** Joop Helder, MARIN, Netherlands

**Co-Chair:** S Yan, The City Univ London, UK

**Numerical Analysis of Liquid Impact Energy Dissipation**

André Baeten, Augsburg Univ of Applied Sciences, Germany

**A Practical Prediction Method of Sloshing Induced Impact Loads**

Zhimei Lu, Sheming Fan, Marine Design & Research Inst of China, China

**Direct Assessment of LNG Cargo Containment System under Sloshing Loads**

Jeong-Oh Hwang, Gil-Dal Song, Sang Eon Chun, Chang-Seon Bang, Ki-Hun Joh, Samsung Heavy Industries, Korea

**Effect of Cargo Phase Transition on Sloshing Impact of LNG Carrier Tank**

S. Xu, J.S. Lu, Zhejiang Ocean Univ, China

**83. HYDRODYNAMICS IX:  
NWT (V. 3)**

**Wednesday      June 24      10:30      Kohala 2**

**Chair:** Georgios Gkikas, MARIN, Netherlands

**Co-Chair:** Sa Young Hong, KRISO, Korea

**Effect of Wave Absorbers on the Propagating Wave in a Small-scale Flume**

Hee-Chang Lim, Pusan National Univ, Korea

**Applied Research of Numerical Wave Tank Based on the MDIBC**

Hui Zhao, Zhe Ma, Dong sheng Qiao, Gang jun Zhai, Dalian Univ of Tech, China

**An Extended Boundary Integral Equation for Structures with Oscillatory Free Surface Pressure**

C.-H. Lee, WAMIT Inc; J. N. Newman, MIT, USA

**Numerical Modeling and Analysis of Ship Motions in Shallow Waters Using Transient Free Surface Green Functions**

Georgios D. Gkikas, Frans van Walree, MARIN, Netherlands

**Three Dimensional Numerical Wave Tank for Simulation of Floating Ship in Wash Wave**

Takako Kuroda, Hiroshi Kobayashi, Katsuji Tanizawa, National Maritime Research Inst, Japan

**A Simple Wave Generation Method for Navier-Stokes Equations**

Junghwan Lee, Seokkoo Kang, Hanyang Univ, Korea

**Wave Absorption Study of Artificial Beach with CFD**

Lup Wai Chew, My Ha Dao, Jing Lou, Inst of High Performance Computing; Mimi Gao, Johan Gullman-Strand, Lloyd's Register Global Technology Centre, Singapore

**Research on Hydrodynamic Characteristic of Moving Body through Deepwater Density Interface**

Wen-hua Wang, Yi Huang, Yan-ying Wang, Dalian Univ of Tech, China

**84. REES OFFSHORE WIND TURBINE IX:  
Wind & Wave Loading**

**Wednesday      June 24      10:30      Kohala 3**

**Chair:** Tao Xing, Univ of Idaho, USA

**Co-Chair:** Wojciech Popko, Fraunhofer IWES, Germany

**OC5 Project Phase I: Validation of Hydrodynamic Loading on a Fixed Cylinder**

Amy N Robertson, Jason M Jonkman, National Renewable Energy Lab, USA; Wojciech Popko, Fabian Vorpahl, Fraunhofer IWES, Germany, et al (See Proceedings for full list)

**Coupled Dynamic Analysis of a MUFOWT with Transient Broken-blade Incident**

H.C. Kim, H.K. Jang, M.H. Kim, Texas A&M Univ, USA; Y.H. Bae, Jeju National Univ, Korea

**Directional Dependence of Extreme Load Parameters for Offshore Wind Turbines**

Boso Schmidt, Michael Hansen, Steffen Marx, Leibniz Univ Hannover, Germany

**A Validation Method for Fluid-Structure-Interaction Simulations Based on Submerged Free Decay Experiments**

Matthias Arnold, Matthias Kretschmer, Jonas Koch, Po Wen Cheng, Univ of Stuttgart; Frank Biskup, Voith Hydro Ocean Current Technologies, Germany

**Comparison of Second-Order Loads on a Tension Leg Platform for Wind Turbines**

Sébastien Gueydon, MARIN; Pierre-Yves Wuillaume, MARIN Academy, Netherlands; Jason Jonkman, Amy Robertson, Andrew Platt, National Renewable Energy Lab, USA

**Effect of Difference-frequency Forces on the Dynamics of a Semi-submersible Type FVAWT in Misaligned Wave-wind Condition**

Kai Wang, Zhengshun Cheng, Torgeir Moan, Martin Otto Laver Hansen NTNU, Norway;

**Why Design Load Calculations for Offshore Wind Turbine Support Structures Cannot Use Load Time Series from Moving Rotors**

Michael Muskulus, NTNU, Norway

**Experimental Analysis of Slamming Load Characteristics for Truss Structures in Offshore Wind Applications**

Ying Tu, Michael Muskulus, Øivind Asgeir Arntsen, NTNU, Norway

**Validation of SWAY Wind Turbine Response in FAST, with a Focus on the Influence of Tower Wind Loads**

Jian Hao Koh, Nanyang Technological Univ, Singapore; Amy N. Robertson, Jason M. Jonkman, Frederick Driscoll, National Renewable Energy Lab, USA; Eddie Yin Kwee Ng, Nanyang Technological Univ, Singapore

**85. OCEAN TECHNOLOGY VIII:  
Jackup & Fixed Structure (V. 1)**

**Wednesday      June 24      10:30      Kohala 4**

**Chair:** Linsong Song, China Oilfield Services, China  
**Co-Chair:** Alan M Wang, COOEC; China

**A Wave Basin Model Test Study for a Jackup Moored on the Dock**

Lei Liu, Shanghai Jiao Tong Univ; Hongtao Yuan, Shanghai Waigaoqiao Shipbuilding; Jianmin Yang, Xinliang Tian, Shanghai Jiao Tong Univ; Chunhui Li, Shanghai Waigaoqiao Shipbuilding; Haining Lu, Shanghai Jiao Tong Univ, China

**Preloading Process Analysis of Jack-up Based on ALE Algorithm**

Z.D Zhang, X. Zhang, Zhejiang Ocean Univ, China

**The Effect of Symmetrical and Asymmetrical Shape in Buckling Strength on Fixed Offshore Platform**

Muhammad Zubair Muis Alie, Juswan, Silfiani Daud, Widya Tami Sriadi, Ratnawati, Hasanuddin Univ, Indonesia

**Structural Damage Alarming of Offshore Platform Based On AR Model and PCA in Changing Environment Conditions**

Yansong Diao, Yadong Cao, Panpan Hua, Qingdao Technological Univ, China

**Dynamic Elastic Response Testing Method of Bridge Structure under Wind-Wave-Current Action**

Gao Liu, Tiancheng Liu, CCCC Highway Consultants; Anxin Guo, Harbin Inst of Tech; Shangyou Chen, CCCC Highway Consultants; Xiaodong Bai, Harbin Inst of Tech, China

**Research and Application of Technique for Building 200ft Jack-up on Horizontal Skidway [Proceedings only]**

Wenhao Zhang, Hong Gu, Yujun Tong, Weihe Shen, Menglong Zhao, Junyi Qiu, COOEC International; Shuang Guo, Tianjin Xingang Shipbuilding Heavy Industry, China

**86. HPM IV:**  
**Advanced Materials & Offshore Structures 4(V. 4)**  
**Wednesday      June 24      10:30      Kings 1**

**Chair:** H.G. Wheat, Univ. of Texas at Austin, USA  
**Co-Chair:** Odd M Akselsen, SINTEF Materials & Chemistry, Norway

**Nonlinear Finite Element Analysis of Composite Laminates Subjected to Biaxial Loading**

Hsuan-Teh Hu, Wen-Pin Lin, Fang-Tai Tu, National Cheng Kung Univ, Taiwan, China

**Study of the Intense-Deformed Condition of the Concrete Elements Reinforced by Basalt-and-Plastic Accessories**

Alexander T. Bekker, Andrey M. Umansky, Anton Pogodaev, Egor S. Ivanov, Far Eastern Federal Univ, Russia

**Corrosive Resistant Slag Concrete with Volcanic Rock for Offshore Conditions**

Nadezhda A. Falaleeva, Roman S. Tyitirin, Lev V. Kim, Vladimir I. Seliverstov, Far Eastern Federal Univ, Russia

**Status Update of ISO TC67/SC8/WG5: Materials for Arctic Applications**

Mons Hauge, Statoil, Norway; Carey L Walters, TNO, Netherlands; Christian Zanfir, CWB, Canada; Mark Maier, Shell Global Solutions International, Netherlands; Erling Østby,

DNV; Harald Osvoll, FORCE Technology Norway, Norway; Sergei M Kordonets, Maritime Register of Shipping, Russia

**Peculiarities of Welding Technical Requirements for Arctic Applications [Proceedings only]**

Paul Kah, Pavel Layus, Jukka Martikainen, Lappeenranta Univ of Tech, Finland

**Behavior of RC Frames with Infill Walls Strengthened by Cement Based Composites [Proceedings only]**

Mehmet Selim. Okten, Cemil. Ozkan, Mustafa. Gencoglu, Istanbul Technical Univ, Turkey

**87. COASTAL HYDRODYNAMICS IX:  
Structures 2 (V. 3)**

**Wednesday      June 24      10:30      Kings 2**

**Chair:** L.-K. Chien, National Taiwan Ocean Univ, Taiwan, China

**Experimental Investigation on Wave Overtopping and Height along Vertical Wall for Obliquely Incident Waves**

Young-Taek Kim, Korea Inst of Civil & Building Technology; Jong-In Lee, Chonnam National Univ, Korea

**Mitigation of Long Waves by means of Submerged Artificial Breakwaters Built upon a Mild-Slope Beach – A Numerical Study**

Yun-Ta Wu, Shih-Chun Hsiao, Ray-Yeng Yang, Hwung-Hweng Hwung, National Cheng Kung Univ, Taiwan, China

**Hydrodynamic Performance of Gabion Box Artificial Reefs**

Srinesh V K, Murali K, IIT Madras, India

**Physical Model Test on 3D Stability of Revetment and Optimization**

Yunpeng Jiang, Feng Gao, Tianjin Research Inst for Water Transport Engineering, China

**Numerical Simulation of Wave and Flow Variations between Submerged Breakwaters and Slope Seawall**

Chun-Han Ko, Ching-Piao Tsai, Ying-Chi Chen, Tri-Octaviani Sihombing, National Chung Hsing Univ, Taiwan, China

**88. SUBSEA-UMBILICALS-PIPELINE-RISER-CABLE IV:  
Pipeline Analysis 2(V. 2)**

**Wednesday      June 24      10:30      Kings 3**

**Chair:** Fuping Gao, Inst. of Mechanics, CAS, China

**Co-Chair:** W C Kan, ExxonMobil Development, USA

**Slender Structure Sensor Optimization: A Genetic Algorithm Approach**

Sam M. Fang, John M. Niedzwecki, Texas A&M Univ, USA; Shixiao Fu, Shanghai Jiao Tong Univ, China

**Effect of Testing Variables on Fracture Toughness in Sour Environment**

Michele Panico, David Baker, Shashank Nawathe, ExxonMobil Upstream Research; Amir Bahrami, ExxonMobil Development; Doug Fairchild, ExxonMobil Upstream Research, USA



**Feasibility Analysis of a New Hybrid Mooring System Applied for Deep Waters**  
Yushun Lian, Haixiao Liu, Tianjin Univ; Liming Hu, Tsinghua Univ, China

**Research on Cable Configurations and Dynamic Analysis [Proceedings only]**  
KanKan Ni Xu Jia LuSheng Jia Yang Li, CNOOC Research Inst, China

**89. GEOTECH IX:  
Offshore Pile Foundation (V. 2)**

**Wednesday June 24 10:30 Queens 4**

**Chair:** C.F. Leung, National Univ of Singapore, Singapore  
**Co-Chair:** H Arslan, ExxonMobil Development, USA

**Soil Plug Effect Evaluation for Large Diameter Steel Pipe Pile in Offshore Engineering**  
Run Liu, Long Zhou, Min-bo Lin, Shu-wang Yan, Tianjin Univ, China

**Driving Analysis of Submerged Large Diameter Piles**  
Nils Fog Gjersøe, Brian Nørgaard Kristiansen, Erik Bouvin Pedersen, Niels-Erik Ottesen Hansen, LICEngineering, Denmark

**Effect of Cyclic Lateral Loads on p-y Curve for Pile Foundations in Saturated Sand**  
Sung-Ha Baek, Joon-Young Kim, Seung-Hwan Lee, Choong-Ki Chung, Seoul National Univ, Korea

**Numerical Analysis on the Lateral Behavior of Offshore Pile with Different Friction Angle**  
Keunju Kim, Hongik Univ; In-Sung Jang, KIOST; Heejung Youn, Hongik Univ, Korea

**Resistance Factor Calibration of Driven Pile Pullout in Sands**  
Dongwook Kim, Byung Soo Kim, Incheon National Univ, Korea

**Reliability Based Resistance Factor Calibration of Axially Loaded Piles**  
Jae Hyun Park, Moonkyung Chung, Korea Inst of Civil Eng & Building Tech; Jungwon Huh, Chonnam National Univ, Korea

**Experiential Study for Load Transfer Characteristics of Reinforcing Pile with Various Soil Densities**  
Seunghun Cho, Korea Univ of Science & Tech; Jae-Mo Kang, Korea Inst of Civil Eng & Building Tech; Changho Choi, Korea Univ of Science & Tech, Korea

**Back-Analysis of Pile Driving Records for Various Subsea Installations/Structures**  
Danny Wright, Justin Kennedy, Alasdair Maconochie, John Oliphant, Technip, UK

**Some Insights Regarding the Installation of Driven Piles for Deep Water Developments [Proceedings only]**  
Paul Brunning, Ni Zhen, Subsea 7, Singapore

**Seabed Slope Effect on the Suction Pile Lateral Capacity in Cohesive Soil [Proceedings only]**  
Sehoon Jang, Hadi Suroor, Genesis, USA

**Analysis of a Self-submersible Single-point Mooring Gravity Cage in Waves and Current [Proceedings only]**  
Tiao-Jian Xu, Guo-Hai Dong, Yu-Cheng Li, Dalian Univ of Tech, China

**90. ADVANCED SHIP TECH III:  
Ship Powering 1 (V. 4)**

**Wednesday      June 24      10:30      Queens 5**

**Chair:** M. Felli, INSEAN, Italy  
**Co-Chair:** M. Fujikubo, Osaka Univ, Japan

**CFD and EFD Analysis of the Interaction of a Propeller Wake with a Rudder**  
Andrea Di Mascio, CNR-IAC; Giulio Dubbioso, Roberto Muscari, Mario Felli, CNR-INSEAN, Italy

**Research of Reliability Enhancement by Module Division Application to Ship Machinery System Design**  
T. Nishijima, E. Shintaku, Hiroshima Univ; T. Mukuno, R. Ota, A. Sugihara, Tsuneishi Shipbuilding, Japan

**Reliability Evaluation of Marine Propulsion Shaft System Using Stress-Strength Interference Theory**  
Chengqing Yuan, Xiuqin Bai, Conglin Dong, Wuhan Univ of Tech, China

**91. ENVIRONMENT II:  
Environmental Impact & Monitoring 1 (V. 1)**

**Wednesday      June 24      10:30      Queens 6**

**Chair** Jinshu Lu, Zhejiang Ocean Univ, China  
**Co-Chair** Koji Otsuka, Osaka Prefecture Univ, Japan

**Inclusive Impact Assessment of a Conceptual Integrated Offshore Platform in East China Sea**  
Fengjun Duan, Cannon Inst for Global Studies, Japan

**Viscous Effects for Submerged Oil Leakage from Damaged Tank of Double-Hull Tankers**  
Jinshu Lu, Zhenbo Yang, Haoxiao Wu, Zhejiang Ocean Univ; Wanqing Wu, Dalian Maritime Univ, China

**Mixing and Transport Processes in Tidal Channels of Radial Sand Ridges Area in the South Yellow Sea, China**  
Jing Yao, Nanjing Inst of Geography & Limnology; Jianfeng Tao, Fan Xu, Hohai Univ, China

**WEDNESDAY 13:15**

**KEYNOTE II**

**Wednesday      June 24      13:15      Kohala 4**

**Introduction:** Wan C Kan, ExxonMobil Development Co, USA

**A Low-Deck Floatover Technology with Strand Jack Lifting Scheme [Oral Presentation]**  
Alan M Wang, Offshore Oil Engineering, China

**WEDNESDAY 14:00**

**92. SLOSHING & LNG SHIP DYNAMICS V:  
Fluid-Structure Interaction Design (V. 3)**

**Wednesday June 24 14:00 Kohala 1**

**Chair:** Sang-Eon Chun, Samsung Heavy Industries, Korea

**Co-Chair:** Kyo-Kook Jin, KOGAS, Korea

**Scaled Boundary Finite Element Method Analysis of Sloshing in Axi-Symmetric Vessels**

Jianbo Li, Jun Liu, Gao Lin, Dalian Univ of Tech, China

**An Effect of Fluid-Structure Interaction for KC-1 Cargo Containment System under Sloshing Loads**

Kyo Kook Jin, Ihn Soo Yoon, Young Chul Yang, KOGAS, Korea

**Effect of Material Behavior of PUF on Dynamic Response Induced by Fluid Structure Interaction in Membrane Type LNG Cargo Containment System**

Dong-Ju Lee, Sang-Beom Shin, Hyundai Heavy Industries; Jonghwan Suhr, Sungkyunkwan Univ, Korea

**93. HYDRODYNAMICS X:  
CFD (V. 3)**

**Wednesday June 24 14:00 Kohala 2**

**Chair:** Pietro Prestininzi, Univ Roma Tre, Italy

**Co-Chair:** A Khayyer, Kyoto Univ, Japan

**A RBF Cut-Cell Finite Volume Two-Phase Method for Immersed Moving Boundaries**

Tingqiu Li, Songsong Zhang, Qiu Jin, Min Yu, Wuhan Univ of Tech, China; William Geraint Price, Pandeli Temarel, Univ of Southampton, UK

**Ship Wake Deformation in the Surf Zone Analyzed by Use of a Time-Frequency Method**

Tomas Torsvik, Ira Didenkulova, Tallinn Univ of Technology, Estonia

**Turbulence Modeling for Locally-Refined Free-Surface Flow Simulations in Offshore Applications**

Arthur E.P. Veldman, Roel Luppés, Henri J.L. van der Heiden, Peter van der Plas, Univ of Groningen; Joop Helder, Tim Bunnik, MARIN, Netherlands

**Immersed Boundary Method for Viscous Flow with Moving Rigid Boundary**

D C Lo, National Kaohsiung Marine Univ, Taiwan, China

**LES of Flow Around Tandem Cylinders Close to a Horizontal Wall**

Mia Abrahamsen Prsic, NTNU; Muk Chen Ong, SINTEF; Bjornar Pettersen, Dag Myrhaug, NTNU, Norway

**Particle-based Flow Simulation by SPH Using Hyperbolic-type Kernel Function**

Kazujiko Kakuda, Tomohiro Kusakabe, Nihon Univ, Japan

**Comparative Study on Particle Method for Numerical Simulations**

Farid P. Bakti, Kyung sung Kim, Moo H. Kim, Texas A&M Univ, USA; Jong-chun Park, Pusan National Univ, Korea

**94. REES OFFSHORE WIND TURBINE X:  
Aerodynamics & Blades (V. 1)**

**Wednesday June 24 14:00 Kohala 3**

**Chair:** Moo Hyun Kim, Texas A&M Univ, USA  
**Co-Chair:** Andrew J Goupee, Univ of Maine, USA

**Experimental and Numerical Study of a New Dynamic Phenomenon for Two-bladed Wind Turbines**

Torben Juul Larsen, Taeseong Kim, Technical Univ of Denmark, Denmark

**Study on Unsteady Aerodynamic Performance of Floating Offshore Wind Turbine by CFD Method**

Jun Wu, Jin-hong Ding, Yan-ping He, Yong-sheng Zhao, Shanghai Jiao Tong Univ, China

**Comparison of Engineering Models for the Aerodynamic Load Distribution along a Wind Turbine Blade**

Erin E Bachynski, Harald Ormberg, MARINTEK, Norway

**CFD Simulation of Aerodynamic Performance of Floating Offshore Wind Turbine Compared with BEM Method**

Lin Lin, Dracos Vassalos, Saishuai Dai, Univ of Strathclyde, UK

**Unsteady Aerodynamics of Offshore Floating Wind Turbines Using Free Vortex Wake Model**

Qi Qi, Nigel Barltrop, Univ of Strathclyde, UK

**A Calibrated Blade-Element/Momentum Theory Aerodynamic Model of the MARIN Stock Wind Turbine**

Andrew J Goupee, Univ of Maine; Richard W Kimball, Maine Maritime Academy, USA; Erik-jan de Ridder, Joop Helder, MARIN, Netherlands; Amy N Robertson, Jason M Jonkman, National Renewable Energy Lab, USA

**Influence of Air Inclusions on Marine Composites Inter-laminar Shear Strength**

Mattia Godani, Marco Gaiotti, Cesare Mario Rizzo, Univ of Genova, Italy

**95. OCEAN TECHNOLOGY IX: -  
TLP, SPAR & Mooring 1 (V. 1)**

**Wednesday June 24 14:00 Kohala 4**

**Chair:** Motohiko Murai, Yokohama National Univ, Japan  
**Co-Chair:** YoungMyung Choi, KRISO, Korea

**Study on Prediction Method for the Springing-Induced Tension Responses of TLP**

Taeyoung Kim, Yonghwan Kim, Seoul National Univ, Korea

**Application of Dam-Break Flow Solution to Predict the Green Water Velocity on a 2D Tension-Leg Platform**

Wei-Liang Chuang, Kuang-An Chang, Richard Mercier, Texas A&M Univ, USA

**Void Fraction and Impact Pressure Caused by Breaking Wave Impingement on a 2D Tension-Leg Structure**

Wei-Liang Chuang, Kuang-An Chang, Richard Mercier, Texas A&M Univ, USA

**Study on Global Fatigue Analysis for Deep Water Tension-Leg Platform Based on Simplified Spectral Method**

Yang Li, CNOOC Research Inst, China; Yongjun Chen, DMAR Engineering, USA; Zhongmin Shi, Wenhui Xie, Kankan Ni, CNOOC Research Inst, China

**Characteristics of Tension Leg Platform with Tender Semi-Submersible**

Young Myung Choi, Bo Woo Nam, Sa Young Hong, KRISO; Hyun Joe Kim, Dong Woo Jung, Samsung Heavy Industries; In Bo Park, KRISO, Korea

**Hydrodynamic Performance Analysis of New MINI Tension Leg Platform**

Shaoshi Dai, Wensen Nong, Hongyang Zhang, Harbin Engineering Univ, China

**Experimental Investigation on Global Responses of a Large Floatover Barge in Extremely Shallow Water**

Lingzhi Xiong, Haining Lu, Jianming Yang, Shanghai Jiao Tong Univ; Wei Zhang, Guang Yang, Offshore Oil Engineering, China

**96. HPM V: Arctic Materials 1:  
Materials Challenges in Arctic (V. 4)**

Wednesday

June 24

14:00

Kings 1

**Chair:** Ilkka Valkonen, SSAB, Finland

**Co-Chair:** T. Fujishiro, Nippon Steel and Sumitomo Metal, Japan

**A Data Management System for Material Assessment at Low Temperature**

Alexandre Kane, Vidar Osen, Xiaobo Ren, Håkon O. Nordhagen, Frode Grytten, Odd M. Akselsen, Josip Zoric, SINTEF, Norway

**The Role of Low Temperature Impact Damage and Freeze-Thaw Exposure on Post Impact Compression Strength of Glass Fibre Reinforced Polymer-Matrix Composite Materials**

Rune Harald Gaarder, Frode Grytten, SINTEF Materials & Chemistry, Norway

**Estimating Low Temperature Fracture Properties for Very High Strength Steels**

Kim Wallin, Päivi Karjalainen-Roikonen, VTT Technical Research Centre of Finland; Sakari Pallaspuuro, Univ of Oulu, Finland

**Development of Materials Requirement Philosophies for Design to Avoid Brittle Behaviour in Steel Structures under Arctic Conditions**

E. Østby, DNV GL; M. Hauge, Statoil; A. M. Horn. DNV GL, Norway

**Characterization of Non-metallic Inclusions in Ferritic Weld Metals for Arctic Applications**

Isabella Juul Hjelterei, NTNU; Odd M. Akselsen, SINTEF; Morten Karlsen, Jarle Hjelen, NTNU, Norway

**Instrumented Charpy Testing Revisited – Possible Use for Arctic Steels?**

Therese Vadholm, DNV GL; Håkon O. Nordhagen, SINTEF Materials & Chemistry; Erling Østby, DNV GL; Odd M Akselsen, SINTEF Materials & Chemistry, Norway

**97. COASTAL HYDRODYNAMICS X:  
Structures 3 (V. 3)**

**Wednesday      June 24      14:00      Kings 2**

**Chair:** Eva Loukogeorgaki, Aristotle Univ of Thessaloniki, Greece

**Interactions of Horizontal Circular Porous Plates with Waves**

FenFang Zhao, Yi Chen, Rong Wan, Liuyi Huang, Peng Sun, Weiguang Bao, Ocean Univ of China, China

**Experimental Study of Wave Impact Forces on Pervious Pipe Breakwaters**

Ruey-Syan Shih, Tungkang Univ; Wen-Kai Weng, Chung-Ren Chou, National Taiwan Ocean Univ, Taiwan, China

**Study on Wave Absorbing Ability of Vegetation on Revetment by Physical Model Test**

Baolei Geng, Feng Gao, Jingshi Sun, Tianjin Research Inst for Water Transport Engineering, China

**Multidirectional Random Wave Loads on Array of Large Scale Cylinders**

Shuxue Liu, Xinran Ji, Jinxuan Li, Dalian Univ of Tech, China; Harry B Bingham, Technical Univ of Denmark, Denmark

**Improvement of a Suction Rate Formula from the Bottom of the Sheet Pile of a Coastal Dike**

Masafumi Ioroi, Yoshimichi Yamamoto, Tokai Univ; Yoshitaka Oshima, Fujimi Consultants, Japan

**Experimental Study on Elastic Model of Bridge Tower Under Wind, Wave and Current [Proceedings only]**

Hai-yuan Liu, Bao-lei Geng, Cheng Peng, Tianjin Research Inst for Water Transport Engineering, China

**98. SUBSEA-UMBILICALS-PIPELINE-RISER-CABLE V:  
Installation & Commissioning.1 (V. 2)**

**Wednesday      June 24      14:00      Kings 3**

**Chair:** Yijun Shen, Wood Group Kenny, UK

**Co-Chair:** Antonie Oosterkamp, Polytec Research Inst, Norway

**Mooring Design and Analysis of Pipe-laying Vessel during the Fairway Pipeline Installation**

Kailong Zhao, Shipeng Wang, Zhiguang Yao, Hai Zhao, CNPC, China

**Lay Method to Allow for Direct Tie-in of Pipelines**

Per R Nystrøm, IKM Ocean Design; Geir Endal, Statoil; Odd M Lyngsaunet, IKM Ocean Design, Norway

**Retrofit Subsea Wye Structure within Hot Section of an Oil Pipeline**

Ljiljana Djapic Oosterkamp, Statoil; Zhenguo Tu, Samson Katuramu, Per R. Nystrøm, IKM Ocean Design, Norway

**Vessel Speed Effect on S-laying Operation**

Yingfei Zan, Chi Yang, George Mason Univ, USA; Duanfeng Han, Harbin Engineering Univ; Zhaohui Wu, Offshore Oil Engineering, China

**A Study on Suction Pile Shell Buckling and Soil Failure Utilizing Predicted and Real-time Monitored Suction Pressures during Installation**

Yuan-Hung Kuo, Bo-Siou Wei, Jeff Measamer, McDermott International, USA

**Analysis of Operability Envelopes for J-Lay Installation of Steel Catenary Risers**

Li Zhang, Zhuang Kang, Boya Wang, Xiang Zhang, Harbin Engineering Univ, China

**On-board Monitoring System Design of Overbend Pipe during Deepwater S-lay Installation [Proceedings only]**

Peng Xie, Chunna Song, Haibin Ye, COOEC Subsea Technology; Yan Zhao, Qianjin Yue; Dalian Univ of Tech, China

**99. GEOTECH X:  
Anchors (V. 2)**

**Wednesday      June 24      14:00      Queens 4**

**Chair:** Osoon Kwon, Korea Inst of Ocean Science and Technology, Korea

**Co-Chair:** M S Hossain, Univ of Western Australia, Australia

**Aspects of Numerical Simulation of Torpedo Anchor Installation**

Majidreza Nazem, John P Carter, Scott W Sloan, Univ of Newcastle, Australia

**Application of Coupled Eulerian-Lagrangian Method in Large Deformation Analyses of Offshore Foundations and Suction Anchors [Oral Presentation]**

Dat Vu Khoa Huynh, Hans Petter Jostad, Norwegian Geotechnical Inst, Norway

**Horizontal Behavior of Anchor Chain Embedded in Sands under Cyclic Loading**

Byeongwan Kim, Taegeon Lee, Hongik Univ; Osoon Kwon, KIOST; Heejung Youn, Hongik Univ, Korea

**Pull-Out Capacity Analysis of Offshore Torpedo Anchors Using Finite-Element Analysis**

David Pecorini, Anirban De, Manhattan College, USA

**Characterizing Ultra-Soft Soils and Anchor-Soil Interaction for Deepwater Application**

Cumaraswamy Vipulanandan, Aram M. Raheem, Univ of Houston, USA

**Assessing Bundle Penetration in North Sea Clayey Soils [Proceedings only]**

Umberto E Arosio, Rupert Rowland, Subsea 7, UK

**100. ADVANCED SHIP TECH IV:  
Ship Powering 2 (V. 4)**

**Wednesday      June 24      14:00      Queens 5**

**Chair:** Adan Vega Saaenz, Tech Univ of Panama, Panama

**Co-Chair:** M Fujikubo, Osaka Univ, Japan

**Numerical and Experimental Assessment of a Kort Nozzle Production Process**

Jonas Hoepke, Patrick Kaeding, Univ of Rostock, Germany

**A Method to Perform Self-Propulsion Computations with a Simplified Body-Force Propeller Model**

Huiping Fu, Shanghai Jiao Tong Univ, China; Thad J Michael, Naval Surface Warfare Center; Pablo M Carrica, Univ of Iowa, USA

**Modeling and Simulation of the Bollard Pull Test for Twin Propeller Tugboats Using CFD**

David Lopez, Polytechnic Univ of Catalonia, Spain; Jouse Hernandez, Carlos Plazaola, Ilka Banfield, Adan Vega, Tech Univ of Panama, Panama

**101. ENVIRONMENT III:  
Environmental Impact & Monitoring 2 (V. 1)**

**Wednesday June 24 14:00 Queens 6**

**Chair:** Koji Otsuka, Osaka Prefecture Univ, Japan

**A Study of the Red-tide Monitoring System Using Drifting Buoy and Wireless Networks**

Hiroshi Shibata, Hiroaki Miyake, Hiromasa Tokimune, Atsushi Hamasaki, Hiroshima College; Yukihiko Matsuyama, Seikai National Fisheries Research Inst, Japan

**Inclusive Impact Index of Biodiesel Production and Cruise Ship Utilization**

Tu Anh Nguyen, Kana Kuroda, Koji Otsuka, Osaka Prefecture Univ, Japan

**Development and Application of the Platform Based Marine Environment Monitoring System**

Bo-Tao Xie, Fang-Hui Lei, Jun-Qin Wang, Bi-Gui Huang, Qin Hu, CNOOC Research Inst, China

**Application of Hydrodynamic Model on Environmental Management of Offshore Cage Farming**

Huiwen Cai, Zhejiang Ocean Univ; Xueqing Zhang, Ocean Univ of China; Tiejun Li, Changwen Wu, Yonghua Ren, Zhejiang Ocean Univ, China

**WEDNESDAY 16:20**

**102. REES OCEAN & WIND ENERGY XI:  
OWC 3 (Vol 1)**

**Wednesday June 24 16:20 Kohala 1**

**Chair:** M Kashiwagi, Osaka Univ, Japan

**Performance of Floating Breakwater Double Used as Wave Energy Converter**

Bing Chen, Chongqi Liu, Haigui Kang, Dalian Univ of Tech, China

**Performance Enhancement of the Oscillating Wave Surge Converter by a Breakwater**

Dripta Sarkar, Federic Dias, Univ College Dublin, Ireland



**Viscous Damping of Wave Power Extracting System with a Resonant Channel Attached to an Existing Vertical Breakwater**

JiHye Seo, Woo-Sun Park, Jin-Hak Yi, Sang-Ho Oh, KIOST; JoongWoo Lee, Korea Maritime & Ocean Univ, Korea

**Development of a Multi-Water-Chamber Type Seawall for Effective Wave Power Extraction and Wave Dissipation**

Firman Husain, Kunimitsu Inouchi, Ehime Univ; Takayuki Nakamura, Calamity Science Institute, Japan

**Characteristics of Volume of Overtopping and Water Supply Quantity for Developing Wave Overtopping Type Wave Power Generation Equipment**

Hiromichi Tanaka, Tomoya Inami, Tetsuo Sakurada, Tokai Univ, Japan

**3-D Numerical Analysis of Overtopping-type Wave Power Generation Equipment**

Masato Minami, Hachinohe National College of Tech; Hiromichi Tanaka, Tokai Univ, Japan

**103. HYDRODYNAMICS XI:  
Shallow Water (V. 3)**

Wednesday

June 24

16:20

Kohala 2

**Chair:** Chi Yang, George Mason Univ, USA

**Numerical Investigation of an Oblique Towed Ship by naoe-FOAM-SJTU Solver**

Jianhua Wang, Xiaojian Liu, Decheng Wan, Shanghai Jiao Tong Univ, China

**Effects of Wave Interference on Farfield Ship Waves in Shallow Water**

Yi Zhu, Jiayi He, Chenliang Zhang, Renchuan Zhu, Decheng Wan, Wei Li, Francis Noblesse, Shanghai Jiao Tong Univ, China

**Computational Modeling of the Evolution of Submerged Laminar Round Jet in Shallow Water**

Ke Chen, Shanghai Jiao Tong Univ, China; Yunxiang Chen, Pennsylvania State Univ, USA; Yunxiang You, Shanghai Jiao Tong Univ, China; Xiaofeng Liu, Pennsylvania State Univ, USA; Tianqun Hu, Wei Li, Shanghai Jiao Tong Univ, China

**The Effect of Porous Bottom Media on Wind Wave Model**

Yuan-Jyh Lan, Tai-Wen Hsu, National Taiwan Ocean Univ; Hung-Hsien Lien, National Cheng Kung Univ, Taiwan, China

**Theoretical and Numerical Study of the Coupled Irregular Waves' Characters in the Density-stratified Ocean**

Shengtao Chen, Jingjun Zhong, Peng Sun, Dalian Maritime Univ, China

**Asymptotic Modeling and Numerical Simulation of Solitary Waves in a Floating Ice Sheet**

Philippe Guyenne, Univ of Delaware, USA; Emilian I Parau, Univ of East Anglia, UK

**Influence of Surface Waves on the Propagation of a Gravity Current**

Michele La Rocca, Andrea Montessori, Pietro Prestininzi, Univ Roma Tre; Rosaria Musumeci, Catania Univ, Italy

**Present Conditions and Challenges of Railway Facilities against Tsunami Disaster in Osaka Bay Area**

Kohji Uno, Kobe City College of Tech; Yuki Hirose, Mie Univ; Gozoi Tsujimoto, Tetsuya Kakinoki, Kobe City College of Tech, Japan

**104. REES OFFSHORE WIND TURBINE XII:  
Installation & Maintenance (Vol 1)**

**Wednesday June 24 16:20 Kohala 3**

**Chair:** Krish Thiagarajan, Univ of Maine, USA

**Stability Analysis of Offshore Wind Turbine Installation Jack-Up Vessel Based on Multi-attribute Decision Making Theory**

Tao Lv, Chang-hang Xu, Guo-ming Chen, China Univ of Petroleum-Qingdao, China

**Offshore Wind Construction Sound Hazards and Hierarchy of Control Measures**

Claas Bruns, Vallourec Deutschland; Vendula Braunova, Phillip Jorgensen, Fiebex, Germany

**Offshore Deployment of Marine Substation in the Lysekil Research Site**

Maria A. Chatziannakou, Irina Dolguntseva, Rickard L. Ekström, Uppsala Univ, Sweden; Mats Leijon, Univ of Southampton, UK

**Prospects of Application of Lithium Batteries for Marine Engineering**

Sergey L. Sinebryukhov, Denis P. Opra, Sergey V. Gnedenkov, Inst of Chemistry; Alexander N. Minaev, Alexander A. Sokolov, Far Eastern Federal Univ; Valerii G. Kuryavyi, Veniamin V. Zheleznov, , Inst of Chemistry, Russia

**ROVs with Semi-Autonomous Capabilities for Use on Renewable Energy Platforms**

Alison A. Proctor, Amos Buchanan, Bradley Buckham, Colin Bradley, Univ of Victoria, Canada

**New Vessel Concepts for Operation and Maintenance of Offshore Wind Farms**

Ole-Erik Vestøl Endrerud, Univ of Stavanger; Knut Ragnar Austreng, Nenad Keseric, Statoil; Jayantha P. Liyanage, Univ of Stavanger, Norway

**105. OCEAN TECHNOLOGY X:  
TLP, SPAR & Mooring 2 (V. 1)**

**Wednesday June 24 16:20 Kohala 4**

**Chair:** Lixin Xu, UniversalPegasus International, USA

**Co-Chair:** Ber-Feng Peng, Oil Field Development Engineering, US

**The Hydrodynamic Characteristics Research of Freak Waves Interaction with JIP Spar--Analysis of Wave Run-Up**

Zhen Liu, Xiaojian Ma, Runze Mao, Xiang Ji, Saihua Tao, Chen Zhao, Jiangsu Univ of Science & Tech, China

**Effect of Heave Plate on Hydrodynamic Response of Spar**

Subbulakshmi. A, Sundaravadivelu. R, IIT Madras, India

**Time History and Spectral Fatigue Analyses of Deepwater Offshore Truss-Spar Platform under In-service and Trans-ocean Tow Conditions**

Bor-Feng Peng, Cheng-Yo Chen, Carlos Llorente, Oil Field Development Engineering, USA

**Coupled Motion Response of a Moored Floating Body in Breaking a Mooring Line in Waves**

Motohiko Murai, Nozomi Suyama, Yokohama National Univ, Japan

**106. HPM VI: Arctic Materials 2  
Steel Testing & Characterization (V. 4)**

**Wednesday June 24 16:20 Kings 1**

**Chair:** Odd M Akselsen, SINTEF Materials & Chemistry, Norway

**Co-Chair:** Hideyuki Kimura, JFE Steel, Japan

**Fatigue Properties of a 420 MPa Structural Steel at Low Temperature**

Antonio Alvaro, Odd M. Akselsen, Xiaobo Ren, Alexander Kane, SINTEF Materials & Chemistry, Norway

**Properties in Submerged Arc Welding of X80 Plate for Arctic Applications**

Odd M. Akselsen, Xiaobo Ren, Bård Nyhus, Antonio Alvaro, SINTEF Materials and Chemistry, Norway

**Tensile Properties of 420 MPa Steel at Low Temperature**

Xiaobo Ren, Håkon Ottar Nordhagen, SINTEF Materials and Chemistry; Zhiliang Zhang, NTNU; Odd M. Akselsen, SINTEF Materials and Chemistry, Norway

**Fracture Toughness of Welded Joint made of UHSS Steel with Yield Strength 960 MPa**

Ilkka Valkonen, SSAB Knowledge Service Center, Finland

**107. COASTAL HYDRODYNAMICS XI:  
Port Development (V. 3)**

**Wednesday June 24 16:20 Kings 2**

**Chair:** K. Hirayama, Port and Airport Research Inst., Japan

**Experimental Study on Wave Height in Harbors and Wave Overtopping by Different Wharf Structures**

Yi-feng Zhang, Chan Wang, Bing Yan, Tianjin Research Inst for Water Transport Engineering, China

**Experimental Campaign on the Overtopping of the Seawall Malecón Traditional**

Luis Fermin Cordova Lopez, Instituto Superior Politécnico “Jose Antonio Echevarria”, Cuba; Daniela Salerno, Fabio Dentale, Univ of Salerno; Alessandro Capobianco, Mariano Buccino, Univ of Naples Federico II, Italy

**A Study of Durability for Marine Fenders with Reclaimed Rubber and Calcium Carbonate**

Kentaro Shimizu, Motohiro Yasui, Bridgestone Corp, Japan; Seigi Yamase, Bridgestone Engineered Products of Asia, Malaysia

**A Study on the Application of Cloud Computing in Maintenance Management System for Harbor Facilities**

Sung-Shan Hsiao, Hui-Ming Fang, Shyh-Rong Kuo, Cheng-Tsen Lai, Hsing-Yu Wang,  
National Taiwan Ocean Univ; Yun-Chih Chiang, Tzu Chu Univ, Taiwan, China

**Offshore Project and its Characteristic in Thailand**

Wissanu Hattha, Tetsuya Hiraishi, Kyoto Univ, Japan

**108. SUBSEA-UMBILICALS-PIPELINE-RISER-CABLE VI:  
Riser Design (V. 2)**

Wednesday June 24 16:20 Kings 3

**Chair:** Frank K. Lim, 2H Offshore Engineering, UK

**Simulations of Deepwater SCR In-field Profiles in Simple Catenary and Lazy Wave Configurations**

Yang Yu, Lixin Xu, Liyong Chang, Tianjin Univ, China

**A Study for Forced Oscillation Experiment for OTEC Riser under Current**

Y.J. Kwon, H.J. Kim, D.H. Jung, Korea Research Inst of Ships & Ocean Engineering, Korea

**Experiments and Analysis Related to Flow Field around Two Circular Cylinders**

Ping Fu, Bernt J. Leira, Dag Myrhaug, NTNU, Norway

**Long-term Fatigue Analysis of Risers with Multiple Environmental Random Variables in Time Domain**

Yidan Gao, Sai Hung Cheung, Nanyang Technological Univ, Singapore

**109. GEOTECH XI:  
Site Characterization (V. 2)**

Wednesday June 24 16:20 Queens 4

**Chair:** Takaharu Shogaki, National Defense Academy, Japan

**Co-Chair:** H. Arslan, ExxonMobil Development Co., USA

**Relationship between Grain Size Properties and Angle of Repose**

Takaharu Shogaki, National Defense Academy, Japan

**Wetting and Drying on Matric Suction of Compacted Cohesive Soil**

Horn-Da Lin, Cheng-Chun Wang, National Taiwan Univ of Science & Tech; Johnson H. S. Kung, Taiwan Professional Civil Engineers Association, Taiwan, China

**Soil Strength from Geophysical Measurements for Soft Clays**

Madhuri Murali, Texas A&M Univ, USA; Giovanna Biscontin, Univ of Cambridge, UK; Charles Aubeny, Texas A&M Univ, USA

**Identifying Macrodispersion in Stratified Porous Formations Using Spatial and Temporal Moment Approaches**

Kazuya Inoue, Tomoki Kurasawa, Takayuki Fujiwara, Tsutomu Tanaka, Kobe Univ, Japan

**110. ADVANCED SHIP TECH V  
Ship Hydrodynamics 1 (V. 4)**

Wednesday June 24 16:20 Queens 5

**Chair:** K Tanizawa, National Maritime Research Inst, Japan

**Computation of Wave-Making Resistance on High Speed Catamaran Using FINE/Marine**

Limin Chen, Guanghua He, Dazheng Wang, Jinsheng Zhang, Harbin Inst of Tech, China

**Numerical Simulation of Viscous Flow around a Ship While Entering a Lock with Overset Grid Technique**

Qingjie Meng, Decheng Wan, Shanghai Jiao Tong Univ, China

**Comparison of Two Methods for Forecasting the Drag, Sinkage and Trim Experienced by a Moving Ship**

Jianwei Wu, Chenliang Zhang, Decheng Wan, Shanghai Jiao Tong Univ, China

**111. ENVIRONMENT IV:  
Environmental Impact & Monitoring 3 (V. 1)**

**Wednesday June 24 16:20 Queens 6**

**Chair:** Kyung-Duck Suh, Seoul National University, Korea

**The Relationship between Sea Level Change of China's Coast and ENSO**

Hui Wang, Kexiu Liu, Wenjing Fan, National Marine Data & Information Service; Qi Zhang, Tianjin Marine Environment Monitoring Central Station; Zengjian Zhang, Guosong Wang, National Marine Data & Information Service, China

**Weakening Relationship between the Atmospheric Circulation in Middle-high Latitude and Sea Surface Temperature over China Seas after Mid-1980s and Possible Cause**

Yan Li, National Marine Data & Information Service; Yang Cai, State Oceanic Administration; Lin Mu, Guosong Wang, Huan Li, Jun Song, Jia Gao, National Marine Data & Information Service, China

**Sonar for Environmental Monitoring: Initial Setup for an Active Acoustic Platform**

Francisco Francisco, Jan Sundberg, Uppsala Univ, Sweden

**Concentrations, Seasonal and Spatial Distributions and Possible Sources of Organochlorine Pesticides in Atmosphere of Shanghai, China**

Yunjuan Zhu, Hohai Univ; Yongsheng Ding, Shanghai Maritime Univ; Weibing Feng, Hohai Univ, China; Nuoer Yang, Duke Univ, USA

**THURSDAY 08:00**

**112. REES OCEAN & WIND ENERGY XIII;  
OWC 4 (Vol 1)**

**Thursday June 25 08:00 Kohala 1**

**Chair:** Decheng Wan, Shanghai Jiao Tong Univ, China

**Co-Chair:** Malin W Götteman, Uppsala Univ, Sweden

**Experimental and Numerical Simulations of Moored Self-Reacting Point Absorber Wave Energy Converters**

Scott J. Beatty, Univ of Victoria; André Roy, Dynamic Systems Analysis; Kush Bubbar, Juan Ortiz, Bradley J. Buckham, Peter Wild, Univ of Victoria; Dean Stienke, Ryan Nicoll, Dynamic Systems Analysis, Canada

**Surrogate-Based Design of a Mooring System for a Self-reacting Point Absorber**

Juan P. Ortiz, Helen Bailey, Bradley Buckham, Curran Crawford, Univ of Victoria, Canada

**Wave Loads on a Point-Absorbing Wave Energy Device in Extreme Waves**

Malin Göteman, Jens Engström, Mikael Eriksson, Uppsala Univ, Sweden; Martyn Hann, Edward Ransley, Deborah Greaves, Plymouth Univ, UK; Mats Leijon, Uppsala Univ, Sweden

**The Study on Design of the Floating Pendulum Wave Energy Converter (FPWEC) Operation System**

Chang Hyuck Lim, Ji Yong Park, Jong Su Choi, Ho Jeong Cheon, Seung Ho Shin, Korea Research Inst. of Ships & Ocean Eng, Korea

**Design of a Physical Point-Absorbing WEC Model on which Multiple Control Strategies will be Tested at Large Scale in the MASK Basin [Proceedings only]**

Diana L. Bull, Ryan G. Coe, Mark Monda, Kevin Dullea, Giorgio Bacelli, David Patterson, Sandia National Labs, USA

**113. HYDRODYNAMICS XII:  
MetOcean1 (V. 3)**

Thursday

June 25

08:00

Kohala 2

**Chair:** Francis Noblesse, Shanghai Jiao Tong Univ, China

**The Second Order Contribution to Wave Crest Amplitude - Random Simulations and NewWave**

Thomas A.A. Adcock, Univ of Oxford, UK; Scott Draper, Univ of Western Australia, Australia

**Freak Waves in Three-Dimensional Random Wave Trains**

Jinxuan Li, Shuxue Liu, Jiqing Yang, Dalian Univ of Tech, China

**Experimental and Numerical Investigation on Kinematics of Freak Waves**

Yanfei Deng, Jianmin Yang, Xin Li, Longfei Xiao, Shanghai Jiao Tong Univ, China

**Modelling First and Second Order Rogue Waves using 2D SPH**

David F. Gunn, Murray Rudman, Monash Univ; Raymond C. Z. Cohen, CSIRO; Amin Chabchoub, Swinburne Univ, Australia

**Experimental and Numerical Investigation on Extreme Wave Propagation and Run-up of Brine (Dead Sea Water) and Fresh Water**

G. Manoj Kumar, V. Sriram, IIT Madras, India; N. Horstmann, T.Schlurmann, Leibniz Univ of Hannover, Germany

**Efficient Numerical Modelling of Focused Wave Groups for Freak Wave Generation**

Thomas Vyzikas, Univ of Plymouth; Dimitris Stagonas, Eugeny Buldakov, Univ College London; Deborah Greaves, Univ of Plymouth, UK

**114. REES OFFSHORE WIND TURBINE XIV:  
Ocean, Wind Farms & Resources1 (Vol 1)**

**Thursday June 25 08:00 Kohala 3**

**Chair:** F Vorpahl, Fraunhofer IWES, Germany

**Co-Chair:** Wen-Yang Hsu, National Cheng Kung Univ, Taiwan  
China

**Optimisation of Offshore Wind Farms Using a Genetic Algorithm**

Ajit C Pillai, John Chick, Univ of Edinburgh; Lars Johanning, Univ of Exeter; Mahdi Khorasanchi, Univ of Strathclyde; Sebastien Pelissier, EDF Energy, UK

**Experimental Study on Floating Offshore Platform in Combined  
Wind/Wave/Current Environment**

Wen-Yang Hsu, Ray-Yeng Yang, National Cheng Kung Univ; Fang-Nan Chang, Hua-Tung Wu, Ship and Ocean Industries R&D Center; Hsin-Hung Chen, National Cheng Kung Univ, Taiwan, China

**A Comparative Study on the API and NORSOK Standards Apply to Design Analysis  
for an Offshore Wind Turbine with Jacket Support Structure**

Lin C.Y., Huang C.C., Wu T.Y., Inst of Nuclear Energy Research, Taiwan, China

**Comparison of Load Calculation between IEC and GL Offshore Wind Turbine  
Design Guideline Using NREL 5 MW Reference Wind Turbine**

Wei-Nian Su, Chin-Cheng Huang, Inst of Nuclear Energy Research; Huei-Jeng Lin, National Taiwan Univ, Taiwan, China

**DNV GL Standard Harmonization – Recommended Practice on Corrosion  
Protection of Offshore Wind Farms [Proceedings only]**

Lars Lichtenstein, DNV GL, Germany

**115. OCEAN TECHNOLOGY XI:  
TLP, SPAR & Mooring 3 (V. 1)**

**Thursday June 25 08:00 Kohala 4**

**Chair:** Yonghwan Kim, Seoul National Univ, Korea

**Heading Instability Analysis of FPSOs**

Razieh Zangeneh, Krish P. Thiagarajan, Univ of Maine, USA

**Dynamic Analysis of Bridge Tower under Wind and Wave Action**

Shangyou Chen, Gao Liu, Hongbo Wu, Tiancheng Liu, Qian Cheng, CCCC Highway Consultants, China

**Wear of Axially Loaded Mooring Chains in Dry and Wet Conditions**

Amin Lotfollahi Yaghin, Robert E. Melchers, Univ of Newcastle, Australia

**Floatover Mooring Analysis with Different Mooring Lines Property in Shallow Water**

Zhihao Ruan, Wanli Zhang, Wenjuan Wang, Jian Gao, Novellant Engineering Services; Xinn Chao Li, Alan M Wang, Offshore Oil Engineering, China

**An Investigation of Dynamic Stiffness Changing with Loading Cycles on Taut  
Mooring Analysis**

Wei Huang, Binbin Li, Xiao-bo Chen, Bureau Veritas Marine (Singapore), Singapore

**Prototype Monitoring Technology of Soft Yolk Mooring System in Bohai Bay**  
Zheliang Fan, Qianjin Yue, Yanlin Wang, Dalian Univ of Tech; Ye Sun, Nanjing Engineering Inst of Aircraft System; Yang Jin, Dalian Univ of Tech, China

**116. HPM VII Arctic Materials 3  
Steel Properties & Applications (V. 4)**

**Thursday June 25 08:00 Kings 1**

**Chair:** O. M. Akselsen, SINTEF, Norway

**Development of High Performance Steel Plates for the Ice-strengthened Ship [Oral presentation]**

SungHo Jang, HakCheol Lee, JangYong Yoo, POSCO, Korea

**Nodular Cast Iron for Normal and Arctic Temperatures in Wind Energy**

Christoph Bleicher, Rainer Wagener, Heinz Kaufmann, Tobias Melz, Fraunhofer Inst for Structural Durability & System Reliability, Germany

**Mechanical Properties and Weldability of Ultra-Heavy-Wall Seamless Pipes for Sour and Arctic-Alike Environment**

S. Farè, M. Ortolani, E. Paravicini Bagliani S. Crippa, P. Novelli, Ph. Darcis, TenarisDalmine, Italy

**Development of Grade X80 Heavy Gauge Linepipe for Extremely Low Temperature Service**

Hideyuki Kiura, Nobuyuki Ishikawa, Junji Shimamura, Ryo Nagao, Shinichi Kakihara, Joe Kondo, JFE Steel, Japan

**Development of YP420 N/mm<sup>2</sup> Class Steel Plate with Excellent Low Temperature HAZ Toughness for Offshore Structures**

Kazukuni Hase, Katsuyuki Ichimiya, Yusuke Terazawa, Takaki Fujiwara, Kenji Hayashi, Masahiro Aoki, JFE Steel, Japan

**Characterization of Weld Properties for Arctic Service**

Tom McGaughy, Paul Zelenak, EWI, USA

**Influence of Alloying Elements on the Low-Temperature Properties of Steel [Proceedings only]**

Paul Kah, Pavel Layus, Jukka Martikainen, Lappeenranta Univ of Technology, Finland

**117. VORTEX-INDUCED VIBRATION I:  
Single Body 1 (V. 3)**

**Thursday June 25 08:00 Kings 2**

**Chair:** Hamn-Ching Chen, Texas A&M Univ, USA

**Numerical Investigation of Vortex Induced Motion of a Square Cylinder at Low Reynolds Numbers**

Chih-Hua Wu, Shengwei Ma, Chang-Wei Kang, Teck-Bin Arthur Lim, Inst of High Performance Computing, Singapore; Gabriel Weymouth, Owen Tutty, Mingyi Tan, Dominic Hudson, Univ of Southampton, UK; Kumar Jaiman Rajeev, Meng Zhao Guan, National Univ of Singapore, Singapore



**Effects of a Higher Reynolds Number and Introduced Perforation on Flows past the Conic Cylinder**

Liming Lin, Xingfu Zhong, Yingxiang Wu, Inst of Mechanics, CAS, China

**Wake Characteristics of Oscillating Cylinder at Re of  $O(10^5)$  through RANS Approach**

Narendran K, Murali K, Sundar V, IIT Madras, India

**118. SUBSEA-UMBILICALS-PIPELINE-RISER-CABLE VII:**

**SCR & TTRs (V. 2)**

**Thursday June 25 08:00 Kings 3**

**Chair:** Yijun Shen, Wood Group Kenny, UK

**Co-Chair:** Mason Wu, DMAR, USA

**A Field Trial of a New System Using Both Free-Standing Drilling Riser and Mid-Depth BOP in the South China Sea**

Yongfeng Guo, Linsong Song, Huimin Zeng and Zengwei Qiu, China Oilfield Services, China

**Impact Evaluation of Internal Solitary Waves on a Drilling Riser**

Song Deng, Chaowei Li, Honghai Fan, Zhiming Wang, Qi Peng, Xu Feng, China Univ of Petroleum-Beijing, China

**Reduction of Tension Variations on Marine Riser Tensioner by Using Magneto-Rheological Damper [Oral presentation]**

Hooi-Siang Kang, Moo-Hyun Kim, Texas A&M Univ, USA; Shankar S Bhat Aramanadka, Sabah Shell Petroleum, Malaysia; Heon-Yong Kang, Texas A&M Univ, USA

**Dynamic Responses of Top Tensioned Risers under Earthquake Excitations [Proceedings only]**

Shutao Xing, Wentao Dai, Dakshina Moorthy, Xuxia Xiang, Independent Riser Engineering Consultants, USA

**119. FERT I:  
EOR & Drilling I (V. 1)**

**Thursday June 25 08:00 Queens 4**

**Chair:** Raghavan Ayer, SK Innovation, Korea

**Co-Chair:** KunSang Lee, Hanyang Univ, Korea

**Cement Sheath Integrity under Two Different Formation Conditions in Steam Stimulation Well**

Shenglai Guo, Yuhuan Bu, Xiangzhen Yan, China Univ of Petroleum-Qingdao, China

**Integrated Reservoir Flow and Geomechanical Model to Generate Type Curves for Pressure Transient Responses in Shale Gas Reservoirs**

Tae Hong Kim, Kanghee Park, Jinsuk Choi, Kun Sang Lee, Hanyang Univ, Korea

**CO<sub>2</sub> WAG Process with Gel Treatment Considering Flowing Gel Viscosity in Heavy Oil Reservoir**

Jinsuk Choi, Moon Sik Jeong, Kanghee Park, Kun Sang Lee, Hanyang Univ, Korea

**Interpretation of Permeability-Dependent Residual Resistance Factors Caused from Polymer Retention Using Conditional Selection of Mechanical Trapping Constant**  
Byungin Choi, Kanghee Park, Jinsuk Choi, Kun Sang Lee, Hanyang Univ, Korea

**120. ADVANCED SHIP TECH VI:  
Ship Hydrodynamics 2 (V. 4)**

**Thursday June 25 08:00 Queens 5**

**Chair:** H. Hashimoto, Kobe Univ, Japan  
**Co-Chair:** Guanghua He, Harbin Inst of Tech, China

**Investigation of Hull-Form Effects on Ship Hydrodynamics Using Time-Domain Iterative Rankine HOBEM**

Guanghua He, Limin Chen, Dehe Zhang, Junwei Zhou, Harbin Inst of Tech, China

**Hydrodynamic Simulation of Pure Sway Tests with Ship Speed and Water Depth Effects**

Xiao-jian Liu, She-ming Fan, Jian-hua Wang, De-cheng Wan, Shanghai Jiao Tong Univ, China

**Validation of the Neumann-Michell Theory for Two Catamarans**

Chenliang Zhang, Jiayi He, Chao Ma, Noblesse Francis, Decheng Wan, Shanghai Jiao Tong Univ, China; Fuxin Huang, Chi Yang, George Mason Univ, USA

**A Role of Spray on the Added Resistance acting on a Blunt-Bow Ship in Head Waves**

Keisuke Mizutani, Sanoyas Shipbuilding; Satowa Ibata, Yuko Aoyama, Yoshiho Ikeda, Osaka Prefecture Univ, Japan; Ngo van he, Hanoi Univ of Science & Tech, Vietnam

**Numerical Evaluation of Double and Single Integral Versions of the Green Function for Wave Resistance Determination**

Mirjam Fürth, Yokohama National Univ, Japan; Mingyi Tan, Zhi-Min Chen, Univ of Southampton, UK; Makoto Arai, Yokohama National Univ, Japan

**121. ARCTIC SCI & TECH I:  
Arctic Environment (V. 1)**

**Thursday June 25 08:00 Queens 6**

**Chair:** D.B. Fissel, ASL Environmental Services, Canada  
**Co-Chair:** Yuri Gudoshnikov, AARI, Russia

**The Detection and Characterization of Massive Marine Ice Features Derived from Moored Upward Looking Sonar Ice Draft Measurements: Seasonal Variability**

David B. Fissel, Ed Ross, Dawn Sadowy, Glenda J. Wyatt, ASL Environmental Sciences, Canada

**The Development of Sea Ice Thickness Measurement Sensor**

Shuo Li, Ralf Bachmayer, Jian Cui, Memorial Univ of Newfoundland, Canada

**A Method of Above-water Iceberg 3D Modeling Using Surface Imaging**

Yahui Wang, Brad deYoung, Ralf Bachmayer, Memorial Univ of Newfoundland, Canada

**Fast Methods for Measuring Ice Ridges in Full-scale**

Teemu Heinonen, Aker Arctic Technology; Annu Oikkonen, Finnish Meteorological Inst; Jani Pötrönen, Meritaito Ltd, Finland

**Long-term Characteristics of Sea Ice in Bohai Sea and Sea Ice Impact Assessment on Port**

Yonghua Xue, Jingfeng Bai, Mingxin Dai, Tianjin Research Inst for Water Transport & Engineering, China

**Sea Ice Impact Assessment on Port and Navigation in China [Oral presentation]**

Jingfeng Bai, Yonghua Xue, Mingxin Dai, Tianjin Research Inst for Water Transport Engineering, China

**THURSDAY 10:30**

**122. REES OCEAN & WIND ENERGY XV:  
OWC 5 (Vol 1)**

**Thursday June 25 10:30 Kohala 1**

**Chair:** Alexandros Taflanidis, Univ of Notre Dame, USA

**Co-Chair:** JungMin Sohn, KRISO, Korea

**Study on Design of Mooring Lines for Floating Pendulum Wave Energy Converter**

J. Y. Park, D.H. Jung, S.H. Shin, Korea Research Inst of Ships & Ocean Engineering, Korea

**Preliminary Study on Global Spectral Analysis of Floating Pendulum Wave Energy Converter**

Jung Min Sohn, Ho Jeong Cheon, Seung Ho Shin, Keyyong Hong, KRISO, Korea

**Performance Analysis and Optimization of a Bottom-hinged Flap-type Wave Energy Converter**

Shouqiang Qiu, South China Univ of Tech, China

**Structural Response of Seawave Slot-cone Generator (SSG) from Random CFD Simulations**

Diego Vicinanza, Second Univ of Naples; Fabio Dentale, Daniela Salerno, Univ of Salerno; Mariano Buccino, Univ of Naples Federico II, Italy

**Experimental Studies on Wave Forces Acting on the Caisson Foundation of Wave Energy Devices**

Yu Xu, Yongda Liu, Hongda Shi, Ocean Univ of China, China

**123. HYDRODYNAMICS XIII:  
MetOcean 2 (V. 3)**

**Thursday June 25 10:30 Kohala 2**

**Chair:** Sa Young Hong, KRISO, Korea

**Assessment of Uncertainty Due to Wave Reflections in Experiments via Numerical Flow Simulations**

Robinson Peric, Moustafa Abdel-Maksoud, Technical Univ Hamburg-Harburg, Germany

**Numerical Simulation of Nonlinear Wave Interactions with Linearly Sheared Currents**

Haifei Chen, Qingping Zou, Univ of Main, USA

**Initial Value Problems for Water Waves in the Presence of a Shear Current**

Yan Li, Simen Å. Ellingsen, NTNU, Norway

**Experimental Research on the Wave Transformation over Submerged Structures with Sudden Depth Changes**

Zhao-Bing Jiang, Jin-Yu Xu, Fei Shao, PLA Univ of Science & Tech, China

**Second-Order Lagrangian Interactions of Tri-Dimensional Gravity Waves**

Frédéric Noguier, Univ de Toulon, Bertrand Chapron, Ifremer; Charles-Antoine Guérin, Univ de Toulon, France

**Wave Flume-generated Seiching Analysis**

Luigia Riefolo, Arianna Azzellino, Politecnico di Milano; Vincenzo Ferrante, Pasquale Contestabile, Diego Vicinanza, Second Univ of Naples, Italy

**Boussinesq Modeling of Wave-Vortex Interaction**

Meng-Yu Lin, Chung Yuan Christian Univ, Taiwan, China

**124. REES OCEAN & WIND ENERGY XVI:  
Ocean, Wind Farms & Resources 2 (Vol 1)**

**Thursday      June 25      10:30      Kohala 3**

**Chair:** F. Dias, Univ College Dublin, Ireland

**Co-Chair:** Wen-Yang Hsu, National Cheng Kung Univ, Taiwan, China

**Reliability of Offshore Wind Turbine Drivetrains Based on Measured Shut-Down Events**

Anand Natarajan, Thomas Buhl, Technical Univ of Denmark, Denmark

**Probabilistic Fatigue Life Assessment of an Offshore Wind Turbine in Greece**

Dimitrios V. Bilonis, Dimitrios Vamvatsikos, National Tech Univ of Athens, Greece

**Reliability Allocation and Fault Tree Qualitative Analysis for Floating Wind Turbines**

Yongjin Guo, Liping Sun, Na Luo, Zijian Liu, Harbin Engineering Univ, China

**Coastal Wind from Satellite Measurements and Meteorological Models for Offshore Wind Power Prediction**

Malin Abrahamsen, Yngve Birkelund, Univ of Tromsø, Norway

**Comparison of WRF-based Methods for Wind Resource Assessment at an Offshore Site**

Teruo Ohsawa, Kazuki Ishigami, Takeshi Misaki, Kobe Univ; Yasuyuki Baba, Kyoto Univ; Koji Kawaguchi, Port and Airport Research Inst, Japan

**Energy Harvesting Using Wake-Induced Vibration: Experiment in a Circulating Water Channel**

Yoshiki Nishi, Yuta Ueno, Takuma Miyamoto, Yokohama National Univ, Japan

**125. OCEAN TECHNOLOGY XII: -  
Offshore Systems (V. 1)**

**Thursday          June 25          10:30          Kohala 4**

**Chair:** J.V. Kurian, Universiti Teknologi Petronas, Malaysia

**Reliable Estimation of Short Term Maximum from a Limited Number of Simulations of Offshore Mooring Systems Responses**

Quentin Derbanne, Martin Dumont, Bureau Veritas, France

**Dynamic Measurement of Spatial Attitude at the Bottom Rotating DrillString**

Qilong Xue, China Univ of Geosciences; Leilei Huang, Sinopec International Petroleum Service; Baolin Liu, Guomin Li, Yuanbiao Hu, Yu Wang, China Univ of Geosciences, China

**Development of Large-scaled SAFE Helideck Structure**

Yeong-Su Ha, Joo-Shin Park, Jeong-Bon Koo, Ki-Bok Jang, Yong-Suk Suh, Samsung Heavy Industries; Jung-Kwan Seo, Pusan National Univ; Won-Heaop Shin, N.K. Co; Young-Ik Seo, ShinYang Metal Industries, Korea

**Deformation Analysis of Fish Cage Rigged with Synthetic Fiber and Copper Net Using Numerical Methods**

Chun Woo Lee, Pukyong National Univ; Jihoon Lee, Chonnam National Univ; Dae Hyun Kim, Poongsan Holdings Copper Business Unit; Subong Park, Gebremeskel Eshetu Kebede, Pukyong National Univ, Korea

**Research on the Cutting Thermodynamic Behavior of High-strength Large-thickness Offshore Jack-up Platform Leg Rack [Proceedings only]**

Hong Zhou, Jiangsu Univ of Science & Tech, China

**126. HPM VIII:  
Fatigue & Fracture 1 (V. 4)**

**Thursday          June 25          10:30          Kings 1**

**Chair:** Huang Tang, ExxonMobil Upstream Research Co, USA

**Prediction of Ductile Crack Growth Initiation and Propagation in X65 Grade Steel Using Damage Modelling [Oral presentation]**

Nicola Bonora, Nicola Bonora, Univ of Cassino and Southern Lazio, Italy; Antonio Carlucci, SAIPEM, France; Andrew Riggiero, Univ of Cassino and Southern Lazio; Luca Cortese, 3 Free Univ of Bozen-Bolzano, Italy

**Evaluation of Ductile Fracture Initiation Behavior for High Strength Linepipe**

Toshihiko Amano, Takehiro Inoue, Nippon Steel & Sumitomo Metal, Japan

**Numerical Model for Bubble Growth and Gas Decompression during Longitudinal Fracture in Underwater Pipelines**

Hiroaki Nakai, Shuji Aihara, Akiyasu Morita, Univ of Tokyo, Japan

**Fundamental Study on Fracture Behavior of RC Beams Made of Ductile-Fiber Reinforced Concrete without Shear Reinforcement**

Naoto Ohtsu, Ken Watanabe, Masaya Nakamura, Mamoru Fujii, Tokai Univ, Japan

**127. VORTEX-INDUCED VIBRATION II:  
Single Body 2 (V. 3)**

**Thursday          June 25          10:30          Kings 2**

**Chair:** S. Etienne, Ecole Polytechnique de Montreal, Canada

**Co-Chair:** Yingxiang Wu, Inst of Mechanics, CAS, China

**Frequency and Moving Direction Effects on Lift, Drag and Vortex Mode for Flows around an Oscillating Cylinder**

Muyu Duan, Decheng Wan, Shanghai Jiao Tong Univ, China

**VIV Prediction of Steel Catenary Riser – A Reynolds Number Sensitivity Study**

Decao Yin, Jie Wu, Halvor Lie, MARINTEK; Rolf J. Baarholm, Statoil; Carl M. Larsen, NTNU, Norway

**CFD Simulation of Vortex Induced Vibrations of Free Span Pipelines Including Pipe-Soil Interactions**

Fei Xiao, Hamn-Ching Chen, Texas A&M Univ, USA

**Roughness Effects on the VIM Response of Deep-Draft Semi-submersible Platforms**

André Luís Condino Fajarra, Rodolfo Trentin Gonçalves, Guilherme Feitosa Rosetti, Univ of Sao Paulo; Hélio Correa da Silva Jr., IPT, Brazil; Arjen Koop, MARIN, Netherlands

**Transverse and Rotational Galloping of Square Cylinders at Low Reynolds Numbers**

Stéphane Etienne, Cédric Béguin, Ecole Polytechnique de Montreal, Canada

**A CFD Based Analysis of the Vortex-induced Motion of Deep-Draft Semisubmersibles**

Arun Antony, Vimal Vinayan, Houston Offshore Engineering; John Halkyard, Deep Reach Technology; Seung-Jun Kim, Los Alamos National Lab; Samuel Holmes, Redwing Engineering; Dusan Spornjak, Los Alamos National Lab, USA

**Numerical Analysis of Circular Cylinder Vortex-Induced Vibration (VIV) in Uniform and Oscillatory Flows at Different Mass Ratio**

Yue Deng, Xinghua Tong, Zhenlin Liang, Shandong Univ; Jingli Zhao, Shandong Marine Resources & Environ. Research Inst, China

**128. SUBSEA-UMBILICALS-PIPELINE-RISER-CABLE**

**VIII: Flow Assurance (V. 2)**

**Thursday**

**June 25**

**10:30**

**Kings 3**

**Chair:** Nick Yunxiao Wang, Wood Group Kenny, UK

**Co-Chair:** Jens K Lervik, SINTEF Energy Research, Norway

**Hydrate Stable Start-up and Restart of Oil and Gas Production Systems**

Douglas J. Turner, Geetha Mahadevan, ExxonMobil Development; Jason Lachance, ExxonMobil Upstream Research, USA

**A Numerical Procedure to Estimate the Sand Erosion in Elbows for Annular-Mist Flow Based on Film Thickness and Droplet Diameter Prediction**

Mingyang Liu, Haixiao Liu, Tianjin Univ, China

**Low Power DEH System for Flow Assurance**

Jens Kristian Lervik, SINTEF Energy Research; Øyvind Iversen, Nexans Norway AS; Arne Nysveen, NTNU, Norway

**Wet Ageing of XLPE Cables – Lifetime Prediction**

Randi Floden, Magnus Bengtsson, Nexans Norway AS, Norway

**129. FERT II:  
EOR & Drilling 2 (V. 1)**

**Thursday June 25 10:30 Queens 4**

**Chair:** Linsong Song, China Oilfield Services, China  
**Co-Chair:** Chuan Cao, China National Petroleum, China

**Effect of Clay Characteristics of Sandstone with Low Salinity Waterflooding in High Salinity Oil Reservoir [Oral presentation]**

Jeonghwan Lee, Changkyun Kim, Youngmin Kim, Meliza Fitri, Chonnam National Univ, Korea

**Optimizing the Design Parameters for Performance Evaluation of the CO<sub>2</sub>-WAG Process in a Heterogeneous Reservoir**

Gongyeong Kim, Hochang Jang, Minwoo Cho, Jeonghwan Lee, Chonnam National Univ, Korea

**Operation Constraints of Steam Assisted Gravity Drainage Considering Steam Interference to Accomplish Optimum Bitumen Recovery**

Changhyup Park, Jiyeon Choi, Changsoo Lee, Kangwon National Univ; Taewoon Ahn, KIGAM; Ilsik Jang, Chosun Univ, Korea

**Determination of Key Parameters and Hydraulic Fracture Design for Shale Gas Production**

Kyoungsu Kim, Sungkyu Ju, Jongchan Ahn, Seoul National Univ; Hyundon Shin, Inha Univ; Changhoon Shin, Korea Gas; Jonggeun Choe, Seoul National Univ, Korea

**Footage-Based Hydraulic Optimization of Deepwater Drilling for Maximum Drilling Rate**

Ning Wang, Baojiang Sun, Yonghai Gao, Zhiyuan Wang, China Univ of Petroleum-Qingdao, China

**Numerical Simulation of Mud Discharge after Drilling Riser Emergency Disconnection**

Chaowei Li, Honghai Fan, Zhiming Wang, Weige Shen, Xu Feng, Song Deng, China Univ of Petroleum-Beijing, China

**130. ADVANCED SHIP TECH VII:  
Hydrodynamic loading (V. 4)**

**Thursday June 25 10:30 Queens 5**

**Chair:** Qingwei Ma, City University London, UK

**A Preliminary Study on the Hydrodynamic Propulsive Force of a Pair of Inversely Oscillating Hydrofoils**

Hongbin Hao, Zhiqun Guo, Harbin Engineering Univ. China; Qingwei Ma, City Univ London, UK; Shaoshi Dai, Harbin Engineering Univ, China

**Estimation of Wave in Deck Load Using CFD Validated Against Model Test Data**

Csaba Pákozdi, Anders Östeman, Carl T. Stansberg, MARINTEK, Norway; Milovan Peric, Cd-adapco, Germany; Haidong Lu, MARINTE USA; Rolf Baarholm, Statoil, Norway

**Experimental Investigation of Global Wave Impact Loads in Steep Random Seas**

Csaba Pákozdi, Jan H. Visscher, Carl T. Stansberg, MARINTEK; Jan T. Fagertun, Statoil, Norway

**131. ARCTIC SCI & TECH II:  
Arctic Mechanics 1 (V. 1)**

**Thursday June 25 10:30 Queens 6**

**Chair:** Edward P Lozowski, Univ of Alberta, Canada;

**Co-chair:** D A Mitchell, ExxonMobil Upstream Research, USA

**The Ice Load Formation Modeling in the Interaction of Ice Plate with a Cylindrical Indenter**

Alexander T. Bekker, Far Eastern Federal Univ, Russia

**Towards a First Principles Model of Curling Ice Friction and Curling Stone Dynamics**

Edward P Lozowski, Univ of Alberta; Krzysztof Szilder, National Research Council Canada; Sean Maw, Univ of Saskatchewan; Alexis Morris, Mount Royal Univ; Louis Poirier, National Research Council Canada; Berni Kleiner, Univ of Calgary, Canada

**Methodology for Experimental Determination of Local Ice Pressures on Flexible Hull of Platforms and Ships**

Lev V. Kim, Victor A. Kulesh, Vladimir G. Tsuprik, Far Eastern Federal Univ, Russia

**Global Ice Loads on the Sakhalin Offshore Structures: Statistical Overview by Existing Design Codes**

Olga A Sabodash, Far Eastern Federal Univ, Russia

**A Stochastic Dynamics Approach for Ice Gouge Depth Determination**

Nikolaos Gazis, Wood Group Kenny; Ioannis A. Kougioumtzoglou, Columbia Univ, USA

**Estimating Sea Ice Thickness Using an Ice Drift Forecast Model**

Douglas A Mitchell, ExxonMobil Upstream Research, USA

**Effect of Fine Contents on the Mechanical Response of Frozen Soils [Proceedings only]**

Wanjei Cho, Deokho Chae, Bumsik Hwang, Dankook Univ; Myounghak Oh, KIOST; Hoki Ban, Kangwon National Univ, Korea

**THURSDAY 13:15**

**KEYNOTE III**

**Thursday June 25 13:15 Queens 4**

**Introduction:** Jin S Chung, ISOPE, USA

**Recent Status of Methane Hydrate R&D Program and Research Activities of Methane Hydrate Research Center, AIST, Japan [Oral presentation]**

Norio Tenma, National Inst of AIST, Japan

**THURSDAY 14:00**



### 132. REES OCEAN & WIND ENERGY XVII:

OWC 6 (Vol 1)

Thursday June 25 14:00 Kohala 1

**Chair:** Robert L Waid, Marine Development Associates, USA

**Co-Chair:** YunHo Kim, KRISO, Korea

#### **The Simulation of Oscillating Wave Surge Converters Using a Boussinesq Simulation; Wave Disturbances around an Array**

Charles E B Greenwood, David Christie, Univ of the Highlands and Islands, UK

#### **Layout Optimization of Wave Energy Converters in a Random Sea**

G. Jia, A.A. Taflanidis, Univ of Notre Dame; J.T. Scruggs, Univ of Michigan, USA

#### **A Study of Motion and Mooring Force of Hinged Joint Type Wave Energy Converter**

Xiaofei Mao, Minghao Wu, Yu Chen, Wuhan Univ of Tech, China

#### **Design Study of a Novel Flex Mooring System of The Floating Wave Energy Converter in Ultra Shallow Water**

Shuo Huang, Songwei Sheng, Yage You, Wensheng Wang, Key Lab of Renewable Energy, CAS; Tianyu Zhang, DMAR Engineering, China

#### **Numerical Analysis of a Large Floating Wave Energy Converter with Adjustable Structural Geometry**

Francesco Ferri, Arthur Pecher, Jens Peter Kofoed, Aalborg Univ, Denmark

#### **Numerical Simulation of Multi-body Wave Energy Converter**

Linghan Li, Mingyi Tan, James Blake, Univ of Southampton, UK

#### **Relative Heave Motion Responses of a Floating Dual-Buoy Wave Energy Converter in Waves**

Jeong Rok Kim, Yoon Hyeok Bae, Il Hyoung Cho, Jeju National Univ, Korea

### 133. HYDRODYNAMICS XIV:

MetOcean 3 (V. 3)

Thursday June 25 14:00 Kohala 2

**Chair:** Wei Qiu, Memorial Univ of Newfoundland, Canada

#### **An Accuracy Statement for the Buoy Heading Component of NDBC Directional Wave Measurements**

Rodney E. Riley, Richard H. Bouchard, National Data Buoy Center, USA

#### **Adaptive Modeling for Typhoon Wave Predictions around Taiwan**

Tien-Hung Hou, National Cheng Kung Univ; Tai-Wen Hsu, National Taiwan Ocean Univ; Chia-Cheng Tsai, National Kaohsiung Marine Univ, Taiwan, China

#### **The Investigation of Wind Characteristics of Typhoon Fung-Wong and Model Validation Using the Floating Lidar**

Pei-Chi Chang, Jing-Bo Hung, Ta-Hui Lin, National Cheng Kung Univ, Taiwan, China

#### **An Optimisation Exercise to Position the DART Buoys in the South China Sea**

Dongfang Liang, Jingxin Zhang, Jian Wang, Shanghai Jiao Tong Univ, China

**Typification of Diagrams of the Vertical Distribution of the Current Velocity in the Gulf of Finland (Baltic Sea) [Proceedings only]**

Natalia A. Sukhikh, AARI; Valentin A. Rozhkov, St. Petersburg State Univ, Russia

**134. REES OCEAN ENERGY XVIII:  
Wind-Wave Hybrid Installation (Vol 1)**

**Thursday June 25 14:00 Kohala 3**

**Chair:** T. Mathai, The Glosten Assoc., USA

**Comparison of Simulations and Offshore Measurement Data of a Prototype of a Floating Combined Wind and Wave Energy Conversion System**

Anders Yde, Torben J. Larsen, Anders M. Hansen, DTU Wind Energy; Miguel Fernandez, Sarah Bellew, Floating Power Plant, Denmark

**Parameter Optimization of Power Take-Off System in a Floating Wind-Wave Energy Hybrid System**

Qi Wang, Fasuo Yan, Harbin Engineering Univ, China; Qingwei Ma, City Univ London, UK; Longchao Yu, Harbin Engineering Univ, China

**Conceptual Design of 10MW Class Floating Wave-Offshore Wind Hybrid Power Generation System**

Kyong-Hwan Kim, Kangsu Lee, Jung Min Sohn, Se-Wan Park, Jong-Su Choi, Keyyong Hong, Korea Research Inst of Ships & Ocean Engineering, Korea

**A Parametric Study on Motion Reduction Device for Floating Hybrid Power Generation Platform**

Sewan Park, Kyoung-Hwan Kim, Jeong-Seok Kim, Kang-Su Lee, Keyyong Hong, KRISO, Korea

**Design and Dynamic Analysis of the Floating Platform for a Hybrid Ocean Renewable Power Generation System**

Yong Ma, Tengfei Li, Xuewei Zhang, Mou Lin, Liang Zhang, Harbin Engineering Univ, China

**Numerical Approach for the Derivation of Interaction Diagrams for Piles under Cyclic Axial Loading**

Martin Achmus, Katrin Lemke, Khalid Abdel-Rahman, Leibniz Univ Hannover, Germany; Yu-Shu Kuo, National Cheng Kung Univ, Taiwan, China

**135. OCEAN TECHNOLOGY XIII:  
VLFS & Floating Structures 1 (V. 1)**

**Thursday June 25 14:00 Kohala 4**

**Chair:** ChangSeop Kwon, Samsung Heavy Industries, Korea

**Co-Chair:** Olga V Shinkarenko, Krylov State Research Centre, Rus

**3D Numerical and Experimental Investigation of the Performance of a Modular Floating Structure**

Eva Loukogeorgaki, Margarita Vasileiou, Evgenia Rapanta, Aristotle Univ of Thessaloniki, Greece

**Experimental Research on Sliding Launching of Ultra Large Floating System**

Jianhui Liu, Univ of Michigan, USA; Keli Shen, CCCC First Harbor Consultants; Alan M.Wang, Offshore Oil Engineering, China

**Hydrodynamic Excitation Forces on Floating Structures with Finite Displacements**

Morten Thøtt Andersen, Søren Rasmus Kjærshøj Nielsen, Aalborg Univ, Denmark

**Scale Effects on Hydrodynamic Manoeuvring Force Prediction**

Yuting Jin, Shuhong Chai, Jonathan Duffy, Christopher Chin, Neil Bose, Univ of Tasmania, Australia

**Nonlinear Network Dynamic Characteristics of Multi-Module Floating Airport with Flexible Connectors**

Haicheng Zhang, Daolin Xu, Shuyan Xia, Hunan Univ; Enrong Qi, Chao Tian, Yousheng Wu, China Ship Scientific Research Center, China

**Jacket Dry Tree Semi-submersible Platform with TTR System**

XL.Qi, GS.Lv, H.Li, YH.Li, Y.Luo, COTEC Offshore Engineering Solutions, China

**Research on the Characteristic of the Multi-segment Beam Model of Very Large Flotation Structure [Proceedings only]**

Jian-qun Sun, De-yu Wang, Yong-gang Sun, Shi-xiao Fu, Shanghai Jiao Tong Univ, China

**136. HPM IX:  
Fatigue & Fracture 2 (V. 4)**

Thursday

June 25

14:00

Kings 1

**Chair:** R. Ayer, SK Innovation, Korea

**Effect of Fillet Weld Metal Toughness on Long Brittle Crack Arrest Behavior in Tee Joint**

Tsunehisa Handa, JFE Steel; Masanobu Toyoda, Noboru Kiji, Japan Marine United; Koutarou Inose, IHI Corp; Seita Watanabe, Japan Marine United; Hiroshi Shiomi, Satoshi Igi, Kenji Oi, JEF Steel, Japan

**Effect of Strain on Occurrence of Inverse Fracture**

Taishi Fujishiro, Takuya Hara, Nippon Steel & Sumitomo Metal, Japan

**Influence of Preparation Procedures on Residual Stresses in Welded Joint Specimen for Toughness Test**

Hui Huang, Hidekazu Murakawa, Osaka Univ, Japan

**Development of Numerical Simulation Model for Unstable Ductile Crack Propagation in High-Pressure Gas Pipelines Based on CTOA**

Kuriya Miyamoto, Hiroaki Nakai, Kazuki Shibamura, Shuji Aihara, Univ of Tokyo, Japan

**Development of Numerical Model to Predict Brittle Fracture Toughness of Ferrite-Pearlite Steels**

Yoshiki Nemoto, Kazuki Shibamura, Katsuyuki Suzuki, Shuji Aihara, Univ of Tokyo, Japan

**Numerical Analyses of Press-notched Bend Tests and Applicability to Simplified Method of Arrest Toughness Evaluation**

Tomoya Kawabata, Univ of Tokyo; Tetsuya Namegawa, Nippon Steel & Sumitomo Metal; Masahito Kaneko, Kobe Steel; Yusuke Shimada, Nippon Steel & Sumitomo Metal; Hisakazu Tajika, JFE Steel; Kazuki Shibanuma, Shuji Aihara, Univ of Tokyo, Japan

**Development of Cleavage Fracture Initiation Model for Bainite Steels Based on Micro Mechanism**

Itsuki Kawata, Univ of Tokyo; Takashi Hiraide, JFE Steel; Kazuki Shibanuma, Tomoya Kawabata, Shuji Aihara, Univ of Tokyo, Japan

**137. VORTEX-INDUCED VIBRATION III:  
Multi-Bodies (V. 3)**

**Thursday June 25 14:00 Kings 2**

**Chair:** A L C Fajarra, Univ of Sao Paulo, Brazil  
**Co-Chair:** Hamn-Ching Chen, Texas A&M Univ, USA

**Effects of Column Designs on the VIM Response of Deep-draft Semi-submersible Platforms**

Rodolfo Trentin Gonçalves, André Luis Condino Fajarra, Guilherme Feitosa Rosetti, Univ of São Paulo; André Mitsuo Kogishi, IPT, Brazil; Arjen Koop, MARIN, Netherlands

**CFD Simulation of Vortex-Induced Motions of a Deep Draft Semi-submersible Platform**

Chia-Rong Chen, Hamn-Ching Chen, Texas A&M Univ, USA

**Detached Eddy Simulations of Wake Induced Vibrations for Cylinders in Tandems at High Reynolds Numbers**

Vinh-Tan Nguyen, Hoang Huy Nguyen, Hendrik Hans, Inst of High Performance Computing, Singapore; Owen Tutty, Gabirel Weymouth, Univ of Southampton, UK

**138. SUBSEA-UMBILICALS-PIPELINE-RISER-CABLE IX:  
Lateral Buckling & Walking (V. 2)**

**Thursday June 25 14:00 Kings 3**

**Chair:** A.M. Gresnigt, Delft Univ of Technology, Netherlands  
**Co-Chair:** Carlos de Oliveira Cardoso, Petrobras, Brazil

**Performed of Triggers to Control Thermal Buckling of Subsea Pipelines Using Reduced Scale Model**

Carlos de Oliveira Cardoso, Rafael Familiar Solano, Petrobras, Brazil

**Study on Global Buckling of Imperfect Submarine Pipeline**

Run Liu, Wenbin Liu, Shuwang Yan, Zhaohui Hong, Tianjin Univ, China

**Optimized Configuration of Snaked-lay Subsea Pipelines for Controlled Lateral Buckling Method**

Zhe Wang, Zhihua Chen, Yongyu He, Hongbo Liu, Tianjin Univ, China

**Pipeline Modeling - Impact of Ambient Temperature and Heat Transfer Modeling**

Filip Sund, Antonie Oosterkamp, Sigmund Mongstad Hope, Polytec Research Inst, Norway

**Pipeline Design on Undulating Seabed with Planned and Rogue Buckles Using Simplified Structural Reliability Method - SSRA**

Yunxiao Nick Wang, Emil Maschner, Richard Thayer, Wood Group Kenny, UK

**Finite Element Analysis of an Umbilical Subjected to Compressive Loads**  
Frank Klæbo, Egil Giertsen, MARINTEK, Norway; Joe Jin, Dale Reid, ExxonMobil Development, USA

**139. OMGH I:  
Gas Hydrates 1 (OMS-2015) (V. 1)**  
Thursday June 25 14:00 Queens 4

**Chair:** T. Komai, Tohoku Univ, Japan

**Numerical Simulation of Gas Hydrate Bearing Sediments for Enhanced Recovery Using Partial Oxidation Method**

Takeshi Komai, Tohoku Univ; Yasuhide Sakamoto, AIST; Atsushi Kishita, Noriaki Watanabe, Tohoku Univ, Japan

**Adiabatic Conversion Method for the Development of Marine Hydrate Deposits**

Alexsandr N. Gulkov, Victor D. Lapshin, Vacheslav V. Slesarenko, Alexey A. Morozov, Sergey F. Solomennik, Far Eastern Federal Univ, Russia

**P-wave Velocity Monitoring during the Dissociation of Methane Hydrate Bearing Sand by Using Giant Pressure Cell**

Tatsuya Yokoyama, Makoto hoshino, Eiki Nakayama, Masaki Ono, Hideki Saito, OYO Corp, Japan

**Depressurization and Electrical Heating of Hydrate Sediment for Gas Production**

Hideki Minagawa, Takuma Ito, Sho Kimura, Hiroaki Kaneko, Shohei Noda, Hideo Narita, National Inst of AIST, Japan

**Geological Constraint on Gas Hydrate Accumulation in Qilian Mountain Permafrost – A Case in DK-9 Hole**

Zhengquan Lu, Gangyi Zhai, Yongqing Zhang, Shiqi Tang, Panpan Tan, Ting Wang, Hui Liu, Youhai Zhu, China Geological Survey, China

**Effect of Fines on Shear Strength of Methane Hydrate Bearing Sand**

Masayuki Hyodo, Akira Nishimura, Shintaro Kajiyama, Yamaguchi Univ, Japan

**Experimental Study of Mud Erosion Phenomena at Sand Mud Alternate Layer**

Hiroyuki Oyama, Shungo Abe, Toru Sato, Univ of Tokyo, Japan

**140. ADVANCED SHIP TECH VIII:  
Shipbuilding Simulation (V. 4)**  
Thursday June 25 14:00 Queens 5

**Chair:** Ju-Hwan Cha, Mokpo National Univ, Korea

**Co-Chair:** Myung-II Roh, Seoul National Univ, Korea

**Multi-physics Framework for Advanced Simulation in Shipbuilding**

Seung-Ho Ham, Jeong-Woo Hong, Ki-Su Kim, Sol Ha, Myung-II Roh, Seoul National Univ; Ju-Hwan Cha, Mokpo National Univ; Namkug Ku, Dong-eui Univ, Korea

**Co-simulation of Multibody System Dynamics and Moving Particle Semi-implicit Method for Heavy Load Lifting Operations in Shipyards**

Sol Ha, Ki-Su Kim, Seung-Ho Ham, Myung-Il Roh, Seoul National Univ; Namkug Ku, Dong-eui Univ, Korea

**Development of Production Plan Assessment System for Productivity Improvement Using AHP Method**

SeungHoon Nam, MyungGi Back, SangMoo Lee, Seoul National Univ; InHyuck Hwang, Samsung Heavy Industires; JongGye Shin, Seoul National Univ, Korea

**Competitiveness Advancement Strategy for Offshore Plant Construction: In Terms of Productivity and Simulation**

Jong Hun Woo, Korea Maritime and Ocean Univ Myung Gi Back, Seoul National Univ; Philippe Lee, Xinnos Co; Jung Goo Park, Hee Young Heo, Samsung Heavy Industry, Korea

**A Study of Data Qualification for Shipyard Manufacturing Scheduling Simulation**

Philippe Lee, Xinnos Co Jong-Hak Lee, Jong-Ho Nam, Yang-Ryul Choi, Korea Maritime and Ocean Univ, Korea

**141. ARCTIC SCI & TECH III:  
Arctic Mechanics 2 (V. 1)**

Thursday June 25 14:00 Queens 6

**Chair:** A.T. Bekker, Far Eastern Federal Univ, Russia

**Co-Chair:** Ling Zhu, Wuhan Univ of Tech, China

**A Study on Statistical Analysis of Local Ice Pressures Measured during the Arctic Voyage of the IBRV ARAON**

Yong-Hyeon Kwon, Jong-Hyun Lee, Gyeongsang National Univ; Kyungsik Choi, Korea Maritime & Ocean Univ; Tak-Kee Lee, Gyeongsang National Univ, Korea

**Impulse Model for Estimation of Local and Global Ice Loads on Fixed Offshore Ice-resistant Structures**

Anatolii Aleksandrov, Roman Matantsev, Krylov State Resesarch Centre, Russia

**Finite Element Analysis of New Structure against Ice Impact**

Chuan Cao, Drilling Research Institute, CNPC, China

**A New Ice Load-Response Model for Structural Design of Ice Classed Ships**

Ling Zhu, Shiyun Shi, T.X. Yu, Wuhan Univ of Tech, China

**Stress - Strain Characteristics of Frozen Silty and Clayey Soils**

Burak Evirgen, Mustafa Tuncan, Ahmet Tuncan, Anadolu Univ, Turkey

**The Fracture Laws of Ice Edge in its Interaction with the Shaft Surface of the Structure [Proceedings only]**

Vladimir G Tsuprik, Far Eastern Federal Univ, Russia

**THURSDAY 16:20**

**142. REES OCEAN & WIND ENERGY XIX:  
OWC 7 (V 1)**

Thursday June 25 16:20 Kohala 1

**Chair:** S. Nagata, Saga Univ, Japan

**Power Flow Analysis and Dynamic Performance of a Nonlinear Vibration Energy Harvesting System Coupled to a SD Oscillator**

Yuan Li, Yeping Xiong, Univ of Southampton, UK

**Measurement System for Evaluating Wanted and Unwanted Forces on a Point Absorbing Wave Energy Converter during Off-Shore Operation**

Liselotte Ulvgård, Ling Hai, Mats Leijon, Uppsala Univ, Sweden

**Wave Energy Converter Using a Compressed Type of Flexible Piezoelectric Device**

Hidemi Mutsuda, Motoki Otake, Kenichi Morisaki, Yoshikazu Tanaka, Yasuaki Doi, Hiroshima Univ, Japan

**Automation of Subsea Connection for Clusters of Wave Energy Converters**

Flore Remouit, Uppsala Univ, Sweden; Miguel F.P. Lopes, Pedro Pires, WavEC; Luis Sebastiao, Blue Edge, Portugal; Magnus Rahm, Uppsala Univ, Sweden

**A Nonlinear Response Amplitude Operator for Complex Maritime Dynamical Systems, Wave Energy Converters and Offshore Applications**

Georgios D. Gkikas, MARIN, Netherlands

**143. HYDRODYNAMICS XV:  
Multi-structure hydrodynamics (V. 3)**

**Thursday**

**June 25**

**16:20**

**Kohala 2**

**Chair:** Tsung-Chow Su, Florida Atlantic Univ, USA

**A Two-Dimensional Numerical Study of Resonant Waves between Two Adjacent Barges with Different Drafts**

Nima Moradi, Tongming Zhou, Liang Cheng, Univ of Western Australia, Australia

**Numerical Simulation of Multi-body Floating Structure Systems in Deep Sea**

Hao Wang, Tingqiu Li, Jianjian Xin, Wuhan Univ of Tech, China; W. G. Price, Pandeli Temarel, Univ of Southampton, UK

**Integrative Performance Optimization of Hybrid Monohull Based on Numerical Simulation and Model Experiment**

Jialong Jiao, Shuzheng Sun, Huilong Ren, Harbin Engineering Univ, China

**A Fundamental Study on Two-Way Coupled Analysis of SPH and Multibody Dynamics**

Sung-Pil Kim, Jong-Chun Park, Pusan National Univ; Jeong-Hyun Sohn, Pukyong National Univ; Han-Sik Ryu, Jeong-Han Lee, FunctionBay Inc, Korea

**Influences on Dynamic Positioning System Capability**

Cédric Brun, Damien Coache, Bureau Veritas, France; Yann Giorgiutti, Flávia Rezende, Bureau Veritas, Brazil

**Wave Pattern in Cloaking Phenomenon around a Body Surrounded by Multiple Vertical Circular Cylinders**

Takahito Iida, Masashi Kashiwagi, Mariko Miki, Osaka Univ, Japan

**Computation of Hydrodynamic Interaction of Two Bodies in Close Proximity with the Panel-Free Method [Oral presentation]**

Junshi Wang, Heather Peng, Wei Qiu, Memorial Univ of Newfoundland, Canada

**144. REES OCEAN & WIND ENERGY XX:**

**Wind Energy Panel**

**Thursday June 25 16:20 Kohala 3**

**Chair:** F Vorpahl, Fraunhofer IWES, Germany

**Co-Chair:** M Muskulus, NTNU, Norway

*Panel Discussions*

**145. OCEAN ECHNOLOGY XIII:**

**VLFS & Floating Structures 2(V. 1)**

**Thursday June 25 16:20 Kohala 4**

**Chair:** ChangSeop Kwon, Samsung Heavy Industries, Korea

**Co-Chair:** Olga V Shinkarenko, Krylov State Research Centre, Rus

*Session 135 continues here!*

**146. HPM X:**

**Fatigue & Fracture 3 (V. 4)**

**Thursday June 25 16:20 Kings 1**

**Chair:** T. Tsakalakos, Rutgers Univ, USA

**Co-Chair:** Tom McGaughy, Arcelor Mittal Global R&D, USA

**New Simplified Method to Determine SIF for Welded T-joints Made of Plates Based on Maximum Crack Opening Displacement**

Jingjie Chen, Yi Huang, Yugang Li, Dalian Univ of Tech, China

**Prediction of Brittle Fracture Initiating at Defects in the End of Complete Joint Penetration Groove Welds**

Takuya Akahoshi, Koji Azuma, Sojo Univ; Tsutomu Iwashita, Ariake National College, Japan

**Characterization of Minimum Base Metal CTOD Values to Screen for API RP2Z Preproduction Qualification**

Tom McGaughy, Paul Zelenak, EWI; Murali Manohar, Arcelor Mittal Global R&D, USA

**Determination of Critical CTOD in X65 Grade Steel Using Circumferentially Cracked Bar**

Domenico Gentile, Univ of Cassino, Italy; Antonio Carlucci, SAIPEM, France; Gianluca Iannitti, Techdyn Engineering; Nicola Bonora, Italo Persechino, Univ of Cassino, Italy

**Practical Application of a Probabilistic Fracture Mechanics Approach in an Offshore Structure**

Matthias Schubert, Matrisk GmbH, Switzerland; Morten Tobias Lind, LICEngineering; Birger Nielsen, Kim Lyngberg, Jakob Plagborg-Møller, DONG Energy E&P, Denmark



**147. VORTEX-INDUCED VIBRATION IV:  
Vortex Shedding Suppression (V. 3)**

**Thursday June 25 16:20 Kings 2**

**Chair:** Jin S Chung, ISOPE, USA

**Co-Chair:** Deok Keun Lee, KISTEC, Korea

**The Effect of a Screen Shroud on Vortex-Induced Vibration of a Circular Cylinder and its Wake Characteristics**

Azlin Mohd Azmi, Tongming Zhou, Univ of Western Australia, Australia; Yu Zhou, Jiangang Chen, Harbin Inst of Tech, China; Liang Cheng, Univ of Western Australia, Australia

**Wind Tunnel Experiment on Suppression of Vortex Induced Vibration for Circular Cylinder with Fairings**

Jiasong Wang, Suijuan, Zhongxu Tian, Shiquan Jiang, Liangbin Xu, Leixiang Sheng, Shanghai Jiao Tong Univ, China

**CFD Evaluation of VIV Suppression of a Cylinder with Multiple Control Rods Subjected to a Shear Flow**

Hongjun Zhu, Jie Yao, Southwest Petroleum Univ, China

**Development of New Device for Reduction of Fluctuating Lift on Riser Pipe**

Sadato Sugiyama, Hiroyuki Yamamoto, Mitsubishi Heavy Industries; Akio Usami, Koki Hirano, Nippon Kaiji Kyokai; Hideyuki Suzuki, Masahiko Ozaki, Univ of Tokyo; Masanori Kyo, Eigo Miyazaki, JAMSTEC, Japan

**The Case Study of Vortex Induced Vibration of the Over-sea Bridges and Vibration Suppression**

Deok Keun Lee, Sang Cheol Lee, Dong Woo You, KISTEC, Korea

**148. SUBSEA-UMBILICALS-PIPELINE-RISER-CABLE IX:  
Lateral Buckling & Walking – Continue (V. 2)**

**Thursday June 25 16:20 Kings 3**

*Session 138 continues here!*

**149. OMGH II:  
Gas Hydrates 2 (OMS-2015) (V. 1)**

**Thursday June 25 16:20 Queens 4**

**Chair:** Hiroyuki Oyama, Univ of Tokyo, Japan

**Co-Chair:** Zhengquan Lu, China Geological Survey, China

**Displacement of Solution and Hydrates Formation in Cooled Glass Beads**

Mingjun Yang, Wen Jing, Yongchen Song, Yuechao Zhao, Yu Liu, Dalian Univ of Tech, China

**Validation of Numerical Model for Methane Hydrate Formation in Porous Media**

Kentaro Kamada, Toru Sato, Hiroyuki Oyama, Takero Yoshida, Univ of Tokyo, Japan

**The Reverse Circulation (RC) Drilling Techniques for the Mineral Resources Exploration and Production in Ocean**

Yongqin Zhang, Linxia Zhang, Hanbao Wang, Inst of Exploration Techniques, China

**Shear Behaviour and Localized Deformation of Methane Hydrate-bearing Sand by High Pressure Plane Strain Shear Tests**

Shintaro Kajiyama, Akira Nishimura, Masayuki Hyodo, Yamaguchi Univ, Japan

**150. ADVANCED SHIP TECH IX:  
Ultimate Strength 1 (V. 4)**

**Thursday June 25 16:20 Queens 5**

**Chair:** M Fujikubo, Osaka Univ, Japan

**Experimental Research on Ultimate Strength of Plates under Cyclic Axial Loads**

Hu-wei Cui, Ping Yang, Chong Cui, Wuhan Univ of Tech, China

**Calculation on Ultimate Strength of Stiffened Plates with Initial Imperfection**

Hui Deng, Weiguo Wu, Jin Gan, Jifeng Zhang, Wuhan Univ of Tech, China

**Investigations on the Dynamic Collapse Behaviour of Thin-Walled Structures and Plate Panels for Shipbuilding Applications**

Thomas Lindemann, Eldor Backhaus, Albert Ulbertus, Anna Oksina, Patrick Kaeding, Univ of Rostock, Germany

**Study on Buckling/Ultimate Strength of Continuous Stiffened Panel under In-plane Shear and Thrust**

Tomoki Takami, National Maritime Research Inst; Hiroaki Ogawa, Japan Marine United; Tomoaki Miyata, Oosaka Univ; Takahiro Ando, National Maritime Research Inst; Akira Tatsumi, Osaka Univ; Shinichi Hirakawa, Japan Marine United; Yoshiteru Tanaka, National Maritime Research Inst; Masahiko Fujikubo, Osaka Univ, Japan

**A Study on Buckling and Ultimate Strength of the Reinforced Perforated Plate with Regard to Stiffening Methods around the Cutout**

Rachadi Zakaria, Jeong-Hyeon Kim, Pusan National Univ; Hyang-Duk Seo, Hyung-Joon Ahn, Sungdong Shipbuilding & Marine Engineering; Joo-Shin Park, Samsung Heavy Industries; Jae-Myung Lee, Pusan National Univ, Korea

**151. ARCTIC SCI & TECH IV:  
Arctic Test Methods (V. 1)**

**Thursday June 25 16:20 Queens 6**

**Chair:** Wojciech Popko, Fraunhofer-IWES, Germany

**Co-Chair:** Woojin Kim, DSME, Korea;

**Validation of Määttänen–Blenkarn Ice Model for Ice–Structure Interaction against Ice Tank Tests**

Wojciech Popko, Sofia Georgiadou, Fraunhofer-IWES, Germany

**Ice Resistance Estimation and Comparison the Result with Model Test**

Woo Jin Kim, Sung Pyo Kim, In Hwan Sim, Jae Wook Hur, Daewoo Shipbuilding & Marine Engineering; Hyun Soo. Kim, Cheol Ho. Ryu, Inha Technical College, Korea

**Experimental Study of Ice Loads in a Test Basin under Action of Granulated and Columnar Crystal Ice on an Elastic Model**

Gennady Kryzhevich, Marina Karulina, Evgeny Karulin, Krylov State Research Centre, Russia

**A Note on Ice Tank Experimentation [Proceedings only]**

Hiroimitsu Kitagawa, Ocean Policy Research Foundation, Japan

**FRIDAY 08:00**

**152. REES OCEAN & WIND ENERGY XXI:**

**OTEC (V. 1)**

**Friday June 26 08:00 Kohala 1**

**Chair:** Hyeon Ju Kim, Korea Research Inst of Ships & Ocean Eng., Korea

**OTEC Cycle Applying a Liquid-vapor Ejector and Motive Pump**

Jung-In Yoon, Chang-Hyo Son, Sung-Hoon Seol, Chang-Min Son, Pukyong National Univ; Ho-Saeng Lee, Hyeon-Ju Kim, KRISO, Korea

**A Novel Working Fluid for Building Air-conditioning and Ocean Thermal Energy Conversion**

Ho-Saeng Lee, KRISO; Myungkyu Park, Joo-Hyung Kim, Inha Univ; Hyeon-Ju Kim, KRISO; Dongsoo Jung, Ho-Saeng Lee, Myungkyu Park, Joo-Hyung Kim, Hyeon-Ju Kim, Dongsoo Jung

**Performance Characteristics of 20kW OTEC Pilot Plant in Korea**

Ho-Saeng Lee, Young-Kwon Jung, Young-Seok Kim, Seung-Teak Lim, Hyeon-Ju Kim, Korea Research Inst of Ships & Ocean Engineering, Korea

**An Experimental Study on the Motion of OTEC Floating Body**

Dong Yeop Lee, Bo Woo Nam, Dong Ho Jung, Sa Young Hong, Hyeon-ju Kim, Korea Research Inst of Ships & Ocean Engineering, Korea

**153. HYDRODYNAMICS XVI:**

**Reliability 1 (V. 3)**

**Friday June 26 08:00 Kohala 2**

**Chair:** Qingwei Ma, City Univ London, UK

**The Role of Fluid Compressibility in Predicting Slamming Loads during Water Entry of Flat Plates**

Z. H. Ma, L. Qian, D. M. Causon, C.G. Mingham, Manchester Metropolitan Univ; T. Mai, D. Greaves, A. Raby, Plymouth Univ, UK

**Investigation of Hydroelasticity: Wave Impact on a Truncated Vertical Wall**

Tri Mai, Zheng Zheng Hu, Deborah Greaves, Alison Raby, Plymouth Univ, UK

**Numerical and Experimental Studies of Interaction between FPSO and Focusing Waves**

Q.W. Ma, S. Yan, City Univ London; Deborah Greaves, Tri Mai, Alison Raby, Plymouth Univ, UK

**OpenFOAM Finite Volume Method Implementation of a Fully Nonlinear Potential Flow Model for Simulating Wave-Structure Interactions**

Arshad Mehmood, David I. Graham, Kurt Langfeld, Deborah M. Greaves, Plymouth Univ, UK

**Runup of Double Solitary Waves on a Vertical Wall**

Wei Wu, Hua Liu, Shanghai Jiao Tong Univ, China

**Wave Forces on Horizontal Cylinder due to Nonlinear Focused Wave Groups**

Ningbo Gao, Jianmin Yang, Xin Li, Shanghai Jiao Tong Univ, China; Wenhua Zhao, Univ of Western Australia, Australia

**154. REES OCEAN & WIND ENERGY XXII:**

**Tidal & Current Energy 1 (V. 1)**

**Friday                  June 26                  08:00                  Kohala 3**

**Chair:** Li Zhang, CNOOC Research Inst, China

**Co-Chair:** Nathan Tom, National Renewable Energy Lab, USA

**Numerical Simulation on Hydrodynamic Performances of Tidal Current Horizontal Axis Twin-Turbines**

Fengmei Jing, Weijia Ma, Harbin Engineering Univ; Yang Liu, Shanghai Merchant Ship Design & Research Inst; Shuqi Wang, Harbin Engineering Univ, China

**Numerical Simulation for Cavitation around Horizontal-axis Counter-rotating Type Propellers in a Tidal Stream Power Unit (in Preparation for Suppressing Cavitation)**

Bin Huang, Toshiaki Kanemoto, Kyushu Inst of Tech, Japan

**Experimental Study on New Active Yaw Controller in Scale Model of Tidal Current Turbines**

Jin Hwan Ko, Jihoon Kim, KIOST; Hoon Cheol Park, Konkuk Univ; Jong Su Yoon, Jin Hun Choo, Tae Gyu Hwang, Korea Marine Equipment Research Inst, Korea

**Research on the Key Technologies for Tidal Power System with Low Current Velocity**

Li Zhang, Zhichuan Li, Gang Xiao, CNOOC Research Inst; Liang Zhang, Harbin Engineering Univ, China

**155. OCEAN TECHNOLOGY XIV:**

**FLNG, & FPSO 1 (V. 1)**

**Friday                  June 26                  08:00                  Kohala 4**

**Chair:** H G Sung, Korea Research Inst of Ships & Ocean Engineering (KRISO), Korea

**Exergy Analysis of Liquefied Natural Gas (LNG) Boil-off Gas (BOG) Re-liquefaction Cycles for On-board Application**

Junghyun Yoo, Cheonkyu Lee, KAIST; Jisung Lee, Korea Aerospace Research Inst; Sangkwon Jeong, KAIST, Korea

**A Study on Fatigue Characteristic of an FPSO Flare Tower in Offshore West Africa**  
Ho Young Cho, Eun Byeol Cho, Sung Woo Seo, Byung Gook Kim, Joo Kyung Joo,  
Samsung Heavy Industries, Korea

**Generation of Multiple Equivalent Regular Waves for Preliminary Analyses of Floating Production Systems**  
Caio S. Brandão, Fabricio Nogueira Correa, Breno Pinheiro Jacob, COPPE/UFRJ, Brazil

**Hydrodynamic Analysis of Semisubmersible Platform to Operate in Deepwater Fields in Mexican Part of the Gulf of Mexico**  
AO Vazquez-Hernandez, Instituto Mexicano del Petroleo, Mexico; SK Cho, HG Sung, NW Kim, JP Hong, KRISO, Korea; A Cruces, E Olivera, JA Martinez, Instituto Mexicano del Petroleo, Mexico

**Investigation on the Hydrodynamic Performance of a FLNG in South China Sea [Proceedings only]**  
Jingrui Zhao, Bin Xie, CNOOC Research Inst, China

**156. HPM XI (V. 4)**  
**Advances in Welding Technology 1**

**Friday June 26 08:00 Kings 1**

**Chair:** HyunWoo Jin, ExxonMobil Research & Engineering, USA

**Relaxation of Welding Residual Stress in CRA-lined Pipes during Reel-lay Installation**  
T Sriskandarajah, Daowu Zhou, Lingjun Cao, Subsea 7, UK

**Control of Weld Bead Shape with Paralleled Electrodes on Seam Welding of SAWL Pipes**  
Shohei Kozuki, Atsushi Ishigami, Naoya Hayakawa, Oi Kenji, JFE Steel, Japan

**Numerical Study on Heat Straightening Process for Welding Distortion of a Stiffened Panel Structure**  
Juan Blandon, Naoki Osawa, Osaka Univ; Sano Masanori, Naikai Zosen Corp; Sherif Rashed, Hidekazu Murakawa, Osaka Univ, Japan

**Welding Residual Stress Relaxation at the Weld Bead Toe of a Non-load Carrying Fillet Joint under Cyclic Loading Condition**  
Seiichiro Tsutsumi, Kasumi Morita, Riccardo Fincato, Hideto Momii, Osaka Univ, Japan

**Numerical Study on Mechanism of Twisting Deformation Observed in Bilge Block during Welding Assembly and Its Control**  
Masanori Sano, Naikaizosen Corp; Juan Blandon, Toshiyuki Miyazaki, Sherif Rashed, Yasuhisa Okumoto, Hidekazu Murakawa, Osaka Univ, Ja pan

**Numerical Method for Laser Welding Simulation Using Particle Method and Finite Element Method**  
Isaku Chimura, Yousuke Uemura, Yousuke Kawahito, Hidekazu Murakawa, Seiji Katayama, Osaka Univ, Japan

**157. REES OCEAN & WIND ENERGY XXVI:**  
**IEA Wind OC5 Workshop 1**

**Friday                      June 26                      09:00 – 17:00                      Kings 2**

**Chair:** F Vorpahl, Fraunhofer IWES, Germany

**Co-Chair:** A Robertson.NREL, USA

**158. SUBSEA-UMBILICALS-PIPELINE-RISER-CABLE X:  
Flexibles & Umbilicals (V. 2)**

**Friday                      June 26                      08:00                      Kings 3**

**Chair:** Carlo M Spinelli, ENI, Italy

**Co-Chair:** Joe Jin, ExxonMobil Development, USA

**Proposed New Failure Criterion for Bending Stiffeners**

Luciano Valdomiro dos Santos, Edison Gonçalves, Univ of Sao Paulo, Brazil

**Critical Process Optimisation for Robust Flexible Riser Manufacture**

John Gerard Rafferty, Justyna Smolinska, GE Oil & Gas, UK

**Technical Challenges of Unbonded Flexible Risers in HPHT and Deepwater Operations**

Yijun Shen, Wood Group Kenny, UK; Paul Jukes, Wood Group Kenny, USA

**Effect of Surface Contact Stiffness on Stress Analysis of Umbilicals**

Howard Wang, ExxonMobil Development, USA; Naiquan Ye, MARINTEK; Tianjiao Dai, Svein Saevik, NTNU, Norway

**Coupled Analysis and Assessment of a Surface Buoy and Umbilical System in Irregular Waves**

Yusong Cao, Galin Tahchiev, Fuwei Zhang, MARINTEK USA; Joe Jin, Dale Reid, ExxonMobil Development, USA

**Fatigue Analysis Methods of Dynamic Umbilical**

Oleg Gaidai, Naiquan Ye, MARINTEK, Norway; Joe Jin, Dale Reid ExxonMobil Development, USA; Philippe Mainçon, SINTEF Materials and Chemistry, Norway

**159. OMGH III:  
Gas Hydrates 3 (OMS-2015) (V.1)**

**Friday                      June 26                      08:00                      Queens 4**

**Chair:** Zhengquan Lu, China Geological Survey, China

**Co-Chair:** T. Komai, Tohoku Univ, Japan

**Numerical Simulation of Mud Erosion by Water Flow in Porous Media Using Lattice Boltzmann Method**

Takero Yoshida, Tosu Sato, Hiroyuki Oyama, Univ of Tokyo, Japan

**Friction Strength between Well and Sediment under Confining Pressure for Methane Hydrate Production Well Integrity**

Masayo Kakumoto, Jun Yoneda, Jun Katagiri, Kuniyuki Miyazaki, Norio Tenma, Kazuo Aoki, National Inst of AIST, Japan

**Electric-Submersible-Pump Performance under Methane/Water/Methane-Hydrate Pipe Flows**

Tsutomu Shimizu, Yoshitaka Yamamoto, Norio Tenma, Hideo Narita, AIST, Japan

**Experimental Study on Gas Hydrate Inhibitors for Hydrate Control during Deep-Sea Drilling**

Xin Zhao, Zhongsong Qiu, Guowei Zhou, Weian Huang, Ganghua Chen, China Univ of Petroleum, China

**160. ADVANCED SHIP TECH X:  
Ultimate Strength 2 (V. 4)**

**Friday June 26 08:00 Queens 5**

**Chair:** Patrick Kaeding, Univ of Rostock, Germany

**Container Ship Ultimate Strength Subject to Combined Bending and Torsional Moments Considering Corrosion Effects**

Jinju Cui, Deyu Wang, Ning Ma, Shanghai Jiao Tong Univ, China

**Effect of Shear Stresses onto the Hull Girder Ultimate Strength of a Containership**

Masahiko Fujikubo, Osaka Univ, Japan; Marco Gaiotti, Nicola Grasso, Cesare Mario Rizzo, Univ of Genova, Italy

**A Study on the Simplified Calculation Method for the Hull Girder Ultimate Strength of Damaged Hull Structures**

Kimihito Toh, Shunsuke Maeda, Takao Yoshikawa, Kyushu Univ, Japan

**Simplified Evaluation of Brittle Crack Arrest Toughness in Heavy-Thick Plate by Combined Small-scale Tests**

Tepei Okawa, Hiroyuki Shirahata, Kiyotaka Nakashima, Kazuhisa Yanagita, Takehiro Inoue, Nippon Steel & Sumitomo Metal, Japan

**161. ARCTIC SCI & TECH V:  
Arctic Operations 1 (V. 1)**

**Friday June 26 08:00 Queens 6**

**Chair:** T. Kokkinis, ExxonMobil Upstream Research Co, USA

**Co-Chair:** Igor Buzin, AARI, Russia

**The Influence of Floating Ice Conditions on Maintaining the Heading of Drill-Ships [Oral presentation]**

Mohamed Sayed, Ivana Kubat, David Watson, National Research Council; Brian Wright, B Wright & Associates; Robert Gash, Jim Millan, National Research Council, Canada

**The Influence of Operational Risks for Ice Transit Simulations**

Robert Bridges, Kaj Riska, Total SA, France

**Port and Coastal Logistics Infrastructure Development on the Shelf of the Arctic Zone of the Russian Federation**

V. I. Pavlenko, E. K. Glukhareva, S.Yu.Kutsenko, Arkhangelsk Scientific Centre, Russia

**Analysis of Outside Factors' Influence on Perspectives of Container Traffic Development in Arctic Region**

Andrey D Burmenskiy, Nikolay A Taranukha, Komsomolsk-na-Amure State Technical Univ, Russia

**FRIDAY 10:30**

**162. HMS I:  
JIP (V. 4)**

**Friday June 26 10:30 Kings 1**

**Chair:** H W Jin, ExxonMobil Research & Engineering, USA

*Postponed to 2016*

**163. HYDRODYNAMICS XVII:  
Reliability 2 (V. 3)**

**Friday June 26 10:30 Kohala 2**

**Chair:** Shiqiang Yan, City Univ London, UK

**Co-Chair:** K. Murali, IIT Madras, India

**Simulation of Breaking Wave Impact on a Vertical Wall with a Compressible Two-Phase Flow Model**

F. Gao, Z. H. Ma, J. Zang, Univ of Bath; D.M. Causon, C.G. Mingham, L. Qian, Manchester Metropolitan Univ, UK

**CFD Simulation and Validation of Breaking Wave Impact Events in Irregular Sea States**

Anders Östman, Csaba Pákozdi, Carl Trygve Stansberg, MARINTEK; Jan Tore Fagertun, Tone M. Vestbøstad, Statoil, Norway

**Impact Analysis Using CFD – A Comparative Study**

Neil Southall, Lloyd's Register, UK; Sangkyu Choi, Samsung Heavy Industries, Korea; Yongwon Lee, Lloyd's Register, UK; Chunbeom Hong, Samsung Heavy Industries; Spyros Hirdaris, Lloyd's Register Asia, Korea; Nigel White, Lloyd's Register, UK

**CFD Simulation of an Extreme Wave Impact on a Ship**

Veniamin M. Dorozhko, Inst of Automation & Control Processes; Victor G. Bugaev, Maksim V. Kitaev, Far Eastern Federal Univ, Russia

**Extreme Wave Loads on a Vertical Cylinder With and Without Currents**

Dimitris Stagonas, Eugeny Buldakov, Richard Simons, Univ College London, UK

**Numerical and Experimental studies of Moving Cylinder in Uni-directional Focusing Waves**

S Yan, Q W Ma, City Univ London, UK; V Sriram, IIT Madras, India; L Qian, P.J.M. Ferrer Manchester Metropolitan Univ, UK; T. Schlurmann, Leibniz Univ Hannover, Germany

**164. REES OCEAN ENERGY XXIII:  
Tidal & Current Energy 2 (V. 1)**

**Friday June 26 10:30 Kohala 3**

**Chair:** Mathias Arnold, Univ of Stuttgart, Germany

**Actuator Disc Model of a Tidal In-Stream Energy Converter - Voith Hytide®**

Frank Biskup, Philipp Daus, Lukas Engbroks, Voith Hydro Ocean Current Technologies; Matthias Arnold, Stuttgart Wind Energy, Germany



**A Measurement Based Analyses of the Hydrokinetic Energy in the Gulf Stream**

Maria Carolina P. M. Machado, James H. VanZwieten, Allan P. O. Callou, Isabella Pinos, Florida Atlantic Univ, USA

**Supply Effect of Nutrient Load Flowing to Shido Bay by Open Floodgates**

Machi Miyoshi, Tokushima Bunri Univ; Junya Miyoshi, Inst of Regional Resources, Kengo Fushimi, Hiroki Shirai, Jumpei Nagao, Hiroaki Tagawa, Tokushima Bunri Univ, Japan

**165. OCEAN TECHNOLOGY XV:  
FLNG, & FPSO 2 (V. 1)**

**Friday**

**June 26**

**10:30**

**Kohala 4**

**Chair:** Jianhui Liu, Offshore Oil Engineering, China

**Co-Chair:** Fabricio N Correa, COPPE/UFRJ, Brazil

**A Study on the Supplementary Towing System for an FPSO Using Active Thrusters**

Youngjun You, Jaewook Hur, Junhyung Jung, Daewoo Shipbuilding & Marine Engineering, Korea

**Determination of Roll Damping Coefficients for an FPSO through Model Tests and CFD Analysis**

Chang Seop Kwon, Hyun Joe Kim, Dong Woo Jung, Sung Wook Lee, Samsung Heavy Industries, Korea

**Motion Response Analysis of Multi-point Moored FPSO**

Guo-qing Feng, Xue-yun Jiang, Hui-long Ren, Qing-yue Zhang, Harbin Engineering Univ, China

**Gangway Motion Evaluation of an Accommodation Vessel Operating along a Turret Moored FPSO**

Binbin Li, Wei Huang, Bureau Veritas Marine & Offshore; Rodrigo Araujo, Poseidon Offshore; Julien Boulland, Xiaobo Chen, Bureau Veritas Marine & Offshore, Singapore

**Security Assessment of Soft Yoke Moored FPSO for the Hinge Point Problems**

Yanlin Wang, Zheliang Fan, Yu Du, Shanshan Sun, Guoxun Zhang, Qianjin Yue, Dalian Univ of Tech, China

**166. HPM XII (V. 4)  
Advances in Welding Technology 2**

**Friday**

**June 26**

**10:30**

**Kings 1**

**Chair:** H Murakawa, Osaka Univ, Japan

**Co-Chair:** Hyun Chung, KAIST, Korea

**Determination of Heat Source Model Parameters for VP-GMAW**

Minseok Kang, Nabeel Arif, Adeel Ikram, Hyun Chung, KAIST, Korea

**Selection of Micro-Jet Gases in Steel Welding to Promote Higher Plastic Properties**

Tomasz Węgrzyn, Silesian Univ of Tech; Jan Piwnik, Białystok Unive Tech, Poland; Abilio P. Silva, Univ of Beira Interior, Portugal; Wojciech Majewski, AM-HP Sp. ZOO; Łukasz Wszolek, OSZ Diagno-Test, Poland

**Effect of the Micro-jet Cooling Gas Intensity in Impact Load Resistance of Welds**

Damian Hadryś, Higher School of Labour Safety Management; Jan Piwnik, Technical Univ of Bialystok, Poland; Abilio Silva, Univ of Beira Interior, Portugal; Wojciech Majewski, AM-HP Sp. ZOO, Poland

**Large-Scale Welding Deformation Analysis of Ship Structure by Idealized Explicit FEM Using Multigrid Method**

Kazuki Ikushima, Kohei Kaigaishi, Masakazu Shibahara, Osaka Prefecture Univ, Japan

**Study on Solidification Cracking Under High-speed Narrow Gap Welding with Tandem Torches**

Masakazu Shibahara, Kazuki Ikushima, Takaaki Harada, Osaka Prefecture Univ; Fumiaki Kimura, Takuya Morimoto, Nippon Steels & Sumikin Engineering, Japan

**167. REES OCEAN & WIND ENERGY XXVI:  
IEA Wind OC5 Workshop 2**

**Friday June 26 09:00 – 17:00 Kings 2**

**Chair:** F Vorpahl, Fraunhofer IWES, Germany

**Co-Chair:** A Robertson, NREL, USA

**168. SUBSEA-UMBILICALS-PIPELINE-RISER-CABLE XI:  
Integrity Management (V. 2)**

**Friday June 26 10:30 Kings 3**

**Chair:** Wan C. Kan, ExxonMobil Development Co, USA

**Co-Chair:** Shane Siebenaler, Southwest Research Inst, USA

**Evaluation of Distributed Acoustic Sensing Leak Detection Technology for Offshore Pipelines**

Shane Siebenaler, Southwest Research Inst; Venkat R. Krishnan, ExxonMobil Upstream Research; Paul Lumens, Shell Global Solutions International; Glenn Gesoff, BP America; Nikos Salmatanis, Chevron Pipeline, USA

**Numerical Simulation on Anchor Penetration into the Seabed above Submarine Pipelines**

Zhenning-Wang, Langxiong-Gan, Lei-Zhang, Yuanzhou-Zheng, Wuhan Univ of Tech, China

**Finite Element Modeling, Design, and Repair of a Deep Seawater Intake Pipeline**

Gerg Rocheleau, Dale Jensen, Makai Ocean Engineering, USA

**Numerical Analysis of Stress Intensity Factors of a Crack in the Composite Patch Repair**

Yu Zhang, Shi Xian Xu, Nao-Aki Noda, Meng Lan Duan, Ji Jun Gu, Univ of Petroleum-Beijing, China

**Numerical Study of Local Scour of Pipeline under Combined Wave and Current Conditions**

Bingchen Liang, Duo Li, Xinying Pan, Ocean Univ of China; Guangxin Jiang, Alcatel-Lucent Qingdao China, China

**Configuration and Operation Optimization of Deepwater Drilling Riser Considering of Evacuation Due to Typhoon**

Meisheng Qi, Langqing Li, Linsong Song, Yongming Cheng, Dongbao Wang, Xiaofei Zhang, China Oilfield Services, China

**Study of Trawling Effect on Subsea Pipeline in East China Sea [Proceedings only]**

Xu Jia, Lusheng Jia, Jun Huang, CNOOC Research Inst, China

**FRIDAY 10:30**

**KEYNOTE IV**

**Friday                  June 26                  10:30                  Queens 4**

**Deep Ocean Mining Systems and Technology, Past and Present  
[Oral presentation]**

Jin S Chung, ISOPE, USA

**KEYNOTE V (V.1)**

**Friday                  June 26                  10:50                  Queens 4**

**Introduction:** Jin S Chung, ISOPE, USA

**The Summary of Environmental Baseline Survey for Mining the Cobalt-Rich  
Ferromanganese Crust on Deep Seamount in Japan Fs License Area**

Teruyoshi Narita, Junya Oshika, Nobuyuki Okamoto, Japan Oil, Gas and Metals National Corporation, Japan

**169. OMGH IV: Deep Ocean Mining 1: (OMS-2015)  
Invited Presentations on Recent Programs, Technology  
Assessment, Exploration, Environment**

**Friday                  June 26                  10:30                  Queens 4**

**Chair:** Jin S Chung, ISOPE, USA

**The Solwara 1 Deepwater Mining Project [Oral presentation]**

Roland Berndt, Nautilus Minerals, Australia

**PNG Preparing to Embrace Deep Sea Mining [Oral presentation]**

Mohan Singh, Mineral Resources Authority, Papua New Guinea

**EU Blue Mining Project - An Overview [Oral presentation]**

Frank Lim, 2H Offshore, UK

**170. ADVANCED SHIP TECH XI:  
Structures and Strength (V. 4)**

**Friday                  June 26                  10:30                  Queens 5**

**Chair:** M. Fujikubo, Osaka Univ, Japan

**Third Order Generalised Beam Theory and Its Complete Solution**  
Ruijiang Chiu, Univ of Manchester, UK; Shuli Sun, Peking Univ, China

**A Meshless Analysis Method of the Ship Structures Based on MLPG Method**  
Jianping Chen, Wenyong Tang, Shanghai Jiao Tong Univ; Manping Xu, Guangzhou Maritime Inst, China

**Effect of Ship Torsion with Wide Hatches on the Hull's Stress State**  
Valery V. Novikov, Sergey V. Antonenko, Andrey P. German, Maksim V. Kitaev, Far Eastern Federal Univ, Russia

**Numerical and Experimental Analysis of the Dynamic Behaviour of Main Engine Foundations**  
Marco Biot, Univ of Trieste; Dario Boote, Univ of Genova; Emanuele Brocco, Lorenzo Moro, Univ of Trieste; Tatiana Pais, Univ of Genova; Stefano Delle Piane, Azimut|Benetti Shipyard, Italy

**171. ARCTIC SCI & TECH VI:  
Arctic Operations 2 (V. 1)**

**Friday June 26 10:30 Queens 6**

**Chair:** Arno Keinonen, AKAC Inc, Canada  
**Co-Chair:** Christian Schroeder, Hamburg Ship Model Basin, Germany

**Effect of Shock Pulse Load on the Ice Cover during Landing of an Airplane**  
Anna A. Matiushina, Amur State Univ of Humanities & Pedagogy; Alexandra V. Pogorelova, Inst of Machining & Metallurgy; Victor M. Kozin, Komsomolsk-na-Amure State Tech Univ, Russia

**Numerical Modeling for Dynamic Positioning in Pack Ice**  
Jie Dai, Heather Peng, Memorial Univ of Newfoundland, Canada

**Simulating Traveling Time and Exhaust Emissions along the Northern Sea Route**  
Christian Schröder, Hamburg Ship Model Basin, Germany

**Preparation of Arctic Oil and Gas Condensate Deposit Formation Fluid for Storage and Transport in the Form of Hydrocarbon Hydrate-Containing Dispersed System**  
Victor S. Vlasenko, Vacheslav V. Slesarenko, Aleksander N. Gulkov, Victor D. Lapshin, Far Eastern Federal Univ, Russia

**Winterization of Drilling Systems and Equipment in Cold Climate Conditions**  
Won Ho Lee, John Dasch, DNV GL, USA

**A Method of Ice Field Reduction in Port Sabetta Water Area [Proceedings only]**  
Alexander Ivanovich Alhimenko, Ivan Dmitrievich Kazumin, Mikhail Uvinalevich Nikolaevskiy, St. Petersburg State Polytechnical Univ, Russia

**FRIDAY 14:00**

**172. HYDRODYNAMICS XVIII:**

## **COMPARATIVE STUDY: Multi-body Hydrodynamics**

### **Panel 1**

**Friday**                      **June 26**                      **14:00**                      **Kohala 2**

**Chair:** Sa Young Hong, KRISO, Korea

**Co-Chair:** Qingwei Ma, City Univ. of London, UK

#### *Presentation*

#### **A Comparative Study on Multi-body Hydrodynamics Interactions: Side-by-side Moored Vessels**

Sa Young Hong, Bo Woo Nam, Y.S. Cho, KRISO, Korea; Guillaume de Hauteclocque, Igor Ten, BV, France; Frank Kin, LR, UK; Ying Gou, Dalian Univ. of Technology, China; Shiqiang Yan, City Univ of London, Wei Qiu, Memorial Univ of New Foundland, Canada

#### *Panelists*

Moohyun Kim (moderator), Texas A&M Univ., USA

Qingwei Ma, City Univ of London, UK

Yonghwan Kim, Seoul National Univ, Korea

Wei Qiu, Memorial Univ of New Foundland, Canada

Yongwon Lee, LR, UK

Binbin Li, BV, France

#### *Continue at Session 181*

## **173. REES OCEAN ENERGY XXIV: OWC 1 (V. 1)**

**Friday**                      **June 26**                      **14:00**                      **Kohala 3**

**Chair:** Robert L Waid, Marine Development Associates, USA

**Co-Chair:**

#### **Closure Schemes for Nonlinear Bi-Stable Systems Subjected to Correlated Noise - Applications to Energy Harvesting from Water Waves**

Han Kyul Joo, Themistoklis P. Sapsis, MIT, USA

#### **The Future Viability of Ocean Wave Energy**

Robert L Waid, Marine Development Associates, USA

#### **Applying Site Specific Resource Assessment: Emulation of Representative EMEC Seas in the FloWave Facility**

S.Draycott, T.Davey, D.M.Ingram, Univ of Edinburgh; J.Lawrence, European Marine Energy Centre; A.Day, Univ of Strathclyde; L.Johanning, Univ of Exeter, UK

#### **Wave energy potential offshore Apulian coasts (Italy)**

Alessandra Saponieri, Nico Valentini, Leonardo Damiani, Vitoantonio Amoroso, Politecnico di Bari, Italy

#### **Green-Island (Lyudao) Ocean Energy Investigation and Evaluation Project**

Chen-Shan Kung, Kuo-Hsu Su, Nian-Tzu Wu, Sinotech Engineering Consultants, Taiwan, China

**Recent Additions in Modeling Capabilities of an Open-Source Wave Energy Converter Design Tool**

Nathan Tom, Michael Lawson, Yi-Hsiang Yu, National Renewable Energy Lab, USA

**Experimental Study of the Generating Efficiency of a Fixed Oscillating Water Column Type Wave Energy Converter**

Yasutaka Imai, Shuichi Nagata, Tengen Murakami, Saga Univ; Manabu Takao, Matsue College of Tech; Toshiaki Setoguchi, Saga Univ, Japan

**Hydrodynamic Performance of a Flap-type Wave Energy Converter in Viscous Flow**

Lifen Chen, Jun Zang, Andrew J Hillis, Andrew R Plummer, Univ of Bath, UK

**174. OCEAN TECHNOLOGY XVI: -  
FLNG, & FPSO 3 (V. 1)**

**Friday                      June 26                      14:00                      Kohala 4**

**Chair:** Youngjun You, DSME, Korea

**Co-Chair:** Binbin Li, Bureau Veritas, Singapore

**Truncation Design of Multi-point Moored FPSO and Its Global Response [Oral presentation]**

Ji Zeng, Gang Chen, Jian Mo, Hongtao Yuan, Shanghai Waigaoqiao Shipbuilding; Zhuang Kang, Harbin Engineering Univ, China

**Transient Effects of an FPSO with a Broken Mooring Line**

Aldo Roberto Cruces Girón, Mexican Petroleum Inst, Mexico; Byoung Wan Kim, KRISO, Korea; José Alberto Martínez Farfán, Alberto Omar Vázquez Hernández, Mexican Petroleum Inst, Mexico; Hong Gun Sung, KRISO, Korea

**Spectral Fatigue Analysis for the Topside Structure of Offshore Floating Vessel**

Dae-Ho Kim, Jae-Woo Ahn, Sung-Gun Park, Seock-Hee Jun, Yeong-Tae Oh, Daewoo Shipbuilding & Marine Engineering, Korea

**Experimental Research of Wind Loads on a FPSO [Proceedings only]**

Cong Yi, Da Li, Xueping Bai, Chao Zhang, CNOOC Research Centre; Wentao Zheng, China Ship Scientific Research Center, China

**175. HMS II:  
Phase Transformation & Mechanical Properties (V. 4)**

**Friday                      June 26                      14:00                      Kings 1**

**Chair:** HyunWoo Jin, ExxonMobil Research & Engineering, USA

**Dynamic Deformation Behaviors of High-Mn Steels at High Strain Rate Region [Oral presentation]**

Hyung-Seop Shin, Kyung-Oh Bae, Dae-Woon Kim, Andong National Univ; Hyun-Chang Yim, Kwang Choi, Jin-Woo Lee, Jong-Kyo Choi, POSCO, Korea

**High Strain Rate Deformation Behavior of High Mn TWIP Steels at Cryogenic Temperature [Oral presentation]**

Yumi Ha, Il-Cheol Yi, POSTECH; Song-Gi Lee, POSCO; Nack J Kim, POSTECH, Korea

**Alloying Effect on Corrosion Property of High Mn Steel in Sour Environment**

Hyung Suk Seo, Jin Ho Park, POSTECH; Jong Gyo Choi, Sung Jin Kim, POSCO; Kyoo Young Kim, POSTECH, Korea

**Variation of Mechanical Properties with Carbide Precipitation in High Mn Steel Containing Chromium [Oral presentation]**

Sunryong Yoon, JunYoung Oh, KwangSuk Son, Donggyu Kim, Dong-A Univ, Korea

**Effects of Manganese and Nickel on the Microstructure and Mechanical Properties of FCA Weldment of Austenitic High Mn Steel [Oral presentation]**

IlWook Han, BongKeun Lee, SangCheol Lee, JongKyo Choi, POSCO, Korea

**176. REES OCEAN & WIND ENERGY XXVI:**

**IEA Wind OC5 Workshop 3**

**Friday June 26 09:00 – 17:00 Kings 2**

**Chair:** F Vorpahl, Fraunhofer IWES, Germany

**Co-Chair:** A Robertson, NREL, USA

**177. SUBSEA-UMBILICALS-PIPELINE-RISER-CABLE XII:**

**Field Test Experiments (V. 2)**

**Friday June 26 14:00 Kings 3**

**Chair:** Naiquan Ye, Marintek, Norway

**Co-Chair:** Chris JD Madeley, Subsea Engineering Assoc, Australia

**Extension of the Reel-Ability Envelope of the Aegir: Synergy between Analysis and Full-scale Testing**

Guido Ridolfi, Helen Boyd, Erwan Karjadi, Harm Demmink, Finian McCann, Anton de Bode, Heerema Marine Contractors, Netherlands

**Pipeline Free-span Observations on Mobile Seabeds**

Chris Madeley, Damiano Lombardo, Adam Czajko, Subsea Engineering Associates, Australia

**Experimental Study of Local Scour around Truncated Piles in Oscillatory Flow**

Hongwei An, Liang Cheng, Univ of Western Australia; Ming Zhao, Univ of Western Sydney, Australia; Yanna Zheng, Dalian Ocean Univ, China

**Numerical Simulation of Sediment-Laden Flow around a Circular Cylinder**

Xiwu Gong, Zhuang Sun, Huaguang Gao, Zhenping Hu, Zhejiang Ocean Univ, China

**Modelling and Measuring of Soil Thermal Properties and Pipeline to Soil Heat Transfer of a Natural Gas Pipeline**

Antonie Oosterkamp, Polytec Research Inst, Norway

**Accelerating Execution Speeds for Lumped Mass Cable Models**

Bradley J Buckham, Univ of Victoria; Ryan Nicoll, Dynamic Systems Analysis, Canada

**178. OMGH V: Deep Ocean Mining 2 (OMS-2015) (V. 1)**

**Friday June 26 14:00 Queens 4**

**Chair:** Benjamin C McLellan, Kyoto Univ, Japan

**Co-Chair:** Mohan Singh, Mineral Resources Authority, Papua New Guinea

**Environmental Management in Seafloor Mining [Oral presentation]**

Renee Grogan, Nautilus Minerals, Australia

**Reconsideration of Polymetallic Nodule Processing Methods -- Further Improvement of Existing Methods**

Kenji Haiki, Masatsugu Okazaki, Tadayuki Ishiyama, Deep Ocean Resource Development, Japan

**Effect of Size Distribution of Deep-Sea Polymetallic Nodule on the Estimation of Abundance Obtained from Seafloor Photographs Using Conventional Formulae**

Akira Tsune, Deep Ocean Resources Development, Japan

**Research on Variably Accelerated Settling of Coarse Mineral Particles in Still Water**

Dasheng Tang, Changsha Research Inst of Mining & Metallurgy; Jianxin Xia, Minzu Univ; Dehuai Xu, Hong Xiao, Changsha Research Inst of Mining & Metallurgy, China

**Change of Biogenic Ba Content in Pacific Ferromanganese Crusts since Cenozoic –A Signal of Paleoproductivity Pulses?**

Guoqing You, Tingdong Li, Jiahua Pan, Liudong Ren, Wenhong Sun, Shuqin Liu, Chinese Academy of Geological Sciences, China

**Comparison of the Lifecycle Impacts of Seafloor Mining with Onshore Equivalents**

Benjamin Craig McLellan, Ran Motoori, Tetsuo Tezuka, Kyoto Univ, Japan

**179. ADVANCED SHIP TECH XII:  
Transport & Navigation (V. 4)**

**Friday**

**June 26**

**14:00**

**Queens 5**

**Chair:** Beom Seon Jang, Seoul National Univ, Korea

**Co-Chair:** Erik Larsson, Chalmers Univ of Tech, Sweden

**Navigation Support System for Hybrid Electric Boat**

Masashi Yamagishi, Etsuro Shimizu, Tsuyoshi Oode, Ayako Umeda, Tokyo Univ of Marine Science & Tech, Japan

**Experimental and Numerical Study about the Effect of Wind on the Zig-Zag Manoeuver of Very Large Crude Oil Carrier**

Hideki Miyazaki, Hiroshi Sawada, National Maritime Research Inst, Japan

**An Experimental Study on the Manoeuvring Characteristics of a Ro-Ro Passenger Vessel in Large Heel Condition**

Dong Jin Yeo, Yeon-Gyu Kim, Byoung-Jae Park, Yeong-Yeon Lee, Jin Choi, Dongkon Lee, Korea Research Inst of Ships & Ocean Engineering, Korea

**Numerical Simulation of Ship Yaw Maneuvering in Deep and Shallow Water**

Xiaoyi Liu, Decheng Wan, Shanghai Jiao Tong Univ, China

**DIRECT Optimization Algorithm in Weather Routing of Ships**

Erik Larsson, Martin Hjorth Simonsen, Wengang Mao, Chalmers Univ of Tech, Sweden

**Simulation of Loads Acting on a Hull during Braking on a Sandy-Gravel Seabed**

Sergey Vladimirovich Antonenko, Viktor Grigorievich Bugaev, Andrey I. Mamontov, Nikita Ya. Tsimbelman, Far Eastern Federal Univ, Russia



**180. ARCTIC SCI & TECH VII:  
Arctic Ship Technology (V. 1)**

**Friday**

**June 26**

**14:00**

**Queens 6**

**Chair:** M. Sayed, National Research Council, Canada

**Co-chair:** V. Pavlenko, Arkhangelst Scientific Center, Russia

**Technologies of Use of Two Hovercrafts for Destruction the Ice Cover**

Victor M. Kozin, Inst of Machining & Metallurgy; Vitaliy L. Zemlyak, Sholom-Aleichem Priamursky State Univ; Elena G. Rogozhnikova, Amur State Univ of Humanities & Pedagogy, Russia

**Experimental Study of Possibility of Submarine Vessels Emerging in the Compact Ice at a Limited Depth of Water Area**

Vitaliy L. Zemlyak, Sholom-Aleichem Priamursky State Univ; Victor M. Kozin, Inst of Machining and Metallurgy; Nikita O. Baurin, Gayane V. Petrosyan, Sholom-Aleichem Priamursky State Univ, Russia

**Analysis of Technical Decisions of Exploration Platforms in Shallow Waters for the Russian Arctic**

Alexander T Bekker, Olga A Sabodash, Konstantin D Shpagin, Yu A Krikunova, Far Eastern Federal Univ, Russia

**Application of Integrated Ice Load Analysis and Model Test Result in Design of WHP-A of an Oilfield in China's Bohai Sea**

Jianmin Li, Keqin Chen, Guoxiong He, Zhenping Sun, Jian Xin, CNOOC, China

**Development of Methods for Modeling Dynamic Interaction of Fixed Offshore Structures with Drifting Ice Fields and Features**

Valery Shaposhnikov, Anatolii Aleksandrov, Viktor Platonov, Oleg Litonov, Krylov State Research Centre; Evgeny Appolonov, Gennady Demeshko, St. Petersburg State Marine Technical Univ, Russia

**Interface Friction Parameters for the Mathematical Modeling of Shell Structures with Infill**

Alexander T. Bekker, Nikita Ya. Tsimbelman, Tatiana I. Chernova, Vadim D. Bruss, Far Eastern Federal Univ, Russia; Ömer Bilgin, Univ of Dayton, USA

**Increasing Resistance to Ice Impact for Conductors of Jackets with Floatover Decks [Proceedings only]**

Qing Zhu, Jinlin Hou, CNOOC Research Inst, China

**FRIDAY 16:20**

**181. HYDRODYNAMICS XIX:  
COMPARATIVE STUDY: Multi-body Hydrodynamics  
Panel 2**

**Friday**

**June 26**

**16:20**

**Kohala 2**

**Chair:** Sa Young Hong, KRISO, Korea

*PANEL*

**182. REES OCEAN ENERGY XXV:**  
**OWC 2 (V. 1)**

**Friday**                      **June 26**                      **16:20**                      **Kohala 3**

**Chair:** Hui Tang, Hong Kong Polytechnic Univ, China  
**Co-Chair:** Yoon Hyeok Bae, Jeju National Univ, Korea

**Improved Energy Production Estimates from Wave Energy Converters through Spectral Partitioning of Wave Conditions**

Bryson Robertson, Dan Clancy, Helen Bailey, Bradley Buckham, Univ of Victoria, Canada

**Effects of Wave-Current Interaction on a Submerged Wave Energy Converter**

Lixian Wang, Yanhua Wu, Nanyang Technological Univ, Singapore; Hui Tang, Hong Kong Polytechnic Univ, China

**CFD Analysis of Flow Field around Wing on Small Hydropower Generator Driven by Karman Vortices**

Kenta Hasegawa, Takanori Hino, Yokohama National Univ, Japan

**One-way Coupled Dynamic Analysis of Floating Platform with Wave Energy Converters**

H. Lee, Y.H. Bae, I.H. Cho, Jeju National Univ; K.H. Kim, K. Hong, KRISO, Korea

**Optimization of the Power Absorption for a Linear Generator Wave Energy Converter [Proceedings only]**

Wei Li, Jan Isberg, Jens Engström, Rafael Waters, Mats Leijon, Uppsala Univ, Sweden

**183. OCEAN TECHNOLOGY XVII:**  
**FLNG, & FPSO 4 (V. 1)**

**Friday**                      **June 26**                      **16:20**                      **Kohala 4**

*Papers moved to Session 155*

**184. HMS III:**  
**Cryogenic Properties & Welding (V. 4)**

**Friday**                      **June 26**                      **16:20**                      **Kings 1**

**Chair:** Jong K. Choi, POSCO, Korea

**Design Principles of Welding Fluxes for Application to High-Mn Steels [Oral presentation]**

JongBae Kim, Il Sohn, Yonsei Univ; IlWook Han, POSCO, Korea

**Ambient and Cryogenic Fatigue Behavior of High Mn Steels and their Welds [Oral presentation]**

D H Jeong, Gyeongsang National Univ; T D Park, Hyundai Heavy Industries; S G Lee, J Y Yoo, J K Choi, J S Lee, POSCO; S S Kim, Gyeongsang National Univ, Korea

**Experimental Study on the Cryogenic Storage Tank Made of High Manganese Steel**

Jiwon Yu, Sung Tae Yun, Sukjin Yoo, Kihwan Kim, Do-Won Seo, Soon Gi Lee, Il Wook Han, Woo Kil Jang, Geon Shin, POSCO, Korea

**High Manganese Austenitic Steels with Strong Resistance to Hydrogen Embrittlement [Oral presentation]**

SoonKi Lee, Yoongjin Kim, Unhae Lee, InShik Suh, SeDon Choo, POSCO, Korea

**185. REES OCEAN & WIND ENERGY XXVI:  
IEA Wind OC5 Workshop 4**

**Friday June 26 09:00 – 17:00 Kings 2**

**Chair:** F Vorpahl, Fraunhofer IWES, Germany

**Co-Chair:** A Robertson, NREL, USA

**186. OMGH VI: Deep Ocean Mining 3 (OMS-2015) (V. 1)**

**Friday June 26 16:20 Queens 4**

**Chair:** Masatsugu Okazaki, Deep Ocean Resource Development, Jap

**Co-Chair:** Jianxin Xia, Minzu Univ of China, China

**Economic Feasibility Impacts of Waste and Waste Water Treatment Regulations for Deep Ocean Hydrothermal Ore Mining in Japan**

Benjamin Craig McLellan, Ran Motoori, Tetsuo Tezuka, Kyoto Univ, Japan

**Spatial Configurations and Particle Transportation Parameters of Flexible Hose in Deep-sea Mining System**

Peng, Y., Xia, J.X., Cao, B., Ren, H.T., Wu, Y., Minzu Univ of China, China

**Water-hammer Pressure in the Hydraulic Lifting Pipeline of Deep-sea Mining System**

Y. Zou, J.X. Xia, B Cao, Minzu Univ of China, China

**Hyperbaric Excavation: From Fundamental Research to Applied Development [Oral presentation]**

Wiebe Boomsma, IHC Mining, Netherland

**187. ADVANCED SHIP TECH XIII:  
Design and Analyses (V. 4)**

**Friday June 26 16:20 Queens 5**

**Chair:** Kyo-Kook Jin, KOGAS, Korea

**Floating Liquid Natural Gas (FLNG) Liquefaction Process Analysis for South China Sea Deep Water Gas Field**

Xichong Yu, Bin Xie, CNOOC Research Inst; Yaling Wu, China Huanqiu Contracting & Engineering; Chunsheng Wang, Qing Wang, Bing Cheng, CNOOC Research Inst, China

**Design on Flat Type River-Sea-Going Multi-Purpose Ship**

Zhiyong Pei, Zhihui Zhu, Weiguo Wu, Wuhan Univ of Tech, China

**Deterministic Non-Linear Wave Forecast and Motion Prediction for Short-Term Offshore Operations**

Günther F. Clauss, Marco Klein, Matthias Dudek, TU Berlin, Germany; Miguel Onorato, Univ of Torino, Italy

**A New Mesh Transformation Method for Hull Structure Shape Optimization Based on Parametric Technology**

Yan-Yun Yu, Kai Li, Yan Lin, Ming Chen, Dalian Univ of Tech, China

**Establishment and Analysis of a Comprehensive Economic Speed Model for Multi-purpose Marine Working Boats**

Wei Cai, Lu Chen, Juan He, Wuhan Univ of Tech; Guoliang Huang, CNOOC Energy Technology & Services, China

**188. ARCTIC SCI & TECH VIII:  
Arctic Structures (V. 1)**

**Friday**

**June 26**

**16:20**

**Queens 6**

**Chair:** M. Sayed, National Research Council, Canada

*Session 180 continues here.*

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