

www.isopec.org; www.isopec2012.org

June 17–22, Rhodes (Rodos), Greece

The Twenty-second (2012) International
**Offshore and Polar
Engineering Conference**

In addition ISOPE specialty symposia:

- 1st Tsunami & Safety
- 1st Asset Integrity
- 3rd Arctic Science & Technology
- 2nd Arctic Materials
- 3rd Renewable Energy & Environment
- 4th Sloshing Dynamics & Design
- 4th Frontier & Clean Energy Tech
- 10th High-Performance Materials
- 5th Strain-Based Design

ISOPE-2012

Rodos Palace Hotel, Rhodes, Greece, June 17–22

Technical Program

(Updated March 6)

Refereed papers from **52** countries in **150** technical general
Plenary and keynote presentations

General Information, Reservations, Publications and Program

Updates on www.isopec.org www.isopec2012.org

Forms for Advance Registration and Venue Hotel:

Inside this program and on www.isopec.org www.isopec2012.org

Organized by:

Technical Program Committee, ISOPE

Sponsored by:

International Society of Offshore and Polar Engineers (ISOPE)
with cooperating organizations (listed inside)



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ISOPE Awards, Scholarship, and Student Forum:
Presentation at Banquet



Conference Opening Session



Annual Conference Banquet

More photos on www.isopec.org and www.isopec2012.org
ISOPE-2011 Maui

21st Annual International Ocean and Polar Engineering
Conference, Maui, June 19-24, 2011

Welcome to ISOPE-2012 Conference

We greatly appreciate the excellent responses with **1250+** abstracts and help we have received from colleagues around the world in the successful organization of the 22nd International Offshore and Polar Engineering Conference (ISOPE-2012), Rhodes, Greece, June 17–22, 2012. The Conference features **150** sessions of *peer-reviewed* papers and **8** keynote presentations from more than **52 countries**, including the ISOPE specialty symposia as a part of the ISOPE-2012 Conference.

The conference program is issued in 2 versions: Printed and internet (www.isope.org and www.isope2012.org). To meet the page limit, only the first author data are listed in the printed version, and the internet version lists all authors.

The purposes of the ISOPE conference are to:

- * Promote technological progress and activities, international technological transfer and cooperation, and opportunities for engineers to maintain and improve technical competence; and
- * Provide a timely international forum for technical activities, cooperation, opportunity and fellowship among researchers and engineers by developing focused session topics with high quality papers (in both originality and significance) accepted through rigorous review, establishing high international standards for publication and worldwide distribution and promoting interdisciplinary interaction between academia and industry.

The International Society of Offshore and Polar Engineers (ISOPE) has already held **49 successful international meetings** with peer-reviewed papers:

- 1st (1990) European Offshore Mechanics Symposium (**EUROMS-90**) Trondheim; EUROMS-99 Moscow;
- 1st (1990) Pacific/Asia Offshore Mechanics Symposium (**PACOMS-90**) Seoul; PACOMS-94 Beijing; 1996 Pusan, 2002 Daejeon, 2004 Vladivostok, 2006 Dalian, 2008 Bangkok, 2010 Busan
- Annual **ISOPE** conferences, starting in Edinburgh, 1991 were held in San Francisco, Singapore, Osaka, The Hague, Los Angeles, Honolulu, Montréal, Brest, Seattle, Stavanger, Kitakyushu, Honolulu, Toulon, Seoul, San Francisco, Lisbon, Vancouver, Osaka, Beijing and Maui. Since 1992, the annual ISOPE conference program has been the world's largest of its kind with peer-reviewed papers;
- 1st (1995) ISOPE Ocean Mining Symposium (**OMS-95**), Tsukuba, 1995, Seoul, Goa, Szczecin, Tsukuba, Changsha, Lisbon; Chennai
- 1st (1996) International Deep-Ocean Technology (**IDOT-96**) Symposium and Workshop, 1996 Los Angeles; 2001 Stavanger and 2009 Beijing;
- ISOPE **HPM** Symposium: Honolulu 2003, Toulon 2004, Seoul 2005, San Francisco 2006, Lisbon 2007, Vancouver 2008; Osaka 2009 and Beijing 2010 ;
- ISOPE Series of specialty symposia : **ANGT**: Seoul 2005-; **Strain-Based Design SBD**: Lisbon 2007-; **Nanotechnology NANOS**: Lisbon 2007 Frontier Energy; **Sloshing Dynamics, Sloshing-2009-**, **Renewable Energy/Environment, REES-2010**; Arctic Science & Tech, **Arctic-2010-**; **Arctic Materials-2011-**; **Asset Integrity-2012-**

On behalf of the Technical Program Committee, it is our pleasure to welcome participants from all over the world to the ISOPE-2012 Conference in Rhodes, Greece.

Jin S Chung, USA	Demos Angelides Greece	Ronald H Knapp USA
Xizhao Jiang China	Shigeru Naito Japan	Michael Isaacson Canada

Co-chairmen of the ISOPE-2012 Conference

SUNDAY JUNE 17

09:00 ISOPE Board of Directors Meeting **Executive D**
10:30 ISOPE-2010 Executive Committee Meeting **Executive D**
EUROMS and PACOMS Executive Committees
15:00-18:00 **CONFERENCE REGISTRATION** Lobby
17:00-18:00 **WELCOME RECEPTION** Outdoor Pool Garden
Tour Information Visit tour desk in ISOPE registration area:
www.isopec.org
Spouse Program Join Tour program: see www.isopec.org

MONDAY June 18

On-Site Registration starts at 07:30 Lobby
07:30 Session Chair/Co-chair Briefing Lobby
08:30 Conference Opening **Jupiter**
08:30
1. OCEAN AND ENERGY INDUSTRY REVIEW—2011 **Jupiter**
10:30
2. LNG SLOSHING I: GTT Progress **Room 1**
3. VORTEX-INDUCED VIBRATIONS I **Room 2**
4. RENEWABLE ENERGY I: Wind 1: Foundations 1 **Room 3**
5. TSUNAMI I: 2011 Tohoku Tsunami 1 **Room 4**
6. ASSET INTEGRITY I **Room 5**
7. ENVIRONMENT I: Oil Spill and Emission **Room 6**
8. SBD I: Materials **Room 7**
9. FRONTIER ENERGY I: Clean Energy **Room 8**
10. RISK & RELIABILITY I **Room 9**
11. UNDERSEA I: Operation and Communication 1 **Room 10**
14:00
12. LNG SLOSHING II: Physics & Coupling **Room 1**
13. VORTEX-INDUCED VIBRATIONS II **Room 2**
14. RENEWABLE ENERGY II: Wind 2: Foundations 2 **Room 3**
15. TSUNAMI II: 2011 Tohoku Tsunami 2 **Room 4**
16. ASSET INTEGRITY II **Room 5**
17. ENVIRONMENT II: Physical & Chemical Processes **Room 6**
18. SBD II: Numerical Modeling **Room 7**
19. FRONTIER ENERGY II: Clean Coal **Room 8**
20. RISK & RELIABILITY II **Room 9**
21. UNDERSEA II: Operation and Communication 2 **Room 10**
16:20
22. LNG SLOSHING III: LNG Tank Design 1 **Room 1**
23. HYDRODYNAMICS I: MetOcean 1 **Room 2**
24. RENEWABLE ENERGY III: Wind 3: Substructures **Room 3**
25. TSUNAMI III: Generation & Warning 1 **Room 4**
26. ASSET INTEGRITY III **Room 5**
27. ENVIRONMENT III: Water & Sediment Qualities **Room 6**
28. SBD III: Strain Capacity Characterization **Room 7**
29. FRONTIER ENERGY III: Hydrate Fundamental **Room 8**
30. RISK & FATIGUE **Room 9**
31. UNDERSEA III: Vehicle and Control 1 **Room 10**
18:30 Find from the bulletin board
ISOPE Technical Committee Meetings

Tuesday June 19

07:30	Session Chair/Co-chair Briefing	Lobby
08:00		
32.	LNG SLOSHING IV: LNG Tank Design 2	Room 1
33.	HYDRODYNAMICS II: MetOcean 2	Room 2
34.	RENEWABLE ENERGY IV: Wind 4: Dynamics 1	Room 3
35.	TSUNAMI IV: Generation & Warning 2	Room 4
36.	ASSET INTEGRITY IV	Room 5
37.	COASTAL I:Waves & Modeling 1	Room 6
38.	SBD IV: Fracture Mechanics	Room 7
39.	FRONTIER ENERGY IV: Hydrate Development	Room 8
40.	OFFSHORE MECHANICS I: Floating Dynamics 1	Room 9
41.	UNDERSEA IV: Vehicle and Control 2	Room 10
10:30		
42.	LNG SLOSHING V: Sloshing Tests	Room 1
43.	HYDRODYNAMICS III: MetOcean 3	Room 2
44.	RENEWABLE ENERGY V: Wind 5: Floating 1	Room 3
45.	TSUNAMI V: Generation & Warning 3	Room 4
46.	ADVANCED SHIP TECH I: Ultimate Strength	Room 5
47.	COASTAL II: Waves & Modeling 2	Room 6
48.	SUBSEA, PIPELINES, RISERS I: NORD Stream	Room 7
49.	FRONTIER ENERGY V: Hydrate Modeling	Room 8
50.	OFFSHORE MECHANICS II: Floating Dynamics 2	Room 9
51.	ARCTIC MATERIALS I	Room 10
13:00		
	Chung Award Lecture	Room 2
14:00		
52.	LNG SLOSHING VI: CFD	Room 1
53.	HYDRODYNAMICS IV: Freak and Long Waves	Room 2
54.	RENEWABLE ENERGY VI: Wind 6: Floating 2	Room 3
55.	TSUNAMI VI: Propagation & Flooding	Room 4
56.	ADVANCED SHIP TECH II: At-Sea Explosions	Room 5
57.	COASTAL III: Waves & Modeling 3	Room 6
58.	SUBSEA, PIPELINES, RISERS II: New Concept Develop.	Room 7
59.	GEOTECH I: Suction Piles	Room 8
60.	OFFSHORE MECHANICS III: Systems I	Room 9
61.	ARCTIC MATERIALS II	Room 10
16:20		
62.	LNG SLOSHING VII: Structural Responses	Room 1
63.	HYDRODYNAMICS V: Wave Loading	Room 2
64.	RENEWABLE ENERGY VII: Wind 7: Analysis Tools	Room 3
65.	TSUNAMI VII: Structure & Sediment 1	Room 4
66.	HPM I: Adv Materials & Structures 1	Room 5
67.	COASTAL IV: Breakwaters & Waves 1	Room 6
68.	SUBSEA, PIPELINES, RISERS III: Panel	Room 7
69.	GEOTECH II: Offshore Foundations	Room 8
70.	OFFSHORE MECHANICS IV: Systems II	Room 9
71.	ARCTIC I: Navigation in Pack Ice	Room 10
15:30	Awards Committee Meeting	Executive D
16:30	Board of Editors Meeting	Executive D
18:00	Student Forum (advance reservation to isope-2@isope-org)	

WEDNESDAY JUNE 20

07:30	Session Chair/Co-chair Briefing	Lobby
08:00		
72.	RENEWABLE ENERGY XVI: Wave 4	Room 1
73.	HYDRODYNAMICS VI: Floating-Body Dynamics 1	Room 2
74.	RENEWABLE ENERGY VIII: Wind 8: Concepts	Room 3
75.	TSUNAMI VIII: Structure & Sediment 2	Room 4
76.	HPM II: Adv Materials & Structures 2	Room 5
77.	COASTAL V: Breakwaters & Waves 2	Room 6
78.	SUBSEA, PIPELINES, RISERS IV: Improved Perform.	Room 7
79.	GEOTECH III: Soil Improvement	Room 8
80.	FRONTIER ENERGY VI: Ocean Mining 1: Minerals	Room 9
81.	ARCTIC II: Ice Mechanics	Room 10
10:30		
82.	RENEWABLE ENERGY XVII: Wave 5	Room 1
83.	HYDRODYNAMICS VII: Floating-Body Dynamics 2	Room 2
84.	RENEWABLE ENERGY IX: Wind 9: Codes & Design	Room 3
85.	TSUNAMI IX: Risk Assessment 1	Room 4
86.	HPM III: Composites	Room 5
87.	COASTAL VI: Breakwaters & Waves 3	Room 6
88.	SUBSEA, PIPELINES, RISERS V: Component Develop	Room 7
89.	GEOTECH IV: Cyclic Loading	Room 8
90.	FRONTIER ENERGY VII: Ocean Mining 2: Systems	Room 9
91.	ARCTIC III: Coastal Arctic Properties	Room 10
12:00	ISOPE Board of Directors Meeting	Executive D
13:15	Plenary Presentation: Pipeline	Room 1
14:00		
92.	RENEWABLE ENERGY XVIII: Wave 6: Resources	Room 1
93.	HYDRODYNAMICS VIII: Floating-Body Dynamics 3	Room 2
94.	RENEWABLE ENERGY X: Wind 10: Resources	Room 3
95.	TSUNAMI X: Risk Assessment 2	Room 4
96.	HPM IV: Fatigue & Fracture 1	Room 5
97.	COASTAL VII: Wave-Structure Interaction	Room 6
98.	SUBSEA, PIPELINES, RISERS VI: Fatigue Assessment	Room 7
99.	GEOTECH V: Slope Stability	Room 8
100.	OFFSHORE MECHANICS V: Deepwater Installation	Room 9
101.	ARCTIC IV: Ice Environment & Forecasting	Room 10
16:20		
102.	RENEWABLE ENERGY XIX: Tidal & Current 1	Room 1
103.	HYDRODYNAMICS XIII: DP & Control	Room 2
104.	RENEWABLE ENERGY XI: Wind 11: Power 4	Room 3
105.	ADVANCED SHIP TECH III: Collision & Vibration	Room 4
106.	HPM V: Fatigue & Fracture 2	Room 5
107.	COASTAL VIII: Estuary Hydraulics	Room 6
108.	SUBSEA, PIPELINES, RISERS VII: Adv Analysis 1	Room 7
109.	GEOTECH VI: Piles & Foundations	Room 8
110.	OFFSHORE MECHANICS VI: Design & Installation	Room 9
111.	LNG SLOSHING VIII: Panel	Room 10

19:00	Super Dome Pool
Annual Conference Banquet	
22nd ISOPE Cultural Event, Best Paper, Best Student Paper, Outstanding Students and Awards	
<i>Don't forget the banquet ticket.</i>	

THURSDAY JUNE 21

07:30 Session Chair/Co-chair Briefing **Lobby**

08:00

112. RENEWABLE ENERGY XX: Tidal & Current 2	Room 1
113. HYDRODYNAMICS IX: CFD 1	Room 2
114. RENEWABLE ENERGY XII: Wind 12:	Room 3
115. ADVANCED SHIP TECH IV: Slamming & Load	Room 4
116. HPM VI: Fatigue & Fracture 3	Room 5
117. COASTAL IX: Coastal Sediment 1	Room 6
118. SUBSEA, PIPELINES, RISERS VIII: Install. & Fabric	Room 7
119. GEOTECH VII: Consolidation & Seepage	Room 8
120. OFFSHORE MECHANICS VII: Moored Structures	Room 9
121. ARCTIC V: Ice Structure Interaction	Room 10

10:30

122. RENEWABLE ENERGY XXI: Tidal & Current 3	Room 1
123. HYDRODYNAMICS X: CFD 2	Room 2
124. RENEWABLE ENERGY XIII: Wave 1	Room 3
125. ADVANCED SHIP TECH V: Propulsion	Room 4
126. HPM VII: Shipbuilding Steels	Room 5
127. COASTAL X: Coastal Sediment 2	Room 6
128. SUBSEA, PIPELINES, RISERS IX: Analysis 2	Room 7
129. GEOTECH VIII: Material Testing	Room 8
130. OFFSHORE MECHANICS VIII: FSRU 1	Room 9
131. ARCTIC VI: Operations in Ice)	Room 10

12:00 Ocean Mining Executive Committee **Executive D**

14:00

132. RENEWABLE ENERGY XXII: Thermal Energy	Room 1
133. HYDRODYNAMICS XI: CFD 3	Room 2
134. RENEWABLE ENERGY XIV: Wave 2	Room 3
135. ADVANCED SHIP TECH VI: System design	Room 4
136. HPM VIII: Advances in Welding Technology 1	Room 5
137. COASTAL XI: Coastal Sediment 3	Room 6
138. SUBSEA, PIPELINES, RISERS X: Flow Effects	Room 7
139. GEOTECH IX: Soil Properties	Room 8
140. OFFSHORE MECHANICS IX: FSRU 2	Room 9
141. ARCTIC VII: Ice Modeling & Operations	Room 10

16:20

142. RENEWABLE ENERGY XXIII: Marine Bioenergy	Room 1
143. HYDRODYNAMICS XII: CFD 4	Room 2
144. RENEWABLE ENERGY XV: Wave 3	Room 3
145. ADVANCED SHIP TECH VII: Seakeeping & Resist.	Room 4
146. HPM IX: Advances in Welding Technology 2	Room 5
147. COASTAL XII: Storm Surge & Inundation	Room 6
148. SUBSEA, PIPELINES, RISERS XI: System Integrity	Room 7
149. GEOTECH X: Construction & Materials	Room 8
150. OFFSHORE MECHANICS X: LNG Transport	Room 9

Sunday – Thursday	
Author Practice	Individual session rooms
On-site Registration	Lobby
ISOPE Headquarters	VIP Lounge
Proceedings Pickup	Registration Desk, Lobby
Committee Meetings	Executive D, Mezzanine e

FRIDAY June 22

Find Updates in Program on www.isopec.org and www.isopec2012.org
 Tours: Click on [General Information](#)

ISOPE-2012 Rhodes
The Twenty-second (2012) International
Offshore and Polar Engineering Conference
Rhodes, Greece, June 17–22, 2012

This 22nd annual conference features **150 technical and opening general sessions**, **1 plenary presentation** and **4 keynote presentations** with top experts from industry, academia and government. After peer review of the manuscripts selected from 1,250+ abstracts, some **720** peer-reviewed papers will be presented and discussed by researchers, engineers and managers from more than **52** countries.

The conference proceedings of peer-reviewed papers in PDF files will be available in a set of 4 volumes on CD-ROM (4,200 pp. est.) — paginated within each volume — during the conference and later for worldwide post-conference mail order from ISOPE: **ISBN 978-1-880653-94-4; ISSN 1098-6189**.

The number at end of the session title indicates the tentative number of the proceedings volume. Only the changes on titles or authors the Technical Program Committee received in writing before January 19, 2012 are reflected in this program. Final corrections will be updated in the Conference Proceedings of peer-reviewed papers and the Final Program.

All ISOPE publications are indexed by Engineering Index (EI).

SESSION LIST BY TOPICS

OCEAN AND ENERGY INDUSTRY REVIEW (V. 1)

1. OCEAN AND ENERGY INDUSTRY REVIEW—2011 Jupiter

FRONTIER ENERGY, GAS HYDRATES & OCEAN MINING (V. 1)

9. FRONTIER ENERGY I: Clean Energy	Room 8
19. FRONTIER ENERGY II: Clean Coal	Room 8
29. FRONTIER ENERGY III: Hydrate Fundamental	Room 8
39. FRONTIER ENERGY IV: Hydrate Development	Room 8
49. FRONTIER ENERGY V: Hydrate Modeling	Room 8
80. FRONTIER ENERGY VI: Ocean Mining 1: Minerals	Room 9
90. FRONTIER ENERGY VII: Ocean Mining 2: Systems	Room 9

**RENEWABLE ENERGY (OFFSHORE WIND AND OCEAN)
AND ENVIRONMENT (V. 1)**

4. RENEWABLE ENERGY I: Wind 1: Foundations 1	Room 3
14. RENEWABLE ENERGY II: Wind 2: Foundations 2	Room 3
24. RENEWABLE ENERGY III: Wind 3: Substructures	Room 3
34. RENEWABLE ENERGY IV: Wind 4: Dynamics 1	Room 3
44. RENEWABLE ENERGY V: Wind 5: Floating 1	Room 3
54. RENEWABLE ENERGY VI: Wind 6: Floating 2	Room 3
64. RENEWABLE ENERGY VII: Wind 7: Analysis Tools	Room 3
74. RENEWABLE ENERGY VIII: Wind 8: Concepts	Room 3
84. RENEWABLE ENERGY IX: Wind 9: Codes & Design	Room 3
94. RENEWABLE ENERGY X: Wind 10: Resources	Room 3
104. RENEWABLE ENERGY XI: Wind 11: Power 4	Room 3
114. RENEWABLE ENERGY XII: Wind 12:	Room 3
124. RENEWABLE ENERGY XIII: Wave 1	Room 3
134. RENEWABLE ENERGY XIV: Wave 2	Room 3
144. RENEWABLE ENERGY XV: Wave 3	Room 3
72. RENEWABLE ENERGY XVI: Wave 4	Room 1
82. RENEWABLE ENERGY XVII: Wave 5	Room 1
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102. RENEWABLE ENERGY XIX: Tidal & Current 1	Room 1
112. RENEWABLE ENERGY XX: Tidal & Current 2	Room 1
122. RENEWABLE ENERGY XXI: Tidal & Current 3	Room 1
132. RENEWABLE ENERGY XXII: Thermal Energy	Room 1
142. RENEWABLE ENERGY XXIII: Marine Bioenergy	Room 1

7. ENVIRONMENT I: Oil Spill and Emission Room 6

17. ENVIRONMENT II: Physical & Chemical Processes	Room 6
27. ENVIRONMENT III: Water & Sediment Qualities	Room 6

OFFSHORE MECHANICS AND HYDRODYNAMICS (V. 1)

40. OFFSHORE MECHANICS I: Floating Dynamics 1	Room 9
50. OFFSHORE MECHANICS II: Floating Dynamics 2	Room 9
60. OFFSHORE MECHANICS III: Systems I	Room 9
70. OFFSHORE MECHANICS IV: Systems II	Room 9
100. OFFSHORE MECHANICS V: Deepwater Installation	Room 9
110. OFFSHORE MECHANICS VI: Design & Installation	Room 9
120. OFFSHORE MECHANICS VII: Moored Structures	Room 9
130. OFFSHORE MECHANICS VIII: FSRU 1	Room 9
140. OFFSHORE MECHANICS IX: FSRU 2	Room 9
150. OFFSHORE MECHANICS X: LNG Transport	Room 9

GEOTECHNICAL ENGINEERING (V. 2)

59. GEOTECH I: Suction Piles	Room 8
69. GEOTECH II: Offshore Foundations	Room 8
79. GEOTECH III: Soil Improvement	Room 8
89. GEOTECH IV: Cyclic Loading	Room 8
99. GEOTECH V: Slope Stability	Room 8
109. GEOTECH VI: Piles & Foundations	Room 8
119. GEOTECH VII: Consolidation & Seepage	Room 8
129. GEOTECH VIII: Material Testing	Room 8
139. GEOTECH IX: Soil Properties	Room 8
149. GEOTECH X: Construction & Materials	Room 8

SUBSEA, PIPELINES AND RISERS (V. 2)

PLENARY: PNG PIPELINE	Room 7
48. SUBSEA, PIPELINES, RISERS I: NORD Stream	Room 7
58. SUBSEA, PIPELINES, RISERS II: New Concept Development	Room 7
68. SUBSEA, PIPELINES, RISERS III: Panel	Room 7
78. SUBSEA, PIPELINES, RISERS IV: Improved Perform.	Room 7
88. SUBSEA, PIPELINES, RISERS V: Component Develop	Room 7
98. SUBSEA, PIPELINES, RISERS VI: Fatigue Assessment	Room 7
108. SUBSEA, PIPELINES, RISERS VII: Adv Analysis 1	Room 7
118. SUBSEA, PIPELINES, RISERS VIII: Install. & Fabric	Room 7
128. SUBSEA, PIPELINES, RISERS IX: Analysis 2	Room 7
138. SUBSEA, PIPELINES, RISERS X: Flow Effects	Room 7
148. SUBSEA, PIPELINES, RISERS XI: System Integrity	Room 7

UNDERSEA VEHICLE, COMMUNICATION AND CONTROL (V. 2)

11. UNDERSEA I: Operation and Communication 1	Room 10
21. UNDERSEA II: Operation and Communication 2	Room 10
31. UNDERSEA III: Vehicle and Control 1	Room 10
41. UNDERSEA IV: Vehicle and Control 2	Room 10

ARCTIC SCIENCE & TECHNOLOGY (V. 1)

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91. ARCTIC III: Coastal Arctic Properties	Room 10
101. ARCTIC IV: Ice Environment & Forecasting	Room 10
121. ARCTIC V: Ice Structure Interaction	Room 10
131. ARCTIC VI: Operations in Ice)	Room 10
141. ARCTIC VII: Ice Modeling & Operations	Room 10

ARCTIC MATERIALS (V. 4)

51. ARCTIC MATERIALS I	Room 10
61. ARCTIC MATERIALS II	Room 10

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23. HYDRODYNAMICS I: MetOcean 1	Room 2
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33. HYDRODYNAMICS II: MetOcean 2	Room 2
43. HYDRODYNAMICS III: MetOcean 3	Room 2
53. HYDRODYNAMICS IV: Freak and Long Waves	Room 2
63. HYDRODYNAMICS V: Wave Loading	Room 2
73. HYDRODYNAMICS VI: Floating-Body Dynamics 1	Room 2
83. HYDRODYNAMICS VII: Floating-Body Dynamics 2	Room 2
93. HYDRODYNAMICS VIII: Floating-Body Dynamics 3	Room 2
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113. HYDRODYNAMICS IX: CFD 1	Room 2
123. HYDRODYNAMICS X: CFD 2	Room 2
133. HYDRODYNAMICS XI: CFD 3	Room 2
143. HYDRODYNAMICS XII: CFD 4	Room 2

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15. TSUNAMI II: 2011 Tohoku Tsunami 2	Room 4
25. TSUNAMI III: Generation & Warning 1	Room 4
35. TSUNAMI IV: Generation & Warning 2	Room 4
45. TSUNAMI V: Generation & Warning 3	Room 4
55. TSUNAMI VI: Propagation & Flooding	Room 4
65. TSUNAMI VII: Structure & Sediment 1	Room 4
75. TSUNAMI VIII: Structure & Sediment 2	Room 4
85. TSUNAMI IX: Risk Assessment 1	Room 4
95. TSUNAMI X: Risk Assessment 2	Room 4

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32. LNG SLOSHING IV: LNG Tank Design 2	Room 1
42. LNG SLOSHING V: Sloshing Tests	Room 1
52. LNG SLOSHING VI: CFD	Room 1
62. LNG SLOSHING VII: Structural Responses	Room 1
111. LNG SLOSHING VIII: Panel	Room 10

FLOW-INDUCED VIBRATIONS (V. 3)

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13. VORTEX-INDUCED VIBRATIONS II	Room 2

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57. COASTAL III: Waves & Modeling 3	Room 6
67. COASTAL IV: Breakwaters & Waves 1	Room 6
77. COASTAL V: Breakwaters & Waves 2	Room 6
87. COASTAL VI: Breakwaters & Waves 3	Room 6
97. COASTAL VII: Wave-Structure Interaction	Room 6
107. COASTAL VIII: Estuary Hydraulics	Room 6
117. COASTAL IX: Coastal Sediment 1	Room 6
127. COASTAL X: Coastal Sediment 2	Room 6
137. COASTAL XI: Coastal Sediment 3	Room 6
147. COASTAL XII: Storm Surge & Inundation	Room 6

HIGH-PERFORMANCE MATERIALS (V. 4)

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106. HPM V: Fatigue & Fracture 2	Room 5
116. HPM VI: Fatigue & Fracture 3	Room 5
126. HPM VII: Shipbuilding Steels	Room 5
136. HPM VIII: Advances in Welding Technology 1	Room 5
146. HPM IX: Advances in Welding Technology 2	Room 5

ASSET INTEGRITY (V. 4)

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26. ASSET INTEGRITY III	Room 5
36. ASSET INTEGRITY IV	Room 5

STRAIN-BASED DESIGN (V. 4)

8. SBD I: Materials	Room 7
18. SBD II: Numerical Modeling	Room 7
28. SBD III: Strain Capacity Characterization	Room 7
38. SBD IV: Fracture Mechanics	Room 7

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105. ADVANCED SHIP TECH III: Collision & Vibration	Room 4
115. ADVANCED SHIP TECH IV: Slamming & Load	Room 4
125. ADVANCED SHIP TECH V: Propulsion	Room 4
135. ADVANCED SHIP TECH VI: System design	Room 4
145. ADVANCED SHIP TECH VII: Seakeeping & Resist.	Room 4

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TECHNICAL PROGRAM

The Twenty-second (2012) International Offshore and Polar Engineering Conference Rhodes, Greece, June 17–22, 2012

The number at end of the session title indicates the tentative number of the proceedings volume. Only the changes on titles or authors the ISOPE-2012 Technical Program Committee (TPC) received in writing before January 19, 2012 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 978-1-880653-94-4; ISSN 1098-6189) will be available as a set of 4 volumes (4,200 pp. est.) from ISOPE during and after the Conference.

Proceedings papers are **indexed** by Engineering Index and Compendex and others.

SUNDAY, June 17 Conference Reception

17:00

Outdoor Pool Garden

MONDAY 08:30

1. Opening General Session: OCEAN AND ENERGY INDUSTRY REVIEW (V. 1)

Monday June 18 08:30 Jupiter

Chair: Jin S. Chung, ISOPE, USA

Co-Chair: I Langen, Univ of Stavanger, Norway

Conference Opening Address

Raghavan Ayer, ISOPE President, ExxonMobil Research & Engineering, USA

From the Longest to the Deepest Seelines

Roberto Bruschi, Director, SAIPEM Energy Services, Fano, Italy

2 MW Floating Offshore Wind WinFloat Prototype and Future Plan [Oral presentation]

Antonio Vidígal, CEO, EDP Inovation, Portugal

MONDAY 10:30

Monday 2. LNG SLOSHING I: GTT Progress (V. 3) June 18 10:30 Room 1

Chair: M Kaminski, Delft Univ of Tech, Netherlands

Co-Chair: YH Kim, Seoul National Univ, Korea

Welcome to Sloshing Symposium

Frederic Dias and Jin Chung

Elementary Loading Processes (ELP) Involved in Breaking Wave

Impacts: Findings from the SlosheI Project

W Lafeber, MARIN, Netherlands; L Brosset, Gaztransport & Technigaz, France; H Bogaert, MARIN, Netherlands

A Mark III Panel Subjected to Three Different Types of Wave

Impacts: Results from the SlosheI Project

L Brosset, Gaztransport & Technigaz, France; H Bogaert, MARIN, Netherlands

Model Scale Test vs. Full Scale Measurement: Findings from the *Full Scale Measurement of Sloshing* Project

CF Berthon, R Pasquier, Gaztransport & Technigaz, France

Comparison of Wave Impact Tests at Large and Full Scale: Results from the SlosheI Project

W Lafeber, MARIN, Netherlands; L Brosset, Gaztransport & Technigaz, France; H Bogaert, MARIN, Netherlands

Loads on Mark III Corrugated Primary Membrane: Findings from the SlosheI Project

M Marhem, GTT, France; W Lafeber, H Bogaert, MARIN, Netherlands; L Brosset, GTT, France

Reconciliation of a Mark III Finite Element Model with Static Tests and SlosheI Wave Impact Tests

N Elkhodja, V Perrin, M Marhem, M Malochet, J Cardot, L Brosset, Gaztransport & Technigaz, France

3. VORTEX-INDUCED VIBRATIONS I (V. 3)

Monday June 18 10:30 Room 2

Chair: J-F Saint-Marcoux, Subsea 7, France

A Systematic Approach to Understanding the Influence of High-Harmonic and Chaotic Vortex-Induced Vibrations on Fatigue Damage of Flexible Risers

H Zheng, RE Price, MIT; Y Modarres-Sadeghi, Univ of Massachusetts; MS Triantafyllou, MIT, USA

Vibration Reduction in Steel Catenary Risers

FCL Borges, N Roitman, C Magluta, DA Castello, COPPE/UFRJ, Brazil

Three Dimensional Numerical Simulation of Vortex Induced Vibration for a 500-m-long Marine Riser

JS Wang, LL Zhan, CG Wang, SQ Jiang, LB Xu, Shanghai Jiao Tong Univ, China

Numerical Analysis of VIV of Flexible Risers Using Discrete Vortex Method

L Sun, Z Zong, CF Liu, Dalian Univ of Tech, China

VIV Experiment of Riser at Low K.C. Condition

DH Jung, D Lee, HJ Kim, DS Moon, Korea Ocean Research & Development Inst, Korea

Vortex Shedding and Hydrodynamic Pressure around Piggyback Pipelines in Steady Current

ZP Zang, JS Cui, FP Gao, Inst of Mechanics, CAS, China

Vortex-Induced Yaw Motion (VIY) of a Large-Volume Semi-Submersible Platform

RT Gongalves, GF Rosetti, ALC Fajarra, K Nishimoto, Univ of Sao Paulo;
AC Oliveira, Petrobras, Brazil

Experimental Investigation for a Truss Spar Subjected to Vortex-Induced Motions in Towing Tank

H Zhang, LF Xiao, HN Lu, Shanghai Jiao Tong Univ, China

On the Effectiveness and Mechanism of Vortex-Induced Vibration Reduction Using a Screen Cylinder

TM Zhou, L Cheng, Univ of Western Australia, Australia

4. RENEWABLE ENERGY I: Offshore Wind 1: Foundations 1 (V.

Monday June 18 10:30 Room 3

Chair: I. Langen, Univ of Stavanger, Norway ,

Design of Piles for Offshore Wind Energy Foundations with Respect to Horizontal Loading

M Achmus, K Abdel-Rahman, Leibniz Univ Hannover, Germany

Quantification of Damping Due to Pore Water Flow in the Soil Around a Monopile Foundation for a Wind Turbine Subject to Cyclic Motion

M Bayat, LV Andersen, LB Ibsen, SRK Nielsen, Aalborg Univ, Denmark

CPTu-Based Geotechnical Site Assessment for Offshore Wind Turbines - A Case Study from the Frederikshavn Site in Denmark

S Firouzianbandpey, LB Ibsen, LV Andersen, Aalborg Univ, Denmark

Local Scour and Pore-Water Pressure around a Monopile Foundation for Wind-Turbines under Combined Waves and Currents

FP Gao, WG Qi, XT Han, QX Gong, Inst of Mechanics, CAS, China

5. TSUNAMI I: 2011 Tohoku Tsunami 1 (V. 3)

Monday June 18 10:30 Room 4

Chair: I Nistor, Univ of Ottawa, Canada

Co-Chair: EL Lekkas, Univ of Athens, Greece

Seismic and Acoustic-Gravity Signals from the Source of the 2004 Indian Ocean and the 2011 Japan Tsunami

R Kind, A Raveloson, R Wang, X Yuan, Deutsches
GeoForschungsZentrum, Germany

Numerical Simulation of the 2011 Tohoku Tsunami: Comparison with Field Observations and Sensitivity to Model Parameters

ST Grilli, T Tajalibakhsh, JC Harris, Univ of Rhode Island; JT Kirby, FY Shi, Univ of Delaware; T Masterlark, C Kyriakopoulos, Univ of Alabama, USA

The Effect of Rupture Process in an Inverse Analysis on the Tsunami Source of the 2011 off the Pacific Coast of Tohoku Earthquake

T Takagawa, T Tomita, Port and Airport Research Inst, Japan

The 2011 Off the Pacific Coast of Tohoku Earthquake Tsunami Observed by GPS Buoys, Seabed Wave Gauges and Coastal Tide Gauges of NOWPHAS on the Japanese Coast

H Kawai, Port and Airport Research Inst; M Satoh, Tohoku Regional Development Bureau; K Kawaguchi, K Seki, Port and Airport Research Inst, Japan

Numerical Analysis of the 2011 Tohoku Tsunami in Tokyo Bay Focusing on High Water Marks in Ports

RU Agung Wiyono, J Sasaki, Yokohama National Univ, Japan

6. ASSET INTEGRITY I (V. 4)
Monday June 18 10:30 Room 5

Chair: JK Na, Edison Welding Inst, USA

Operational Experience with Structural Threats on Transport Subsea Pipelines

LD Oosterkamp, AO Lind, Statoil, Norway

Deepwater High Pressure and Temperature Pipeline Asset Integrity Inspection

C Piovesan, M Meade, K Fogleman, H Green, M Peterson, NDT Systems & Services, USA

SIRIS: A New Concept for In-Situ Riser Inspection

MF Santos, SUBSIN; LL Menegaldo, UFRJ; DC Ristow, MO Brito, SUBSIN, Brazil

Advanced Tools and Auto-Monitoring Systems for Subsea Equipments

SD Soares, PETROBRAS, Brazil

The Development, Integration, and Validation of a Fully Distributed Fiber Optic Strain & Temperature Sensor within a Power Umbilical

DW DuToit, Omnisens, USA; H Rochat, Omnisens, Switzerland; P Willemoes, H Little, Aker Solutions, USA

Using Acoustic Resonance Technology to Obtaining Accurate Thickness Measurements of Coated Pipes and Structures

P Norli, N-O Negerd, E Heland, E Bergh, Det Norske Veritas, Norway

Detection of Corrosion Damage in Pipes with Electromagnetic-acoustic Transducers (EMATs)

JK Na, RL Spensor, EWI, USA

EMD-HHT Based Structural Performance Assessment of an Offshore Platform

SQ Wang, Ocean Univ of China, China

Smart Coatings for Corrosion Detection - A Review of Recent Advances

HG Wheat, Univ of Texas at Austin, USA

7. ENVIRONMENT I: Oil Spill and Emission (V. 1)
Monday June 18 10:30 Room 6

Chair: C Bostater, Florida Inst of Tech. USA

Operational Oceanography as a Tool for MSFD Implementation

F Lalli, A Truschi, V Pesarino, ISPRA, Italy

2-D Modeling of Oil Slick Transport: A Case Study

SN Erturk Bozkurtoglu, Istanbul Tech Univ, Turkey

Lattice Boltzmann Simulation for the Prediction of Oil Slick Movement and Spreading in Ocean Environment

S Ha, NK Ku, KY Lee, M Friebe, Seoul National Univ, Korea

An Optimized Method to Trace the Oil Spill Based on a Multi-Buoys System

TL Wang, SJ Su, Dalian Maritime Univ, China

Exhaust Characteristics of the Nitrous Oxygen as Navigational Conditions on the Ship

DH Yoo, Y Nitta, M Ikame, National Maritime Research Inst; M Hayashi, H Fujita, Kobe Univ, Japan

Assessment of Ship's Emissions Using Recovery Systems

S Al-Zubaidy, KB Sreedhar, Nazarbayev Univ, Kazakhstan

Waste Management Model for Ship Life Cycle Assessment (LCA)

UB Celebi, N Vardar, T Akanlar, V Alankaya, Yildiz Tech Univ, Turkey

8. SBD I: Materials (V. 4)
Monday June 18 10:30 Room 7

Chair: PL Moore, TWI, UK

Co-Chair: E Tsuru, Nippon Steel, Japan

Welcome

B Newbury

Potential Strain Limit for Girth-welded UOE Line Pipes Commercially Manufactured for Strain-based Design

E Tsuru, Y Shinohara, T Hara, Y Hattori, Nippon Steel, Japan

Influence of Plastic Deformation on Measured Pipe Tensile Properties and the Consequence for Design

P Thibaux, OCAS NV, Belgium

Correlation of Microstructure and Tensile and Charpy Impact Properties of Cu- and B-containing Bainitic Steels [Oral presentation]

SH Lee, HK Sung, Pohang Univ of Science & Tech, Korea; SY Shin, Max-Planck-Inst fur. Eisenforschung, Germany; BC Hwang, CG Lee, Korea Inst of Materials Science; NJ Kim, Pohang Univ of Science & Tech, Korea

Small-Scale Studies of the Effects of Pre-Deformation and Ageing on the Ductile Tearing Resistance

E Østby, PA Kane, B Nyhus, SINTEF Materials and Chemistry, Norway

Successful Production Results of X70 UOE Pipes for NORD STREAM

I Minato, N Takahashi, M Hamada, Y Nish, M Miura, Sumitomo Metal Industries, Japan; G Trond, I Pachniuk, Nord Stream, Switzerland

Steel Elbow Response under Strong Cyclic Loading

GE Varelis, Univ of Thessaly, Greece; AM Gresnigt, TU Delft, Netherlands; SA Karamanos, Univ of Thessaly, Greece

Monday 9. FRONTIER ENERGY I: Clean Energy (V. 1) June 18 10:30 Room 8

Chair: R. Ayer, ExxonMobil Research & Engineering Co, USA
Co-Chair: GT Tae Kim, SK Innovation, Korea

Supersonic Separators for Natural Gas Processing: Real Gas Effects

C Wen, XW Cao, Y Yang, WL Li, China Univ of Petroleum, China

Numerical Simulation of an Energy Pile Using Thermo-Hydro-Mechanical Coupling and Visco-Hypoplastic Model

XL Ma, G Qiu, J Grabe, Hamburg Univ of Tech, Germany

A Study on Re-liquefaction Process of Boil-off Gas of LCO₂ Transfer Ship

YB Lee, SG Lee, SH Jeon, YM Yang, Korea Gas, Korea

An Analytical Model for Spiral Coil Type Ground Heat Exchanger

SK Park, SR Lee, S Yoon, JW Chung, GH Go, KAIST, Korea

Heavy Oil Viscosity Prediction from Density at Elevated Temperature

O Alomair, A Alkorieh, M Hamed, Kuwait Univ, Kuwait

A Novel Underwater Horizontal Directional Drilling Platform Base on Coiled Tubing Technology

XY Wang, T Ge, Shanghai Jiao Tong Univ, China

Monday 10. RISK & RELIABILITY I (V. 4) June 18 10:30 Room 9

Chair: I Rychlik, Chalmers Univ of Tech, Sweden
Co-Chair: BF Peng, J Ray McDermott, USA

Reliability Analysis on Subsea X-tree Tubing Hanger

CY Wang, HH Zhang, ML Duan, China Univ of Petroleum, China

Experience from Application of Semi-Automatic Fault Tree Synthesis to Reliability and Availability Analysis of Ship Systems

E Rde, P Securius, Germanischer Lloyd SE, Germany; Y Papadopoulos,
D Parker, M Walker, Univ of Hull, UK

Lifetime Prediction of Steel Jacket Platform Based on Time-Dependent Reliability

DC Zhou, Dalian Univ of Tech, China

A Probabilistic Approach for Reliability Assessment and Fatigue Analysis of Subsea Free Spanning Pipelines

N Gazis, J P Kenny, USA

Estimation of the Reliability of LNG loading Berth after Possible Accident

EN Bellendir, OM Finagenov, JSC B E Vedeneev "VNIIG". Russia

A Study on the Relation between Safety Factor and Reliability and Application to a Marine Structure

TM Cho, BJ Kim, YS Suh, Samsung Heavy Industries, Korea

11. UNDERSEA I:

Operation and Communication 1 (V. 2)

Monday June 18 10:30 Room 10

Chair: SC Yu, Pohang Univ of Science & Tech, Korea

Co-Chair: G Marani, West Virginia Univ, USA

Deep NINJA: A New Profiling Float for Deep Ocean Observation

T Kobayashi, JAMSTEC; K Amaike, K Watanabe, T Ino, Tsurumi Seiki Corp; K Asakawa, T Suga, T Kawano, T Hyakudome, M Matsuura, JAMSTEC, Japan

Design of a New Seafloor Acoustic Transponder System

SH Wu, JP Jang, Taiwan Ocean Research Institute; HH Chen, National Sun Yat-Sen Univ, Taiwan, China

Multi-target Detection of Underwater Vehicle Based on Multi-sensor Data Fusion

GH Xu, LY Wu, K Yu, C Yang, L Yang, Huazhong Univ of Science & Tech, China

Development of UHF Band Communication Method under the Sea

M Ozawa, E Shimizu, Tokyo Univ of Marine Science & Tech, Japan

A Fast-Convergent Spectral Method for Harmonic Wave Propagation in Inhomogeneous Layered Waveguides

KA Belibassakis, T Papanthasiou, S Filopoulos, National Tech Univ of Athens, Greece

Certification Procedure for Hulls of Deep-Ocean Vehicles

GA Tumashik, VS Baldichev, VV Osipenko, Krylov Shipbldg Research Inst, Russia

MONDAY 14:00

12. LNG SLOSHING II: Physics & Coupling (V. 3)
Monday June 18 14:00 Room 1

Chair: L Diebold, Bureau Veritas, France
Co-Chair: F Dias, Univ College Dublin, Ireland

Influence of Phase Transition on Sloshing Impact Pressures Described by a Generalized Bagnold's Model

M Ancellin, ENS-Cachan; L Brosset, Gaztransport & Technigaz; J-M Ghidaglia, ENS-Cachan, France

Study on the Effect of Density Ratio of Liquid and Gas in Sloshing Experiment

YH Kim, YJ Ahn, SY Kim, KH Kim, SW Lee, Seoul National Univ; JJ Park, Samsung Heavy Industries, Korea

Influence of a Bubbles Curtain on the Impact of Waves on a Vertical Wall

O Kimmoun, Ecole Centrale Marseille, A Ratouis, L Brosset, GTT, France

Experimental and Numerical Study of Liquid Sloshing in a Rectangular Tank with Three Fluids

B Molin, F Remy, Ecole Centrale Marseille; C Audiffren, R Marcer, Principia; A Ledoux, Total E&P, France; S Helland, Total E&P Norge, Norway; M Mottaghi, Total E&P, France

Sloshing and Two-Body Motion Analysis of FLNG Considering Coupled Effects

JJ Park, JH Seo, MS Kim, BW Kim, JK Eom, Samsung Heavy Industries, Korea

Linear and Nonlinear Coupling Effects of Ship Motion and Sloshing in Time-Domain Numerical Simulation

WY Duan, S Huang, Harbin Engineering Univ, China

The Method Used for Predict Ship Motions Coupled with Liquid Sloshing

RQ Zhu, Jiangsu Univ of Science & Tech; K Zou, QM Miao, China Ship Scientific Research Center, China

13. VORTEX-INDUCED VIBRATIONS II (V. 3)
Monday June 18 14:00 Room 2

Chair: MS Triantafyllou, MIT, USA
Co-Chair: JS Wang, Shanghai Jiao Tong Univ, China

Wake Induced Riser interference under VIV at 10^5 Reynolds Number

J-F Saint-Marcoux, Subsea 7, France; RD Blevins, Scripps Inst, USA

Application of Wake Oscillator Models to Deepwater Riser Towers for VIV Responses

AB Wang, V Loentgen, F Germanetto, Subsea 7, France

Flow-Induced Vibration of an Elastically Supported Circular Cylinder above a Plane Boundary

B Chen, Dalian Univ of Tech, China; TC Su, Florida Atlantic Univ, USA

Experimental Forces Measurements on the Flow around a Fixed and Yawed Cylinders in the Presence of Free-Surface

GR Franzini, RT Gongalves, ALC Fujjara, JR Meneghini, Univ of Sao Paulo, Brazil

Vortex-induced Vibrations of a Circular Cylinder with Different Geometric Disturbances

LM Lin, XF Zhong, YX Wu, Inst of Mechanics, CAS, China

Vortex-Induced Vibrations of a Circular Cylinder in the Inclined Flow

CC Chu, BF Chen, National Sun Yat-sen Univ, Taiwan, China

Experimental Study on Wake Flow of an Inclined Square Cylinder

TM Zhou, XF Lou, Univ of Western Australia, Australia

14. RENEWABLE ENERGY II: Offshore Wind 2: Foundations 2 (V. 1)

Monday June 18 14:00 Room 3

Chair: G Paulsen, FEDEM Technology, Norway

Co-Chair: M Achmus, Leibniz Univ Hannover, Germany

Buckling of Bucket Foundations - Sensitivity to Shape Imperfections during Installation

S Madsen, LV Andersen, LB Ibsen, Aalborg Univ, Denmark

Scour Evolution around Offshore Transition Pieces on Bucket Foundations

A Nezhentseva, TL Andersen, LV Andersen, LB Ibsen, Aalborg Univ, Denmark

Design and Installation of Small-Scale Monopod Suction Pile and Tripod Suction Buckets for Offshore Wind Farms

SC Bang, South Dakota School of Mines & Tech, USA; DJ Kwag, ADVACT; MH Oh, OS Kwon, KORDI; YS Choi, ADVACT, Korea

Relative Density of Backfilled Soil Material around Monopiles for Offshore Wind Turbines

SPH Sørensen, LB Ibsen, Aalborg Univ, Denmark

Drivability of Large-diameter Piles with Submerged Conical Sections

G Barauskis, F Jakobsen, LICengineering, Denmark

Numerical Simulation of Soil Extrusion Effects of Large-Diameter Steel Pipe Piles in Offshore Wind Fields

K Liu, M Yang, Tongji Univ, China

15. TSUNAMI II: 2011 Tohoku Tsunami 2 (V. 3)

Monday June 18 14:00 Room 4

Chair: ST Grilli, Univ of Rhode Island, USA

Co-Chair: M Stiassnie, Technion, Israel

Field Survey of the Tsunami Impact and Loading on Structures - Engineering Lessons of the 2011 Tohoku Tsunami

I Nistor, Univ of Ottawa, Canada; T Shibayama, Waseda Univ, Japan

Inundation and Damage by Run-Up Tsunami of 2011 in the Sendai Plain, Japan

S Arai, A Sibuya, A Aihara, O Takahasi, Tohoku Inst of Tech, Japan

Seabed Environment Damage of Matsushima Bay (Miyagi Prefecture, Japan) after the 2011 Tohoku Earthquake and Tsunami

M Nagao, National Inst of AIST; O Nishimura, Tohoku Univ; K Nishimura, National Inst of AIST; H Sasaki, N Chiba, Tohoku Univ; A Suzuki, National Inst of AIST, Japan

The Mw=9.0 Tohoku Japan Earthquake (March 11, 2011) Tsunami Impact on Structures and Infrastructure

EL Lekkas, E Andreadakis, V Alexoudi, E Kapourani, I Kostaki, Univ of Athens, Greece

Geochemical Survey of Tsunami Sediments and Transport of Toxic Elements from Offshore Environment - Urgent Investigation for Earthquake 2011-3-11

T Komai, Y Kawabe, J Hara, Y Sakamoto, M Zhang, National Inst of AIST, Japan

A Survey on Damage of Small Buildings Due to Liquefaction by the Pacific Coast of Tohoku Earthquake

M Fujii, Tokai Univ; MJ Arai, System Measure; CH Kim, Hokoku Engineering; K Watanabe, Tokai Univ, Japan

Monday **16. ASSET INTEGRITY II (V. 4)**
June 18 **14:00** Room 5

Chair: A Kumar, ExxonMobil Upstream Research, USA

Technologies and Methodologies for Automated Ultrasonic Testing Quantification

EI Todorov, R Spencer, N Porter, Edison Welding Institute; MG Lozev, BP Products North America, USA

Advanced Structural Integrity Assessment of Subsea Pipelines in Operation

HS Alsos, SO Kvarme, AC Hordsve, Reinertsen AS, Norway

Analysis of a Corroded Pipeline Using Finite Element Method

A Nikkhaah, Advance Analysis; M Radzi Ismail, SLT-Engineering, Malaysia

Failure Risk Assessment of Marine Pipeline for Time-independent Factors Using Fuzzy Rule-based Synthetic Evaluation

YT Liu, H Hu, Shang Jiao Tong Univ, China

Underwater Acoustic for Leak Inspection and Monitoring

L Barbagelata, Co.L.Mar. srl, Italy

Enhanced Reliability for Pipeline Leak Detection System

MG Kulkarni, J Buitrago, H Arslan, ExxonMobil Upstream Research; F Bardi, ExxonMobil Production, USA

17. ENVIRONMENT II: Physical & Chemical Processes (V. 1)
Monday June 18 14:00 Room 6

Chair: F Lalli, ISPRA, Italy

Co-Chair: G Schriever, Biolab Forschungsinstitut, Germany

Tidal Simulation in Loch Linnhe Using a Finite Volume Shallow Flow Model

YA Albouraee, QH Liang, MI Downie, Newcastle Univ, UK

Surface and Subsurface Imaging of Released Oil in Littoral Zones

CR Bostater, F Leavaux, G Coppin, H Frystacky, J Jones, Florida Inst of Tech, USA

Behaviour of Disposed Brine in Stratified Marine Environment

B Bas, SN Erturk Bozkurtoglu, SM Kabdasli, Istanbul Tech Univ, Turkey

Numerical Study on Pollutant Transport in Long-Narrow Waters - Xiangshan Bay, China

J Xie, ZC Sun, SX Liang, SS Tu, Dalian Univ of Tech, China

pH and Ionic Strength Effects on the Binding Constant between N-PAC and Humic Acid

CL Lee, KC Chang, PC Hsieh, SM Kao, National Sun Yat-sen Univ, Taiwan, China

Naturally Grown Ag Nanoparticle SERS Substrate as Chemical Sensor in Water Body Applying a 488 nm Microsystem Diode Laser

YH Kwon, TU-berlin; R Ossig, Univ Kassel; A Kolomijeca, TU-Berlin; F Hubenthal, Univ Kassel; HD Kronfeldt, TU-Berlin, Germany

18. SBD II: Numerical Modeling (V. 4)
Monday June 18 14:00 Room 7

Chair: G Mannucci, Centro Sviluppo Materiali, Italy

Co-Chair: WT Cheng, ExxonMobil Upstream Research, USA

Pipeline FEM on Strain Based Design Approach through Full Scale Tests

CM Spinelli, L Prandi, ENI, A Lucci, A Fonzo, M Di Biagio, CSM, Italy

Advanced Ice Gouging Continuum Models: Comparison with Centrifuge Test Results

P Michele, SP Lele, JM Hamilton, H Arslan, WR Cheng, ExxonMobil Upstream Research, USA

Experiments and Fracture Modeling of High-Strength Pipelines

K Kofiani, MIT, USA; A Nonn, Salgitter Mannesmann Forschung, Germany; CL Walters, Structural Dynamics TNO, Netherlands; T Wierzbicki, MIT, USA; C Kalwa, Europipe, Germany

Effect of Modeling of Concrete Weight Coating on Assessment of Strain Concentration in Pipeline Field Joints

A Eltahir, A Al-Showaiter, MCS Kenny; A Basel, JP Kenny; P Jukes, MCS Kenny, USA

Numerical Simulation on Ductile Crack Growth in Girth Weld Portion of X80 UOE Pipes

Y Shinohara, T Hara, N Nagata, E Tsuru, Nippon Steel, Japan

Effects of Weld Strength Mismatch over Crack Driving Forces for Circumferential Surface Crack in Pipes under Bending

M Paredes, C Ruggieri, Univ of Sao Paulo, Brazil

19. FRONTIER ENERGY II: Clean Coal (V. 1)
Monday June 18 14:00 Room 8

Chair: DS Kim, SK Innovation, Korea

Study on the Empirical Fouling Index for Predicting Ash Deposition Phenomenon in Coal Gasification Environments

HT Kim, H Namgung, Ajou Univ, Korea

Advanced Particle Separation with the Concept of Uniflow Cyclone

JS Oh, SI Choi, GT Jin, JG Kim, SH Lee, Korea Inst of Energy Research, Korea

A Study of the Gasification Characteristics of Low Rank Coal in a Transport Gasifier

YJ Kim, JH Kim, GT Kim, SR Park, BS Kwak, DS Kim, SK Innovation, Korea

Efficient Drying System of Low Rank Coal

MH Yi, BS Kwak, GT Kim, SK Innovation, Korea

Performance Analysis Study on the IGCC Power Plants with Different Steam Integration Scheme

C Lee, Univ of Suwon; JW Lee, SJ Lee, Inst for Advanced Engineering, Korea

20. RISK & RELIABILITY II (V. 4)
Monday June 18 14:00 Room 9

Chair: K Kawano, Kagoshima Univ, Japan

Co-Chair: H Rathje, Germanischer Lloyd SE, Germany

Treatment of Uncertainties, Risks and Opportunities in Cost and Schedule Estimates in the Early Phases of Offshore Projects

M Gu, Aker Solutions; OT Gudmestad, Univ of Stavanger, Norway

The Study of Human Reliability Model Based on Dynamic Bayesian Networks Theory

LY Chen, Shanghai Jiao Tong Univ, China

An Enhanced Smart Maintenance of Piping System for the Offshore Plants

KH Lee, JM Lee, DS Kim, G Lee, Inha Univ, Korea

The Study of Coastal Risk Assessment of Planning and Management for Coastal Area in Taiwan

LK Chien, SY Chiu, WC Tseng, National Taiwan Ocean Univ; CH Hsu, National Cheng Kung Univ, Taiwan, China

Process Risk Assessment for Transportation and Installation of Jacket Considering Correlation

X Bai, H Sun, LP Sun, Harbin Engineering Univ, China

Hazard Risk Analysis of Submerged Floating Tunnels with Fuzzy AHP

SH Han, Korea Ocean Research & Development Inst, Korea

21. UNDERSEA II: Operation and Communication 2 (V. 2)
Monday June 18 14:00 Room 10

Chair: M Nakamura, Kyushu Univ, Japan

Co-Chair: GR Siddall, Bedford Inst of Oceanography, Canada

"SeaCycler": A Sub-Surface Moored Profiler with Two-Way Satellite Communication

GR Siddall, Bedford Inst of Oceanography, Canada

Development of 3D Image Sonar Based Object Recognition for Underwater Vehicle

SC Yu, POSTECH; DJ Kang, Z Dung, Pusan National Univ, Korea

Deepwater Applications for Brazilian Pre-Salt Exploration Using Underwater Sensor Networks

FJL Ribeiro, Petrobras; ACP Pedroza, LHMK Costa, COPPE/UFRI, Brazil

Modeling of Acoustic Propagation across a Warm-Core Eddy in South China Sea

LL Ji, M Lin, Inst of Mechanics, CAS, China

Experimental Study of a Hydro-Acoustic Hybrid System for Simultaneous Underwater Communication and Positioning

KG Kebkal, OG Kebkal, EvoLogics GmbH, Germany; IA Belolaptikov, VM Aynutdinov, Inst for Nuclear Research, RAS, Russia; R Bannasch, EvoLogics GmbH, Germany; GV Domogatski, Inst for Nuclear Research, RAS, Russia

MONDAY 16:20

22. LNG SLOSHING III: LNG Tank Design 1 (V. 3)
Monday June 18 16:20 Room 1

Chair: L Brossset, Gaztransport & Technigaz, France
Co-Chair: J-M Ghidaglia, ENS-Cachan, France

Laboratory Study on Effects of Baffle on Reducing Liquid Sloshing in a Tank

MA Xue, Hohai Univ; PZ Lin, Sichuan Univ; JH Zheng, Hohai Univ, China

Influence of Raised Invar Edges on Sloshing Impact Pressures during Drop Tests - Numerical Investigations

L Diebold, N Moirod, Bureau Veritas, France

Design Improvement of LNG Pump Tower Structure

MS Lee, DH Kim, WS Kim, Hyundai Heavy Industries, Korea

Nonlinear Liquid Sloshing in a 3D Square Tank with Internal Structures

CH Wu, BF Chen, National Sun Yat-sen Univ, Taiwan, China

Comparative Study on Effect of Cross Tie on Sloshing Loads of a VLCC

SS Jeon, JH Jung, MJ Song, MC Ryu, YS Kim, Daewoo Shipbldg & Marine Engineering, Korea; SE Kim, American Bureau of Shipping, USA

Experimental Study on the Effects of Sloshing Loads on Fatigue Strength of an Independent Type-B LNG Tank

MJ Song, Daewoo Shipbldg & Marine Engineering; YJ Ahn, SY Kim, Seoul National Univ; JH Jung, Daewoo Shipbldg & Marine Engineering; YH Kim, Seoul National Univ, Korea

Structural Safety Assessment for Independent LNG Cargo Tank Considering the Support Structure

JK Bang, STX Offshore & Shipbldg, Korea

23. HYDRODYNAMICS I: MetOcean 1 (V. 3)
Monday June 18 16:20 Room 2

Chair: C Yang, George Mason Univ, USA
Co-Chair: SS Lee, Naval Surface Warfare Center, USA

Combination Mode of Internal Waves Generated by Surface Wave Propagating over Two Muddy Sea Beds

RY Yang, HH Hwung National Cheng Kung Univ, Taiwan, China

Nonlinear Forced and Free Waves in Two-Layer Fluids with a Free Surface

EI Parau, HC Woolfenden, Univ of East Anglia, UK

Numerical Study on the Evolution of Internal Solitary Waves in a Two-Layer Fluid System over a Triangular Bottom Obstacle

CM Hsieh, National Kaohsiung Marine Univ; RR Hwang, Academia Sinica, Taiwan, China

Numerical Simulation of Waves Generated by a Moving Pressure Field

D Bayraktar Ersan, S Beji, Istanbul Tech Univ, Turkey

Nonlinear Wave Modeling in Shallow Water with Variable Depth by Using Extended Boussinesq Equations

H Peng, N Williams, Memorial Univ of Newfoundland, Canada

Evaluation of Boussinesq-type Wave Breaking Model with Highly Nonlinear Property

KZ Fang, ZL Zou, Dalian Univ of Tech, China

Nonlinear Interaction between Shear Current and Multiple Waves

SJ Liao, Z Liu, ZL Lin, Shanghai Jiao Tong Univ, China

Nonlinear Periodic Waves Travelling in Water of Finite Depth with a Uniform Current

ZL Lin, H Xu, Shanghai Jiao Tong Univ, China

Bed Shear Stress under a Plunging Breaking Wave

T Liiv, N Oldekop, Tallinn Univ of Tech, Estonia

24. RENEWABLE ENERGY III: Offshore Wind 3: Substructures (V.

Monday June 18 16:20 Room 3

Chair: F Vorpahl, Fraunhofer-IWES, Germany

Development Status Quo of Korea Offshore Wind Foundations

JH Kim, CH Choi, SD Cho, Korea Inst of Construction Tech, Korea

Fatigue Analysis of a Tripod Support Structure of an Offshore Wind Turbine

F Zacharioudaki-Apelidou, F Dedonakis, DC Angelides, Aristotle Univ of Thessaloniki, Greece

Modeling Offshore Wind Turbine Substructures Using a Parametric Approach

M Strach, Fraunhofer Inst for Wind Energy IWES, Germany; M Brommundt, NTNU, Norway; F Vorpahl, Fraunhofer Inst for Wind Energy IWES, Germany

A Suggestion for the Foundation Type of Offshore Wind Turbine in the Test Bed on the Basis of Economic and Constructability Analysis

MS Ryu, KS Kang, JS Lee, Korea Electric Power Research Inst, Korea

Study on a New Methodology Proposed to Install a Monopile

A Sarkar, OT Gudmestad, Univ of Stavanger, Norway

A Probabilistic 3D Model of an Offshore Wind Turbine Foundation

M Vahdatirad, LV Andersen, LB Ibsen, J Clausen, JD Sørensen, Aalborg Univ, Denmark

A Design of Windmill Turbine Installation Vessel Using Jack-up System
YK Kim, JH Woo, NG Mun, Daewoo Shipbldg & Marine Engineering, Korea

25. TSUNAMI III: Generation & Warning 1 (V. 3)
Monday June 18 16:20 Room 4

Chair: S Tinti, Univ Of Bologna, Italy
Co-Chair: M Fujii, Tokai Univ, Japan

A Laboratory Perspective of Long Wave Generation
N Goseberg, Leibniz Univ Hannover, Germany

On Methodology of Generating a Tsunami-Like Waves in a Wave-Flume Experiment Using a Piston Wavemaker
EV Buldakov, Univ College London, UK

Tsunami Triggering Mechanisms Associated with the 17th Cent. BC Minoan Eruption of Thera Volcano, Greece
D Sakellariou, G Roussakis, Hellenic Centre for Marine Research; P Nomikou, National & Kapodistrian Univ of Athens, Greece; KL Croff Bell, SN Carey, H Sigurdsson, Univ of Rhode Island, USA

Mathematical Modelling of Tsunami Waves Generated by Bottom Motion on a Non-Uniformly Sloping Beach
A Bandyopadhyay, Khalisani College, India

26. ASSET INTEGRITY III (V. 4)
Monday June 18 16:20 Room 5

Chair: S Damasceno, Petrobras, Brazil

Reinforced Liners for Pipeline Rehabilitation
TD Anderson, MG Kulkarni, ML Macia, ExxonMobil Upstream Research, USA

Subsea Repair Challenges in the Australian Region
AG Low, Wood Group Integrity Management, Australia

Investigating Remote Pipeline Repair Using Laser Cleaning and Welding
SL Asher, A Kumar, N Verma, D Fairchild, M Macia, ExxonMobil Upstream Research, USA

Options in Material, Coating and Chemical Selection to Mitigate Failure in Hydrocarbon Production
JC Price, GATE Engineering, USA

Development and Application of Rust Conversion Coatings Based on Compound of Ployphosphoric Acid and Tannin
HY Hu, XQ Fan, Y Liu, Zhejiang Ocean Univ, China

The Design Concept of Marine Anti-Biofouling Electrolysis Membrane

Y Chang, JY Lee, RC Kao, National Cheng Kung Univ, Taiwan, China

Experience with the Application of DEH

H Kulbotten, JK Lervik, SINTEF Energy Research, Norway

Numerical Simulations of Liquid Motion in SPB Tank

H Kobayakawa, H Kusumoto, M Toyoda, IHI Marine United, Japan

27. ENVIRONMENT III: Water & Sediment Qualities(V. 1)
Monday June 18 16:20 Room 6

Chair: K Otsuka, Osaka Prefecture Univ, Japan

Water and TP Budgets Analysis Including Submarine Groundwater near the Intertidal Zone

M Hayashi, Kobe Univ; M Taniguchi, RIHN; T Fujii, Nara Univ of Education; S Onodera, Hiroshima Univ; Y Umezawa, Nagasaki Univ, Japan

Experimental Investigation of the Effect of Flow Turbulence on the Kinetics of Phosphorus Desorption from Suspended Sediment

B Xia, QH Zhang, Tianjin Univ; B Deng, CB Jiang, Changsha Univ of Science & Tech, China

Purification Experiments of Ocean Sludge by Activating Microorganisms

K Okamoto, T Toyama, H Kohno, K Hotta, Nihon Univ, Japan

Fractionation of Oxygen Consumption Component in the Inner Western Area of Ariake Bay, Japan

T Tokunaga, K Kimoto, Seikai National Fisheries Research Inst, Japan

Numerical Diagnostic Study on Dominant HAB Species Succession Mechanism during HAB in the Highly Frequent HAB Occurrence Area in the East China Sea

Q Wang, LS Zhu, South China Univ of Tech, China

Enhancement Modeling of Light Intensity and Phytoplankton Dynamics in Tokyo Bay Using Extensive Monitoring Dataset

M Jedari Attari, J Sasaki, Yokohama National Univ, Japan

An Experimental Study on the Effects of *Posidonia Oceanica* Seagrass Patches on the Velocity Patterns under Wave Conditions

N Elginoz, E Oguz, AM Akgul, SM Kabdasli, Istanbul Tech Univ, Turkey

28. SBD III: Strain Capacity Characterization (V. 4)
Monday June 18 16:20 Room 7

Chair: WT Cheng, ExxonMobil Upstream Research, USA

Co-Chair: G Mannucci, Centro Sviluppo Materiali, Italy

Axial Deformation Studies of High Strain Line Pipe

CS Huang, LK Ji, YL Liu, LH Qi, HY Chen, HT Wang, H Li, Tubular Goods Research Inst, CNPC, China

Characterization of Initial Geometric Imperfections for Pipelines and Influence on Compressive Strain Capacity

A Fatemi, IMV Projects; S Kenny, Memorial Univ of Newfoundland, Canada

Effect of Full Scale Pipe Bending Test Method on Deformability Results of SAW Pipes

H Shitamoto, M Hamada, N Takahashi, Y Nishi, Sumitomo Metal Industries, Japan

Effect of Strength Matching and Reinforcement of Girth-Welded Joints on Axial Buckling Characteristics of Welded Line Pipe

Y Seko, T Sakanoue, H Motohashi, Tokyo Gas, Japan

Analysis of Bending Test of 40" X70 Line Pipe

HY Chen, Tubular Goods Research Inst, CNPC, China

Validation of Methods to Determine CTOD from SENT specimens

PL Moore, HG Pisarski, TWI Ltd, UK

Constraint Effects on Toughness: Implications for Engineering Tensile Strain Capacity Design

W Hanif, S Kenny, Memorial Univ of Newfoundland, Canada

**29. FRONTIER ENERGY III:
Hydrate Fundamental (V. 1)**

Monday June 18 16:20 Room 8

Chair: T. Komai, National Inst of AIST, Japan

Oceanic Gas Hydrates as an Energy Resource

MJ Economides, Univ of Houston; XL Wang, XGas Ltd; HD Brannon, Baker Hughes, USA

Temperature-dependent Raman Spectroscopic Observation for Structural Transformation and Guest Dynamics of Gas Hydrates and Hydroquinone Clathrates

JW Park, BU Nam, BS Kim, JH Yoon, Korea Maritime Univ, Korea

Heat Transfer Analysis of Hydrate Packed Bed under Storage and Discharge Conditions

S Tanaka, M Sadano, Hiroshima Univ, Japan

Safety and Risk analysis of a Natural Gas Hydrate Pellet Carrier

N Kaehler, R Hamann, Germanischer Lloyd SE, Germany

Effect of Gas Component on Hydrate Equilibrium in Porous Medium

MJ Yang, Dalian Univ of Tech, China

Modeling of Gas Hydrate Equilibrium Conditions in Porous Medium

QL Ma, QY Mu, LT Chen, CY Sun, GJ Chen, LY Yang, China Univ of Petroleum, China

Monday **30. RISK & FATIGUE (V. 4)**
June 18 **16:20** Room 9

Chair: J Roesset, Texas A&M Univ, USA

What is the Potential of Using Ship Fatigue Routing in Terms of Fatigue Life Extension?

WG Mao, JW Ringsberg, I Rychlik, Chalmers Univ of Tech, Sweden

Statistical Approximation of Rainflow Damage for Ship Fatigue Estimates

I Rychlik, WG Mao, Chalmers Univ of Tech, Sweden

Determination of Critical Factors for the Damaged Strength Assessment of Steel Grillages

JM Underwood, AJ Sobey, JIR Blake, RA Sheno, Univ of Southampton, UK

Semi-empirical Assessment of Long-term High-frequency Hull Girder Response of Containerships

H Rathje, A Kahl TE Schellin, Germanischer Lloyd SE, Germany

Study on Preciseness of Load History Generation Based on "Storm Model" for Fatigue Assessment of Ship Structure Members

FA Prasetyo, N Osawa, Osaka Univ; T Kobayashi, Kawasaki Heavy Industry; J Sawamura, Osaka Univ, Japan

Development and Application of Fatigue Modeling Automation System using Patran Command Language (PCL)

YC Jo, JC Lee, SB Lee, SK Shin, STX Offshore & Shipbldg; JT Jang, RaonX Solutions, Korea

Risk-Based Analysis of LNG Carriers Loading and Unloading Operations

GFM de Souza, DW Roldan Silva, Univ of Sao Paulo, Brazil

Monday **31. UNDERSEA III: Vehicle and Control 1 (V. 2)**
June 18 **16:20** Room 10

Chair: TL Liu, National Defense Univ, Taiwan, China

Co-Chair: L Wen, Harvard Univ, USA

Biomimetic Design of an Undulatory Stingray AUV Fin

H Beem, M Triantafyllou, MIT, USA

Experiment Study on Formation Control of Multiple AUVs

HL Xu, YP Li, SZ Ren, XY Liu, W Li, Shenyang Inst of Automation, CAS, China

Visually Augmented Control and Navigation for a Biomimetic Underwater Vehicle

YL Chiu, JH Guo, National Taiwan Univ, Taiwan, China

Feasibility Study of an Ocean-Going Solar-Powered Underwater Glider

M Arima, H Tonai, Osaka Prefecture Univ, Japan

Energy Sources for Autonomous Unmanned Underwater Vehicles
VV Slesarenko, VV Knyazhev, Inst of Marine Tech Problem, FEB RAS,
Russia

Black-Box Modeling for Underwater Vehicles Based on Artificial Intelligence
ZJ Zou, F Xu, Shanghai Jiao Tong Univ, China

TUESDAY 08:00

32. LNG SLOSHING IV: LNG Tank Design 2 (V. 3)
Tuesday June 19 08:00 Room 1

Chair: YH Kim, Seoul National Univ, Korea

Simulation of the Sloshing in the Prismatic Gas Tank after Impact Interaction of the Vessel with Ice Barrier

NV Tryaskin, IV Tkachenko, AO Dukarskiy, State Marine Tech Univ-St. Petersburg; DB Kiselev, Severnoye Design Bureau; VV Yakimov, VN Tryaskin, State Marine Tech Univ-St. Petersburg, Russia

Effects of Earthquake on LNG Storage Tank under Different Liquid Height

KW Lee, JH Kim, Korea Gas, Korea

Experimental and Numerical Investigations of Internal Global Forces for Violent 6 Degrees of Freedom Irregular Excitations in LNGC Prismatic Tanks

L Diebold, N Moirod, E Baudin, T Gazzola, Bureau Veritas, France

A Computer Code for Fast Simulations of Liquid Tank Sloshing

YS Cao, FW Zhang, MARINTEK USA; S Liapis, Shell, USA

A Study on the Sloshing Effect on the Roll Motion of a 2D Rectangular Tank in Regular Waves

HS Choi, YH Kim, Seoul National Univ; DY Lee, Daewoo Shipbldg & Marine Engineering, Korea

Apply MPS Method to Simulate Liquid Sloshing in LNG Tank

YX Zhang, DC Wan, Shanghai Jiao Tong Univ, China

Numerical Simulation of Sloshing in a Rectangular Tank Subjected to Rotational Motion

JJ Stephen, SA Sannasi, V Sundar, IIT Madras, India

33. HYDRODYNAMICS II: MetOcean 2 (V. 3)
Tuesday June 19 08:00 Room 2

Chair: PH Taylor, Univ of Oxford, UK
Co-Chair: JZ Yim, National Taiwan Ocean Univ, Taiwan, China

Stochastic Sea-state and Current Simulation by Vector Autoregression Model and its Application

M Minoura, Osaka Univ, Japan

Sparse Spectrum Model of the Sea Surface Elevations

M Zhrnotskii, NOAA/ESRL, USA

Changes in Wave Spectra and Total Variation Distance

J Ortega, CIMAT, Mexico; AC Pedro, Univ de Valladolid, Spain

Comparison of Wave Model Results Using Different Reanalysis Wind Data in the North Pacific

Y Shimada, S Shiotani, Kobe Univ; K Takahashi, JAMSTEC, Japan

Degree of Experience & Durability - Indices for Two Types of Extrapolating Sea Extremes

T Kitano, W Kioka, Nagoya Inst of Tech; R Takahashi, Kobe Univ, Japan

A Study of the Statistical Properties of the Wave Climate around Taiwan

JZ Yim, National Taiwan Ocean Univ; WP Huang, Sinotech Engineering Services; JG Lin, WK Weng, National Taiwan Ocean Univ, Taiwan, China

Long-Term Trend on Wave Characteristics on Japanese Coast Based on NOWPHAS Data

K Seki, H Kawai, M Satoh, K Kawaguchi, Port and Airport Research Inst, Japan

Interannual and Decadal Variation of Sea Level in the East China Sea

SW Zhang, L Du, YT Chang, J Li, Ocean Univ of China, China

34. RENEWABLE ENERGY IV: Offshore Wind 4: Dynamics 1 (V.

¹)

Tuesday June 19 08:00 Room 3

Chair: TJ Larsen, RISØ/DTU, Denmark

Resonance Frequency Estimation of Offshore Wind Turbine Structures

M Damgaard, JB de Place, LV Andersen, LB Ibsen, Aalborg Univ; JKF Andersen, Vestas Technology, Denmark

Time-History Analysis of a 600kW Wind Turbine under Wenchuan Seismic Excitation

L Zhu, Beijing Univ of Civil Engineering & Architecture; ZX Ye, Tsinghua Univ, China

Dynamic Analysis of Fixed-Bottom Offshore Wind Turbines

E Loukogeorgaki, AG Throumoulopoulos, AK Dimitriou, DC Angelides, Aristotle Univ of Thessaloniki, Greece

Effects of Non-Linear Wave Forces on Dynamic Response of Floating Offshore Wind Platforms

S Jagdale, QW Ma, City Univ London, UK

Fatigue Behaviour of Load-Bearing Structures for Offshore Wind Energy Converters - Numerical and Experimental Investigations
P Weidner, T Ummenhofer, Karlsruhe Inst of Tech, Germany

Aero-Elastic-Control-Floater-Mooring Coupled Dynamic Analysis for a TLP-Type FOWT (Floating Offshore Wind Turbine)
YH Bae, MH Kim, Texas A&M Univ, USA; JK Heo, STX Inst of Tech; SW Im, RIST/POSCO, Korea

Offshore Wind Profile and Fatigue Life of Offshore Wind Turbines
L Eliassen, JB Jasna, Univ of Stavanger, Norway

On the Impact of Controllers on Reliability of the Wind Turbines
M Teimouri Sichani, Aalborg Univ, Denmark

35. TSUNAMI IV: Generation & Warning 2 (V. 3)
Tuesday June 19 08:00 Room 4

Chair: H Kawai, Port and Airport Research Inst., Japan
Co-Chair: GS Khakimzyanov, Inst of Computational Tech, Russia

Influence of the Heterogeneity of the Seismic Source on the Timely Detectability of a Tsunami: Implications for Tsunami Early Warning in the Central Mediterranean
S Tinti, F Zaniboni, A Armigliato, G Pagnoni, L Bressan, Univ of Bologna, Italy

Numerical Modelling of the 1998 Papua New Guinea Tsunami, Generated by the Quasi-Nonrigid Landslide
SA Beisel, LB Chubarov, Inst of Computational Technologies, RAS, Russia

Geological and Geophysical Investigations - A Background for the Tsunami Early Warning System in the Bulgaria-Romania Black Sea Border Region
BK Rangelov, Mining & Geology Univ, Bulgaria; G Oaie, R Dimitriu, GEOECOMAR, Romania; O Dimitrov, IO-BAS, Bulgaria

Forecasting Database for the Tsunami Warning Center for the Western Mediterranean and North-East Atlantic Basins
A Gailler, H Hibert, A Loevenbruck, B Hernandez, CEA, France

The Need for a Decision Support System in Tsunami Early Warning Practice in Case of Near-Shore Sources
S Tinti, A Armigliato, G Pagnoni, F Zaniboni, L Bressan, Univ of Bologna, Italy

Tsunami Early Warning in the Eastern Mediterranean, Aegean and Black Sea
O Necmioglu, N Meral Ozel, Bogazici Univ; AC Yalciner, Middle East Tech Univ; D Kalafat, M Yilmazer, M Comoglu, M Erdik, Bogazici Univ, Turkey

Tuesday **36. ASSET INTEGRITY IV (V. 4)** **Room 5**
June 19 **08:00**

Chair: S. Maleki, TWI Ltd, UK

Assessing Industry Trends in Risk Based Asset Management Practices
UR Bharadwaj, TWI Ltd, UK

Managing Assets during Deferred Nuclear Decommissioning
PI Burrows, Health and Safety Executive, UK

Asset Integrity Management (AIM) Through Implementation of Structural Health Monitoring (SHM) Technology
JK Na, EWI, USA

AC Corrosion Protection of Direct Electric Heating Pipeline
A Pedersen, SINTEF Energy Research; A Nysveen, NTNU; M Hoyer-Hansen, SINTEF Energy Research, Norway

Seismic Analysis for Offshore Industry: Promoting the State of the Practice toward the State of the Art
JB Jia, Aker Solutions, Norway

Examples of Disaster Prevention to Change Defective Safety Culture and Overcome Organizational Inertia
B Wittkower, B Poblete, A Botto, J Garcia, B Singh, P Jukes, J P Kenny, USA

Tuesday **37. COASTAL I: Waves & Modeling 1 (V. 3)** **Room 6**
June 19 **08:00**

Chair: DC Angelides, Aristotle Univ of Thessaloniki, Greece
Co-Chair: CP Tsai, National Chung Hsing Univ, Taiwan, China

Wave Transformation between a Submerged Breakwater and a Seawall
CP Tsai, National Chung Hsing Univ, Taiwan, China

Progressive Waves on Gentle Slope under the Influence of Tidal Waves
BD Yang, YY Chen, National Sun Yat-sen Univ, Taiwan, China

Experimental Determination of Wave Dissipation by Undulating Obstacle
RS Shih, Tungnan Univ; WK Weng, CR Chou, Taiwan Ocean Univ, Taiwan, China

A Note on Hybrid Wide-Spacing Approximation to Wave Scattering by a Varying Topography
SN Seo, Korea Ocean Research & Development Inst, Korea

Experimental Study of Wave Statistics and Nonlinearity on Sloping Bottoms
YX Ma, GH Dong, XZ Ma, Dalian Univ of Tech, China

Transformation of Wave Groups from Intermediate through Shallow Water Depths

W Kioka, NN Pujianiki, T Kitano, Nagoya Inst of Tech, Japan

38. SBD IV: Fracture Mechanics (V. 4)
Tuesday June 19 08:00 Room 7

Chair: E Tsuru, Nippon Steel, Japan

Co-Chair: HW Jin, ExxonMobil Research & Engineering, USA

Flaw Acceptability of In-Service Offshore Pipelines

A Fonzo, G Melis, Centro Sviluppo Materiali, Italy; P Darcis, I Marines-Garcia, H Quintanilla, Tubos de Acero de Mexico, Mexico; F Marchesani, Saipem Energy Services, Italy

Advancements Regarding Capacity Prediction of Strain-Based Pipelines

D Fairchild, V Krishnan, H Tang, S Kibey, X Wang, M Macia, W Cheng, ExxonMobil Upstream Research, USA

Fatigue Crack Initiation Predicted By a Cyclic Plasticity Model with Damage Counting Parameter

S Tsutsumi, Osaka Univ, Japan

Fatigue and Fracture Performance of Reeled Mechanically Lined Pipes

T Tkaczyk, A Pepin, S Denniel, Technip, UK

Crack Front Straightness Validity in SENT Specimens

PL Moore, AR Malpas, HG Pisarski, TWI Ltd, UK

**39. FRONTIER ENERGY IV:
Hydrate Development (V. 1)**
Tuesday June 19 08:00 Room 8

Chair: GJ Chen, China Univ Of Petroleum, China

New Gas Hydrates Promoters: Spectroscopic Observation and Phase Equilibrium

H Lee, WC Shin, SM Park, HY Ro, KAIST, Korea

Bulk Thermal Conductivity of Stable and Dissociated Methane Hydrate-Bearing Zones

S Falser, M Loh, A Palmer, TS Tan, National Univ of Singapore, Singapore

Recovery of Methane Intercalated in Natural Gas Hydrate Sediments Using a Carbon Dioxide and Flue Gas Mixture

H Lee, DY Koh, H Kang, DO Kim, JW Park, MJ Cha, KAIST, Korea

Characterization of Hydraulic Permeability of Methane-Hydrate-Bearing Sediment Estimated by T2-Distribution of Proton NMR

H Minagawa, K Egawa, Y Sakamoto, T Komai, N Tenma, H Narita, National Inst of AIST, Japan

Prediction of Stresses and Deformation of Production Well and Seabed for Methane Hydrate Production Using Multi Phase Coupled Simulator COTHMA

J Yoneda, N Tenma, K Miyazaki, Y Sakamoto, M Kakumoto, K Aoki, National Inst of AIST; J Mori, West Japan Engineering Consultants, Japan

Friction Strength between Casing and Cement or Sand under Confining Pressure

M Kakumoto, J Yoneda, N Tenma, K Miyazaki, K Aoki, National Inst of AIST; R Itoi, Kyushu Univ, Japan

Experimental Investigation into the Applicability of Depressurization to Dissociate Methane Hydrate in an Unconsolidated Sedimentary Sample

TW Ahn, JH Lee, JY Lee, SJ Kim, Korea Inst of Geoscience & Mineral Resources; CH Park, Kangwon National Univ, Korea

**40. OFFSHORE MECHANICS I:
Floating Dynamics 1 (V. 1)**

Tuesday June 19 08:00 Room 9

Chair: LF Xiao, Shanghai Jiao Tong Univ, China

Co-Chair: K Kirimoto, NTNU, Norway

Methodology to Apply TLP Tow Test Data in Hull VIM Numerical Analysis

Z Zhang, SS Zhang, XY Zhang, E Huang, FloaTEC, USA

Effect of Directional Bimodal Seas on TLP Response

N Varadarajan, CY Chen, McDermott Engineering, USA

Optimized Design of Equivalent Truncated Mooring System Based on Similarity of Static and Damping Characteristics TH Fan, DS Qiao, JP Ou, Dalian Univ of Tech, China

Hydro-elastic Dynamic Analysis of Large-scale Flexible Offshore Platforms

HY Kang, MH Kim, Texas A&M Univ, USA; MK Kim, JY Cho, GS E&C, Korea

Experimental Research on the Global Performance of a VLFOB Concept

LF Xiao, YF Kou, LJ Yang, X Li, Shanghai Jiao Tong Univ, China

A New Concept of Spar in Deep Water and Its Hydrodynamic Performance under Internal Wave

MY Sun, WP Huang, Ocean Univ of China, China

41. UNDERSEA IV: Vehicle and Control 2 (V. 2)

Tuesday June 19 08:00 Room 10

Chair: S Yamaguchi, Kyushu Univ, Japan

The Use of Robotic Apparatus for Studying Propulsion Performance and Fluid Mechanism of Undulatory Fish Locomotion

L Wen, Harvard Univ, USA; GH Wu, Tsinghua Univ; TM Wang, Beihang Univ, China

Development and Preliminary Study of Experimental System of Swarm Formation by Underwater Robots

A Konno, Y Ohkubo, N Ono, Y Suzuki, S Ito, Kogakuin Univ, Japan

On the Thrust Efficiency of an IPMC Actuated Robotic Swimmer: Dynamic Modeling and Experimental Investigation

Q Shen, TM Wang, Beihang Univ, China; L Wen, Harvard Univ, USA; JH Liang, Y Chen, Beihang Univ, China

Indirect Adaptive Control for Autonomous Underwater Vehicle-Manipulator Systems

S Mohan, JW Kim, KAIST, Korea

Performance Evaluation of Communication and Video System for a Multi-legged Subsea Robot

BH Kim, SW Park, PM Lee, BH Jun, Korea Ocean Research & Development Inst, Korea

Oceanographic Survey Design and Error Analysis for a Solar-Powered Autonomous Surface Craft

JH Guo, YL Ma, DC Li, JF Tsai, YJ Lee, National Taiwan Univ, Taiwan, China

TUESDAY 10:30

42. LNG SLOSHING V: Sloshing Tests (V. 3)
Tuesday June 19 10:30 Room 1

Chair: F Dias, Univ College Dublin, Ireland

First Sloshing Model Tests Benchmark

T Loysel, Alten; S Chollet, E Gervaise, L Brosset, P-E de Seze, Gaztransport & Technigaz, France

Sloshing Model Tests at Scale 1:10

L Brosset, C Kosinki, J Amaichan, S Claude, Gaztransport & Technigaz, France

Comparison of Two Measuring Systems with Various Acquisition Frequencies for Sloshing Tests

B Fillon, J Henry, Bureau Veritas, France

An Alternate Maximum Impact Pressure Measurement

E Baudin, B Fillon, L Diebold, Bureau Veritas, France

Repeatability and Practical Ergodicity of 2D Sloshing Experiments

E Botia Vera, J Mas Soler, Tech Univ of Madrid, Spain; G Bulian, Univ of Trieste, Italy; A Souto Iglesias, Tech Univ of Madrid, Spain

Experimental Investigation of 3D Sloshing Effects in Thin Rectangular Tanks

S Schreier, B Mehl, Univ of Rostock, Germany

An Experimental Investigation of Liquid Sloshing Impact Load on a Rectangular Tank

ZJ Wei, QJ Yue, SL Ruan, SQ Tong, TW Hu, Dalian Univ of Tech, China

Preliminary Analysis of Impact Pressure on Swash Bulkheads on the Top of a Liquid Tank

M Sun, Harbing Engineering Univ, China; QW Ma, City Univ, UK; LP Sun, BQ Li, Harbin Engineering Univ, China

43. HYDRODYNAMICS III: MetOcean 3 (V. 3)
Tuesday June 19 10:30 Room 2

Chair: M Minoura, Osaka Univ, Japan

Co-Chair: J Spinneken, Imperial College London UK

Motion-Based Wave Estimation by a Bayesian Inference Method: A Procedure for Pre-Defining the Hyperparameters

AN Simos, IB da Silva Bispo, EA Tannuri, JJ da Cruz, Univ of Sao Paulo, Brazil

HF Radar Measurement of Surface Current around Taiwan - Some Preliminary Results and Validations

EY Liang, SH Chen, WC Yang, YJ Wang, CW Lee, Taiwan Ocean Research Inst, Taiwan, China

Application of Bayesian Wave Estimation to Actual Merchant Vessels

T Iseki, Tokyo Univ of Marine Science & Tech; M Baba, K Hirayama, Japan Radio, Japan

Study on the Simulation Performance of Two-sided Segmented Wavemakers

J Li, G Chen, P Tao, HN Lv, Shanghai Jiao Tong Univ, China

The Problem of Simulating Simultaneous Distribution of Waves and Current in a Towing Basin in Shallow Water

VV Magarovskiy, AN Kulikova, Krylov Shipbldg Research Inst. Russia

Space-Time Reconstruction of Oceanic Sea States via Variational Stereo Methods

G Gallego, Univ Politecnica de Madrid, Spain; A Yezzi, F Fedele, Georgia Inst of Tech, USA; A Benetazzo, Consiglio Nazionale delle Ricerche, Italy

Early Summer Circulation in the Gulf of Patras (Greece)

NT Fourniotis, GM Horsch, Univ of Patras, Greece

Fully Nonlinear Wave Diffraction by a Velocity Potential Division Method

BZ Zhen, B Teng, DZ Ning, Dalian Univ of Tech, China

A Hydro-Morphodynamic Model for the Nearshore Region: Resolution of the Exner Equation

M Postacchini, M Brocchini, Univ Politecnica delle Marche, Italy

44. RENEWABLE ENERGY V: Offshore Wind 5: Floating 1 (V. 1)
Tuesday June 19 10:30 Room 3

Chair: JD. Sørensen, [Aalborg Univ, Denmark](#)

Co-Chair: PE Thomassen, NTNU, Norway

Mooring Effects on Dynamic Behavior of Sub-structure for Floating type Offshore Wind Turbine System

CY Song, JH Cha, CI Moon, Mokpo National Univ, Korea

Experimental Study on a Single-Point-Mooring Floating Structure

CC Huang, MF Lee, National Sun Yat-sen Univ, Taiwan, China

Development of Surface Current Observation System Using GPS Sensor Network and its Application to a Bathing Beach

A Myhr, Norwegian Univ of Life Sciences; TA Nygaard, Inst for Energy Tech, Norway

Linear and Nonlinear Analysis of Tension Leg Platform Wind Turbines

EE Bachynski, T Moan, NTNU, Norway

Yaw Stability of a 3-Bladed Wind Turbine

T Bracchi, P-E Krogstad, NTNU, Norway

The Wind-Wave Tunnel Test of a New Offshore Floating TLP Wind Turbine with Mooring Lines

NX Ren, Harbin Inst of Tech; YG Li, JP Ou, Dalian Univ of Tech, China

45. TSUNAMI V: Generation & Warning 3 (V. 3)
Tuesday June 19 10:30 Room 4

Chair: T Tomita, Port and Airport Research Inst, Japan

Co-Chair: AC Yalciner, Middle East Tech Univ, Turkey

Investigation of the Poro-Elastic Response of Seabed to Tsunami Waves

A Merxhani, DF Liang, Univ of Cambridge, UK

Fully Nonlinear Dispersive Shallow Water Equations on a Rotating Sphere

GS Khakimzyanov, ZI Fedotova, Inst of Computational Technologies, RAS, Russia

Calculations of Wave Run-Up on Cylinder in Multi-Directional Focused Wave

JX Li, ZH Wang, SX Liu, Dalian Univ of Tech, China

Resonant Long-Wave Run-Up on a Plane Beach

T Stefanakis, France; F Dias, Univ College Dublin, Ireland; D Dutykh, Univ de Savoie, France

Field Survey of the 27 February 2010 Chile Tsunami

N Kalligeris, Tech Univ of Crete, Greece; HM Fritz, Georgia Inst of Tech, USA; CE Synolakis, Hellenic Center for Marine Research, Greece; R Weiss, Texas A&M Univ, USA

Tsunami Wave Runup on the Clustered Islands using Boussinesq-type Model

JM Chen, Univ of Cambridge, UK

Sensitivity Analysis of a 2DH Model for Flood Wave Propagation over Dry Land

C Koutitas, M Gousidou, Aristotle Univ of Thessaloniki, Greece

Doppler Effect on Tsunami due to Tidal Amphidromes

K Murali, IIT Madras, India; MR Behera, National Univ of Singapore, Singapore; V Sundar, IIT Madras, India

46. ADVANCED SHIP TECH I: Ultimate Strength (V. 4)
Tuesday June 19 10:30 Room 5

Chair: T Yao, Tsuneishi Shipbldg, Japan

Collapse Behaviour and Ultimate Strength of Stiffened Plates with Arbitrary Number of Stiffeners Subjected to Longitudinal Thrust

A Yasuoka, S Tanaka, Hiroshima Univ; D Yanagihara, Ehime Univ; O Shigenobu, Hiroshima Univ; T Yao, Tsuneishi Shipbldg, Japan

Residual Longitudinal Strength of Hull Girder Considering Probabilistic Damage Extents

JM Choung, JM Nam, Inha Univ, Korea

The Effect of Initial Imperfection on the Hull Girder Ultimate Strength of Intact and Damaged Ships

K To, M Maeda, T Yoshikawa, Kyushu Univ, Japan

Ultimate Longitudinal Strength Analysis of Ship Hull Girder with Damages

ZM Alie, M Fujikubo, Osaka Univ; ZY Pei, Tsuneishi Shipbldg; K Iijima, Osaka Univ, Japan

Collapse Behaviour of Ship Hull Girder of Bulk Carrier under Alternate Heavy Loading Condition

Z Pei, Tsuneishi Ship Design, China; K Iijima, M Fujikubo, Osaka Univ; S Tanaka, S Okazawa, Hiroshima Univ; T Yao, Tsuneishi Ship Design, Japan

Approaches to the Improvement of the Applicability of the Idealized Structural Unit Method for Collapse Analysis of Plate Structures

T Lindemann, J Klostermann, P Kaeding, Univ of Rostock, Germany

Third Order GBT Terms and Its Complete Solution

RJ Chiu, Univ of Manchester, UK

Nonlinear Static Analysis of Deep Water Axisymmetric Half Drop Shell Storage Container with Constrained Volume

W Jiammeepreecha, S Chucheeepsakul, King Mongkut's Univ of Tech, Thailand

47. COASTAL II: Waves & Modeling 2 (V. 3)
Tuesday June 19 10:30 Room 6

Chair: K Hirayama, Port and Airport Research Inst, Japan
Co-Chair: SA Mavrakos, National Tech Univ of Athens, Greece

Nonpropagating Waves in the Vicinity of Perforated Breakwater
O Nejadkazem, AR Mostafa Gharabaghi, Sahand Univ of Tech, Iran

Wave Simulations through SAR Cosmo-SkyMed Wind Retrieval and Verification with Buoy Data
G Benassai, M Migliaccio, A Montuori, A Ricchi, Univ of Naples Parthenope; Italy

Boussinesq-Type 2D Wave Equations: Derivation and Analysis
M Chondros, C Memos, National Tech Univ of Athens, Greece

Application of Wave Model YW-WAM to Coastal Engineering
X Lin, B Yang, Hohai Univ, China

Modeling Combined Diffraction-Refraction in a Coastal Spectral Wave Model
LH Lin, Z Demirbilek, US Army Corps of Engineers, USA

The Nonlinear Schrödinger Equation on Slowly Varying Topography
YF Zhang, Tianjin Research Inst for Water Transport Engineering, China

Theoretical and Experimental Study of Wave Breaking for Nonlinear Water Waves Propagating on a Sloping Bottom
YY Chen, Sun Yat-sen Univ; HC Hsu, National Cheng Kung Univ; MS Li, YP Lin, National Sun Yat-sen Univ, Taiwan, China

48. SUBSEA, PIPELINES, RISERS I:
NORD Stream (V. 2)
Tuesday June 19 10:30 Room 7

Chair: WC Kan, ExxonMobil Development, USA

Nord Stream Project - Assisting Pipelaying on Soft Seabed: Gravel Berm Stability and Intervention Work Refinement
LM Bartolini, D Zenobi, M Canu, F Mele, LA Modesto, Saipem Energy Services, Italy; J Watkins, Nord Stream AG, Switzerland

Nord Stream Project - Segmented Pipeline System: Sizing vs Design for Operation
D Pettinelli, SP Bergomi, R Bruschi, D Zenobi, Saipem Energy Services, Italy; W Rott, T Gjedrem, Nord Stream AG, Switzerland

Nord Stream Project - Baltic Sea Environment: Hydrogen Damage Assessment for Line Pipe Steel and Anode Material Selection
M Gentile, M Fehervari, Saipem Energy Services; S Ragazzoni, M Cattalini, L Tomaselli, Saipem SpA, Italy; T Gjedrem, Nord Stream AG, Switzerland

**Nord Stream Project - Route Selection and Optimised Intervention
Work Design to Meet Design Criteria**

F Guidi, D Pettinelli, F Tose, E Iannucci, S Albanese, Saipem Energy Services, Italy; J Watkins, Nord Stream AG, Switzerland

Nord Stream Project – Very Large Size Valves and Actuators – Design and Testing

S Ragazzoni, G Campanelli, Saipem SpA, R Pozzati, I Ambrosini, Petrolvalves Srl, Italy; T Gjedrem, Nord Stream AG, Switzerland

Nord Stream Project – Pipeline Safety against Ship Traffic Related Threats – Quantitative Risk Assessment Approach

L Vitali, F Candiracci, R Bruschi, Saipem Energy Services, Italy; W Rott, Nord Stream AG, Switzerland

The Nord Stream Project (NSP)

D Zenobi, W Cimbali, Saipem Energy Services, Italy; W Rott, T Gjedrem, Nord Stream AG, Switzerland

49. FRONTIER ENERGY V: Hydrate Modeling (V. 1)
Tuesday June 19 10:30 Room 8

Chair: H Lee, KAIST, Korea

Mechanical and Dissociation Property of Methane Hydrate Bearing Sand

M Hyodo, Yamaguchi Univ; J Yoneda, AIST; Y Nakata, Yamaguchi Univ, Japan

Loading-Rate Dependence of Triaxial Compressive Strength of Artificial Methane-Hydrate-Bearing Sediment Containing Fine Fraction

K Miyazaki, N Tenma, K Aoki, Y Sakamoto, National Inst of AIST; T Yamaguchi, Toho Univ, Japan

Influence of CO₂ Hydrate on Flow Behavior of Liquid CO₂ in Packed Column

Y Takagi, A Kaneko, Y Abe, Univ of Tsukuba; K Yamane, National Maritime Research Inst, Japan

Multiphase Flow Behavior of Supercritical CO₂ in Sandy Sediments - Matching Analysis of Simulation and Experiment for Carbon Storage

T Komai, Y Sakamoto, A Tanaka, National Inst of AIST, Japan

Preliminary Experiments for Geomechanical Characterization of Sandy Sediment Containing Supercritical CO₂

K Miyazaki, N Tenma, Y Sakamoto, National Inst of AIST; T Yamaguchi, Toho Univ, Japan

The Stability of Ocean Floor after the Exploitation of Gas Hydrate

XB Lu, XH Zhang, M Zhang, SY Wang, Inst of Mechanics, CAS, China

**50. OFFSHORE MECHANICS II:
Floating Dynamics 2 (V. 1)**

Tuesday June 19 10:30 Room 9

Chair: HS Choi, Seoul National Univ, Korea
Co-Chair: HR Jia, NTNU, Norway

A Simplified Method for Predicting Global Motion of Moored Semi-submersible Platforms

JR Wang, B Xie, CNOOC Research, China

Full-scale Monitoring and Evaluation of FPS Nan Haitiaozhan in South China Sea

Y Du, WH Wu, QJ Yue, Dalian Univ of Tech; Y Qu, ZM Shi, CNOOC, China

Relative Heave Motion Analysis of FPDSO's Hull and Tension Leg Deck

S Lei, WH Zhang, QJ Yue, JH Lin, Dalian Univ of Tech, China

Prediction of the Motion Responses a Truss Spar Platform in South China Sea by Applying the Hybrid Model Testing Technique

HN Liu, LF Xiao, X Li, Shanghai Jiao Tong Univ, China

Dynamics of FPSO with Polyester Mooring Lines

I Catipovic, V Coric, V Vukcevic, Univ of Zagreb, Croatia

Fully Coupled Nonlinear Dynamic Response of Spar Platform under Random Loads

M Jameel, Univ of Malaya, Malaysia; A Suhail, IIT Delhi, India

51. ARCTIC MATERIALS I (V. 4)

Tuesday June 19 10:30 Room 10

Chair: OM Akselsen, SINTEF, Norway

Keynote

Arctic Materials and Platform Winterisation (Keynote)

M Hauge, NTNU, Norway

Low Temperature Fracture Toughness of X80 Girth Welds

OM Akselsen, SINTEF/NTNU; E Østby, B Nyhus, SINTEF, Norway

Robust Material Qualification for Arctic Applications

AM Horn, Det Norske Veritas; E Østby, SINTEF; M Hauge, Statoil, Norway

Mechanical Properties and HAZ Toughness of YS 345/420 MPa Steel Plates for Arctic Offshore Structures

SH Jang, WG Kim, KM Ryu, SH Kim, IS Suh, POSCO, Korea

In-situ Heating and EBSD Measurements of Arctic Steels inside the SEM

KW Hansen, T Saetran, J Hjelen, T Nilsen, W Dall, NTNU; M Karlsen, Statoil ASA; OM Akselsen, NTNU/SINTEF; E Østby, SINTEF, Norway

Determination of Crystallographic Facet Orientation of Fracture Surface in Arctic Steels at Low Temperature by Using EBSD
P Mohseni, JK Solberg, M Karlsen, NTNU; OM Akselsen, E Østby, SINTEF; Norway

TUESDAY 13:10

Tuesday **Jin S Chung Award Lecture**
June 19 **13:15** Room 5

The Speaker to be announced on www.isopec.org

Introduction by R Ayer, ISOPE president, ExxonMobil Research & Engineering

Tuesday **52. LNG SLOSHING VI: CFD (V. 3)**
June 19 **14:00** Room 1

Chair: M Kashiwagi, Osaka Univ, Japan
Co-Chair: J-M Ghidaglia, ENS-Cachan, France

Simulation of Breaking Wave Impacts on a Mark III Containment System for LNG Carriers with LS-DYNA Bi-fluids
N Couty, HydrOcean; L Brosset, Gaztransport & Technigaz, France

Simulations of Breaking Wave Impacts on a Mark III Containment System for LNG Carriers with a Two-Phase Fluid-Structure SPH Model
P-M Guilcher, HydrOcean; L Brosset, GTT; E Jacquin, HydrOcean; D Le Touzé, Ecole Centrale Nantes, France

Simulation of Breaking Wave Impacts on a Rigid Wall by a 2D Compressible Two-Fluid Finite Volume Solver with Advanced Free Surface Reconstruction
J-P Braeunig, CEA/DAM/DIF; L Brosset, Gaztransport & Technigaz; J Costes, ENS-Cachan/EUROBIOS; F Dias, ENS-Cachan, France/Univ College Dublin, Ireland; J-M Ghidaglia, ENS-Cachan, France

Study of Free Surface Flows Using Level Set Method
N Repalle, Univ of Western Australia, Australia; KP Thiagarajan, IIT Madras, India; M Kantharaj, Univ of Maine, USA

CFD Post-Processing for Sloshing and Comparison with Potential Theory
L Diebold, N Moirod, T Gazzola, Bureau Veritas, France

Numerical Simulation of Sloshing with SPH
MD Itibar, NE Unal, Istanbul Tech Univ, Turkey

Tuesday **53. HYDRODYNAMICS IV:
Freak and Long Waves (V. 3)**
June 19 **14:00** Room 2

Chair: S Naito, Osaka Univ, Japan

Co-Chair: F Fedele, Georgia Inst of Tech, USA

A Study on the Characteristics of the Freak Wave Generated in the Ocean

M Ishiguro, A Shinkai, S Yamaguchi, Kyushu Univ, Japan

Wave Statistics and Space-Time Extremes via Stereo Imaging

F Fedele, Georgia Inst of Tech, USA; A Benetazzo, Italian National Research Council, Italy; G Gallego, Univ Politecnica de Madrid, Spain; PC Shih, A Yezzi, Georgia Inst of Tech, USA; F Barbariol, Univ of Padua, Italy

Parametric Modelling of Cyclonic Winds and Waves for Quick Location Assessment

E Spentza, I Garcia de Andoin, GL Nobel Denton, UK

Shallow Water Effects on Freak Wave Occurrence

H Kashima, K Hirayama, Port and Airport Research Inst; N Mori, Kyoto Univ, Japan

Short-term Wave Statistics in the Greek Seas

KH Soukissian, Hellenic Centre for Marine Research; DE Sifnioti, DK Kastrioti, Athens Univ, Greece

Numerical Investigation of Focused Waves on Uniform Currents

DZ Ning, XL Zhuo, TC Hou, B Teng, Dalian Univ of Tech, China

Wavelet Spectrum Analysis of Evolution Process of Freak Wave Generation in the Laboratory

JP Hu, South China Univ of Tech; YQ Zhang, Inst of Energy Conversion, CAS, China

Multi-Chromatic Shallow Water Waves Reproduction in a Large Wave Basin

H Peng, G Watts, Memorial Univ of Newfoundland; H Zaman, S McKay, Inst for Ocean Tech, Natl Research Council, Canada

Greenwater Velocity Measurements in a Large Scale Wave Basin Using Bubble Image Velocimetry

KA Chang, YK Song, K Ariyaratne, R Mercier, Texas A&M Univ, USA

54. RENEWABLE ENERGY VI: Offshore Wind 6: Floating (V. 1)
Tuesday June 19 14:00 Room 3

Chair: J Jonkman, National Renewable Energy Lab, USA

Co-Chair: TJ Larsen, RISØ/DTU, Denmark

Response Analysis of a Parked Spar-Type Wind Turbine under Different Environmental Conditions and Blade Pitch Mechanism Fault

ZY Jiang, M Karimirad, T Moan, NTNU, Norway

Modelling and Analysis of Semi-submersible Wind Turbine

MI Kvittem, T Moan, NTNU, Norway

Time Domain Analysis of the Spar-Type Floating Offshore Platform for Various Platform Geometries and Mooring Points
JY Go, SK Lee, DJ Kim, YJ You, KP Rhee, Seoul National Univ, Korea

Model Test of Floating Offshore Wind Turbine Moored by a Spring-TLP
HK Shin, Univ of Ulsan, Korea

Experimental Validation for Motion of SPAR-type Floating Wind Turbine at Severe Condition with Affect of Gyro moment of the Rotating Blade of Windmill
MNE Mostafa, M Murai, R Nishimura, O Fujita, Yokohama National Univ, Japan

55. TSUNAMI VI: Propagation & Flooding (V. 3)
Tuesday June 19 14:00 Room 4

Chair: ST Grilli, Univ of Rhode Island, USA
Co-Chair: K Murali, IIT Madras, India

NEMO-SN1 (Western Ionian Sea, off Eastern Sicily): A Cabled Abyssal Observatory with Tsunami Early Warning Capability
F Chierici, INAF-IRA; P Favali, L Beranzoli, A De Santis, D Embriaco, G Giovanetti, G Marinaro, S Monna, INGV, L Pignagnoli, CNR-ISMAR; G Riccobene, INFN; F Bruni, F Gasparoni, Tecnomare, Italy

Analytical Solutions for Landslide Tsunami Generation and Propagation in Inclined Canyons
I Didenkulova, Tallinn Univ of Tech, Estonia; E Pelinovsky, Inst of Applied Physics, Russia

Numerical Simulation of Long Wave Propagation and Run-Up Using a Lattice Boltzmann Approach on GPGPU Hardware
C Janssen, ST Grilli, Univ of Rhode Island, USA; M Krafczyk, TU Braunschweig, Germany

Numerical Simulation of Tsunami Propagation with Corrected Dispersion Effects in Ocean
YS Cho, KW Park, TM Ha, YI Moon, Hanyang Univ, Korea

Application of SEC-HY21 Model on Tsunami Simulations
MC Chiou, CP Ko, CA Hsu, CS Kung, Sinotech Engineering Consultant, Taiwan, China

56. ADVANCED SHIP TECH II: At-Sea Explosions (V. 4)
Tuesday June 19 14:00 Room 5

Chair: M Fujikubo, Osaka Univ, Osaka, Japan
Co-Chair: P Kaeding, Univ of Rostock, Germany

Comparison of Various Methods of Assessment of Loading Parameters on Platform Structures at Emergency Gas Explosion
AI Dulnev, VV Chizhevsky, Krylov Shiplbldg Research Inst, Russia

**Simulation of Dynamic Behavior of High Speed Catamaran Craft
Subjected to Underwater Explosion**

JH Chung, STX Offshore & Shipbldg; YS Shin, KAIST; KH Yim, SH Lee,
YP Kim, STX Offshore & Shipbldg, Korea

**Simulation of the Structure Response and Survivability of a VLCC during
an Underwater Explosion (UNDEX)**

SE Kim, STX Offshore & Shipbldg; YS Shin, KAIST; SK Shin, YD Choi, JS
Lee, STX Offshore & Shipbldg, Korea

Optimal Allocations of Seismic Restraints in Pipe Systems in Ships

DQ Yang, T Ma, XZ Lin, Shanghai Jiao Tong Univ, China

57. COASTAL III: Waves & Modeling 3 (V. 3)
Tuesday June 19 14:00 Room 6

Chair: RY Yang, National Cheng Kung Univ, Taiwan, China
Co-Chair: JW Lee, Korea Maritime Univ, Korea

**Numerical Modeling of Surf Zone Turbulence and Wave Induced
Mean Flows with the SPH Method**

CV Makris, YN Krestenitis, Aristotle Univ of Thessaloniki, Greece

**An Experimental Study and Characterization of Transition to
Turbulence in Solitary Wave Boundary Layer**

B Winarta, H Tanaka, H Yamaji, Tohoku Univ, Japan

**Large-Eddy and Large-Wave Simulation of Flow under Breaking
Waves over Constant Slope Bed**

GA Kolokythas, AA Dimas, Univ of Patras, Greece

Fiber-optic Probe for Measuring Local Void Fraction of Bubbly Flows

CJ Huang, YT Lin, TM Tien, National Cheng Kung Univ, Taiwan, China

**PIV Measurements on Flow Field of Waves Propagating over a
Submerged Poro-Elastic Breakwater**

TW Hsu, YJ Lan, JW Lai, YH Cheng, National Cheng Kung Univ,
Taiwan, China

**58. SUBSEA, PIPELINES, RISERS II:
New Concept Development (V. 2)**
Tuesday June 19 14:00 Room 7

Chair: FK Lim, 2H Offshore Engineering, UK.

Sea Trial of a Buoy Supported Drilling Riser

FK Lim, 2H Offshore, UK; LS Ching, 2H Offshore, Malaysia; YF Guo,
COSL, China

Offshore Installation of Reinforced Thermoplastic Pipe (RTP)

BB Yu, Y Bai, P Cheng, Zhejiang Univ, China

**Investigation on the Mechanical Properties of the Reinforced
Thermoplastic Pipe (RTP) under Internal Pressure**

F Xu, Y Bai, P Cheng, Zhejiang Univ, China

Structural Performance of Comeld Hybrid Metal-To-Composite Joints
SE Mouring, US Naval Academy, USA; L Louca, Imperial College
London, UK

Optimal Design Approach of Compliant Vertical Access Risers
MAL Martins, ESS Silveira, EEN Lages, Federal Univ of Alagoas, Brazil

**Computational Fluid Dynamic Analysis of a Novel Open Bundle Riser
Tower System**
SL Liu, DYP Lee, L Chinello, N Willis, Intecsea UK Ltd, UK

**Urugua-Mexilhco Pipeline Route Selection Design - A Santos Basin
Case Study**
CRM Barros, AGL Pereira, SV Santos, PETROBRAS;,G Gottardo,
Saipem do Brasil, Brazil

59. GEOTECH I: Suction Piles (V. 2)
Tuesday June 19 14:00 Room 8

Chair: SS Kim, Korea Land & Housing Corp, Korea

Keynote

**Performance of Suction Embedded Plate Anchors for Permanent
Mooring (Keynote)**
PC Wong, ExxonMobil Development, USA; C Gaudin, MF Randolph, MJ
Cassidy, YH Tian, Univ of Western Australia, Australia

Numerical Analysis on the Sliding Failure of Suction Pile
HJ Youn, MJ Lee, I Lee, Hongik Univ; IS Jang, KORDI; HT Kim, Hongik
Univ, Korea

On the Suction Pile Relocation Distance
Y Li, Technip USA; E Liedtke, BP USA, USA

**Upper Bound Plasticity Method Calculating Cyclic Bearing Capacity of
Suction Anchors with Taut Mooring Systems**
JL Liu, JH Wang, Tianjin Univ, China

60. OFFSHORE MECHANICS III: Systems I (V. 1)
Tuesday June 19 14:00 Room 9

Chair: F Mineiro, Petrobras, Brazil

New Concept of a Deepwater Tumbler Platform
B Xie, WH Xie, Z Jiang, China National Offshore Oil, China

**Introduction of the Structural Analysis Methodology for Platform
Installation/Removal and Pipe Lay Vessel**
TJ Koh, DK Lee, JH Woo, Daewoo Shipbldg & Marine Engineering,
Korea

Seacliff Pier Complex Decommissioning Program
C Basavalinganadoddi, California State Lands Commission, USA

Submersible Ocean Observation Buoy System to Survive under Severe Sea Conditions

M Nakamura, W Koterayama; Kyushu Univ; S Masuda, S Miyabe, Tottori Prefectural Fisheries Experimental Station; H Aso, Zeni Lite Buoy, Japan

Building Submarine Seismic Detection System

SH Yu, Taiwan Ocean Research Inst, Taiwan, China

Heave Compensation Dynamics for Offshore Drilling Operation

NK Ku, S Ha, A Jo, KY Lee, Seoul National Univ; KP Park, Daewoo Shipbldg & Marine Engineering, Korea

Study of Salt-tolerable Latex Cement Slurries

JG Zeng, FQ Sun, PX Li, AP Liu, W Hou, Tianjin Bo-Xing Engineering Sci-Tech, CNPC, China

A Numerical Optimization Method for the Development Mode Selection of Deepwater Oil & Gas Fields

ML Duan, China Univ of Petroleum; ZG Li, Offshore Oil Engineering; YY Wang, YH Dong, China Univ of Petroleum, China

Analysis of Approaches for Cost Estimation and Pricing Methods for Ocean Engineering Facilities Design Works

MS Korableva, Krylov Shipbuilding Research Inst, Russia

Tuesday **61. ARCTIC MATERIALS II (V. 4)** **Room 10**
June 19 **14:00**

Chair: KB Kang, POSCO, Korea,

Co-Chair: AM Horn, Det Norske Veritas, Norway

Microstructures and Mechanical Properties of Heavy Gauge API-X80 Linepipe Steel for Arctic Application

KB Kang, SH Chon, JY Yoo, POSCO, Korea

Comparison of Fracture Toughness in Real Weld and Thermally Simulated CGHAZ of a 420 MPa Rolled Plate

E Østby, SINTEF; G Kolstad, NTNU; OM Akselsen, SINTEF; NTNU; C Thaulow, NTNU; M Hauge, NTNU/Statoil, Norway

Effects of Microstructure on Initiation of Brittle Fracture in Low Alloy Steel Welds

K Brandt, T Salvesen, JK Solberg, NTNU; E Østby, SINTEF; OM Akselsen, NTNU/SINTEF, Norway

Influence of Large Amount of H₂S on Carbon Steel and Low Alloy Steel Toughness at Low Temperature

P Fassina, T Cheldi, ENI, Italy

The Influence of Plastic Strain on the Effective Hydrogen Diffusion Coefficient and Trapping in Base Metal and Weld Simulated Heat Affected Zone of an X70 Pipeline Steel

V Olden, SINTEF; OM Akselsen, SINTEF/NTNU; AS Hauge, NTNU, Norway

Low Temperature Brittle Fracture Susceptibility in Welding of F70 Grade Forging

MT Welsch, D Bruch, Bruck Forgings, Germany; OM Akselsen, E Østby, SINTEF, Norway

Material Mismatch Effects-Simplified Analysis

C Thaulow, N Askgaard, NTNU; E Østby, SINTEF, Norway

TUESDAY 16:20

62. LNG SLOSHING VII: Structural Responses (V. 3)
Tuesday June 19 16:20 Room 1

Chair: YH Kim, Seoul National Univ, Korea
Co-Chair: L Diebold, Bureau Veritas, France

Structural Safety Assessment of LNGC MARK III Membrane Type CCS under Sloshing Impact Loading

SG Lee, JK Kim, Korea Maritime Univ, Korea

Parametric Investigation on the Simplified Triangular Impulse of Sloshing Pressure and Categorization of the Structural Response on the Mark III LNG CCS

SC Kim, Inha Technical College; IS Nho, Chungnam National Univ; BS Jang, Seoul National Univ; JH Lee, Inha Univ, Korea

Reliability-Based Sloshing Assessment of Containment Systems in LNGCs and FLNGs

B Wang, U Shin, C Wang, American Bureau of Shipping, USA

Finite Particle based Elastic Structure Dynamics Modeling for LNG Sloshing Analysis

A Baeten, Augsburg Univ of Applied Sciences, Germany

Simplified Impinging Jet Model for Practical Sloshing Assessment of LNG Cargo Containment

SY Hwang, JH Lee, Inha Univ; SC Kim, Inha Technical College; DK Jo, Inha Univ, Korea

Dynamic Amplification Factor of NO96 Insulation Structures of Membrane System

H Dobashi, A Usami, ClassNK, Japan

Simulations of a Sloshing Experiment by FEM CFD, SPH and FEM FSI Approaches

M Viviani, M Fossa, CM Rizzo, G Tani, Univ of Genoa, Italy

63. HYDRODYNAMICS V: Wave Loading (V. 3)
Tuesday June 19 16:20 Room 2

Chair: DC Wan, Shanghai Jiao Tong Univ, China
Co-Chair: TQ Li, Wuhan Univ of Tech, China

Numerical Investigation of Extreme Wave Effects on Cylindrical Offshore Structures

HJ Cao, DC Wan, Shanghai Jiao Tong Univ, China

Long Comparison of Wave Force Predictions for a Surface Piercing Column

PH Taylor, Univ of Oxford; J Zang, Univ of Bath, UK

Interaction of Waves and Pile Group-Supported Offshore Structures: A Large Scale Model Study

L Bonakdar, H Oumeraci, TU Braunschweig, Germany

Development of STEP for the Reduction of Added Resistance in Waves

M Kuroda, M Tsujimoto, N Sasaki, National Maritime Research Inst; M Omote, N Nojima, N Kaga, Naikai Zosen Corp, Japan

Wave Resistance for a Submarine at a Snorkel Submergence

MB de Conti, Univ of Sao Paulo; V Domiciano, Centro Tecnológico da Marinha em Sao Paul, A Nunes, Univ of Sao Paulo, Brazil

Experimental Investigation on Large-Scale Tunnel Element Immersing Process of Immersed Tube Tunnel in the Towing Tank within the Load of Wind-Wave-Current

KQ Chen, S Peng, WG Wu, HX Sun, Wuhan Univ of Tech, China

Numerical Studies of Oscillating Flow around a Cylinder and Assessment of Morison's Equation

SA Kinnaas, LW Han, XM Yu, Univ of Texas at Austin, USA

Forces on Bilge Keels in Regular and Irregular Oscillating Flow

R van't Veer, SBM Schiedam BV; A Pistidda, Altran BV; A Koop, MARIN, Netherlands

Dynamics Calculation of Towed Cables under Heave Motion of Mother Vessels

XS Xu, SW Wang, L Lian, Shanghai Jiao Tong Univ, China

Deflection of Slender Cylindrical Member under Breaking Wave Impact

SA Sannasi, R Manjula, IIT Madras; K Palanichamy, National Inst of Tech, India

On the Study of Wind-Wave-Body Coupling by a Two-Phase Solver

TQ Li, X Chang, Wuhan Univ of Tech, China

64. RENEWABLE ENERGY VII: Offshore Wind 7: Analysis Tools

(V. 1)

Tuesday June 19 16:20 Room 3

Chair: E Loukogeorgaki, Aristotle Univ of Thessaloniki, Greece

Offshore Code Comparison Collaboration Continuation (OC4), Phase I - Results of Coupled Simulation of Offshore Wind Turbine with Jacket Support Structure

W Popko, IWES, Germany; J Jonkman, A Robertson, NREL, USA; TJ Larsen, RISØ/DTU, Denmark; K Sfertrix, KM Okstad, Fedem Technology, Norway; J Nichols, Garrad Hassan & Partners, UK; TA Nygaard, Inst for Energy Tech, Norway; W Shi, HC Park, POSTECH, Korea; Z Gao, NTNU, Norway; D Manolas, NTUA, Greece; A Basquez-Rojas, J Dubois, Leibniz Univ Hannover, Germany; M Kohlmeier, IWES, Germany; A Yde, RISØ/DTU, Denmark; D Kaufer, Univ Stuttgart, Germany; MJ de Ruiter, WMC, Netherlands; J Peeringa, ECN, Netherlands; K Kim, ABC, USA; H von Waaden, Repower Systems, Germany

A Numerical Tool for the Integrated Analysis of Fixed-Bottom Offshore Wind Turbines

E Loukogeorgaki, DC Angelides, Aristotle Univ of Thessaloniki, Greece

FAST Code Verification of Scaling Laws for DeepCwind Floating Wind System Tests

A Jain, NREL/Texas Tech Univ; A Robertson, JM Jonkman, National Renewable Energy Lab; A Goupee, Univ of Maine; R Kimball, Marine Maritime Academy; A Swift, Texas Tech Univ, USA

Global Analysis of Floating Wind Turbines: Code Development, Model Sensitivity and Benchmark Study

H Ormberg, MARINTEK; EE Bachynski, NTNU, Norway

A Novel Tool for Fem Analysis of Offshore Wind Turbines with Innovative Visualization Techniques

PE Thomassen, NTNU, Norway

Calibration and Validation of a FAST Floating Wind Turbine Model of the DeepCwind Scaled Tension-Leg Platform

G Stewart, Univ of Massachusetts; A Robertson, J Jonkman, National Renewable Energy Lab; M Lackner, Univ of Massachusetts; A Goupee, Univ of Maine, USA

Validation of a Fast Panel Vortex Code for Wind Turbines Implemented on a General Purpose Graphics Processor Unit

L Eliassen, Univ of Stavanger; M Muskulus, NTNU, Norway

65. TSUNAMI VII: Structure & Sediment 1 (V. 3)
Tuesday June 19 16:20 Room 4

Chair: PF Filianoti, Univ Mediterranea di Reggio Calabria; Italy

Co-Chair: YS Cho, Hanyang Univ, Korea

Evaluation of Anchored Ship Motion under Tsunami Attack

R Ohta, E Kobayashi, Kobe Univ; S Koshimura, Tohoku Univ; M Murayama, Toyama National College of Tech, Japan

Impact of Tsunami Forces on Near-shore Buildings - Design and Analysis

I Nistor, D Palermo, Univ of Ottawa, Canada

Investigation into Structural Displacement due to Initial Tsunami Forces: Developing a Performance Based Tsunami Engineering Model

R Collins, AG Bloodworth, D Stagonas, Univ of Southampton, UK

Realistic Simulation of Tsunami Induced Flooding and Associated Fluid-Structure Interaction Using the ESI Group VPS Suite of Codes

A Kamoulakos, ESI Group, France; P Groenenboom, ESI Group Netherlands, Netherlands; S Vlachoutsis, J Ramos, ESI Group, France

Comparison of the Effects of Permeable, Impermeable and Monolithic Vertical Surfaces Submerged Breakwaters on Tsunami Run-up Height

E Irtem, Balikesir Univ; E Seyfioglu, Aralik Univ; S Kabdasi, Istanbul Tech Univ, Turkey

66. HPM I: Adv Materials & Structures 1 (V. 4)
Tuesday June 19 16:20 Room 5

Chair: S Herion, Karlsruhe Inst of Tech, Germany

Recent Development of High Strength Linepipe for Sour Service

M Okatsu, H Nakamichi, K Nishimura, N Ishikawa, R Muraoka, JFE Steel, Japan

Use of HFW Linepipe in Sour Service Applications

L De Pari, WH Van Geertruyden, JW Anson, ExxonMobil Development, USA

Effect of Pipe Forming on Hydrogen Permeation Behavior of Linepipe Steel in Sour Environment

KY Kim, SJ Kim, POSTECH; WK Kim, GB Kang, POSCO, Korea

Multiscale Modelling of X100 Pipeline Steels

M Zanganeh, C Pinna, Univ of Sheffield, UK

Potential Ageing Issues with Umbilical Hose Materials

WM Banks, M Bridesser, RA Pethrick, Univ of Strathclyde, UK

On Local Properties of Microstructures in Steel Welding

V Haugen, NTNU; OM Akselsen, NTNU/SINTEF; C Thaulow, NTNU; E Østby, SINTEF, Norway

Influence of Geometrical Imperfections on Adhesive Bonded Cast Steel - Steel Joints

M Albiez, T Ummenhofer, Karlsruhe Inst of Tech, Germany

Study for Transmission Law of Bending Waves through L Form Steel-Aluminum Joints

YS Lin, WG Wu, XB Li, Wuhan Univ of Tech, China

67. COASTAL IV: Breakwaters & Waves 1 (V. 3)
Tuesday June 19 16:20 Room 6

Chair: Y Yuksel, Yildiz Technical Univ, Turkey

Estimation of Repair Cost for Caisson Breakwater Covered with Wave-dissipating Blocks Including Influence of Sea Level Rise Due to Global Warming

S Araki, I Deguchi, Osaka Univ, Japan

Designing a New Low-Reflectivity Quay Wall Caisson

A Colucci, GH Smith, Univ of Exeter, UK; JR Medina, Univ Politecnica de Valencia, Spain

Earthquake-Based Displacements of a Gravity Type Quaywall: An Experimental Study

A Akgul, E Oguz, S Cokgor, Istangul Tech Univ, Turkey

Study on Seismic Performance Evaluation of an Existing Pile-Wharf Structure

Y Yuksel, B Doran, C Cakir, S Korkmaz, A Seckin, M Koroglu, Yildiz Tech Univ, Turkey

HMAR HARBOUR: An Integrated Numerical Model for Harbour Layout Design

S Christopoulos, I Avgeris, HYDROMARE; TV Karambas, Aristotle Univ of Thessaloniki, Greece

Adaptation of Existing Breakwaters to Sea Level Rise Overtopping Effect

TD Nguyen, J Brossard, Univ of Le Havre, France

Experimental Study on Mechanical Characteristics of Wooden Plank Road under Wave Actions

LC Sun, SS Yao, Tianjin Research Inst for Water Transport Engineering, China

Estimation of Seismic Forces and Analysis of Quay Wall in KACC Marina in the Eastern Zone of KSA

MA Hasan, Banha Univ; AM Mostafa, Cairo Univ, Egypt

68. SUBSEA, PIPELINES, RISERS III: Panel
Tuesday June 19 16:20 Room 7

Panelists
To Be Announced

69. GEOTECH II: Offshore Piple & Foundations (V. 2)
Tuesday June 19 16:20 Room 8

Chair: PC Wong, ExxonMobil Development, USA

Model Tests on Failure Modes and Bearing Capacities of Suction Anchors with Taut Mooring System

JH Wang, JL Liu, SZ Li, Tianjin Univ; Y Yang, Tianjin Xince Electronics Apparatus Tech, China

The Kinematic Failure Mechanism Analysis for Bucket Foundations: Physical Modelling and Numerical Simulation

A Barari, LB Ibsen, Aalborg Univ, Denmark

Physical Modelling of Bucket Foundation under Long Term Cyclic Lateral Loading

A Foglia, LB Ibsen, L Vabbersgaard Andersen, H Ravn Roesen, Aalborg Univ, Denmark

Seismic Performance of Suction Pile Foundations: Practical Solutions

EJ Parker, F Ardoino, D'Appolonia SpA; S Bughi, Saipem Energy Services, Italy

Numerical Simulation of the Deep Penetration Process of Spudcans into Sand Overlying Clay Using the Extended Hypoplastic Models

G Qiu, J Grabe, Hamburg Univ of Tech, Germany

Determining Pullout Capacity of a Deep Penetrating Anchor (DPA) Using FLAC3D

C Rudito, JT Lieng, Deep Sea Anchors, Norway

Mooring Design Utilizing a Coupled Mooring and Anchor Analysis Approach

EH Zimmerman, R Garrity, CY Nie, Delmar Systems, USA

Effect of a Thin Strong Middle Layer on Spudcan Penetration into Three-Layer Uniform Soils by LDFE Analysis

W Gao, YX Hu, Univ of Western Australia, Australia

Drag Embedment Anchors - Application of Field Test Data and Numerical Analysis Methods

R Ruinen, Vryhof Anchors BV, Netherlands

Effect of Skirt Geometry Variation on Uplift Capacity of Skirted Foundation

M Ahmadi, M Ghazavi, K N Toosi Univ of Tech, Iran

Research on Soil Failure Modes and Penetration Depth of Spudcan Foundation on Single Layer based on Finite Element Analysis Method [Proceedings only]

N Wang, JZ Wu, YC Xu, Ocean Univ of China, China

70. OFFSHORE MECHANICS IV: Systems II (V. 1)

Tuesday June 19 16:20 Room 9

Chair: T Mathai, The Glosten Assoc, USA

Tug Control Algorithms for Tandem Offloading Simulations

AJ Voogt, W Xu, MARIN USA, USA

Seed Variation Study in Coupled Analysis of FPSOs and Full Scale Comparison

F Mineiro, Petrobras; AC Fernandes, COPPE/UFRJ, Brazil

Assessment of Fatigue Damage of FPSO Topsides Structures Using Spectral Fatigue Analysis Method

Q Feng, WorleyParsons Europe, UK

The Design and Interface Management of Riser I-Tube of FPSO

TS Yun, Daewoo Shipbldg & Marine Engineering, Korea

Behaviour of a Moored Tanker under Extreme Environmental Conditions

E Sarioz, Y Unsan, K Sarioz, Istanbul Tech Univ, Turkey

Hydrodynamic Coupling Analysis of Net-Pen Cage and Well Boat

HR Jia, T Moan, NTNU, Norway

FEA of Structural Connection via Swaging Process

B Zhang, K Chang, I Solberg, S Miller, Technip; T Moran, Chevron, USA

Analysis of Hulls' Applicability of Semisubmersible Platforms with Pontoons for Organisation of Offshore Heliport

A Vamvini, DC Angelides, OY Timofeev, Krylov Shipbldg Research Inst, Russia

Strategic Development of Offshore Oil Production in Katakolo of Greece Considering Safety and Risk Assessment

A Vamvini, DC Angelides, Aristotle Univ of Thessaloniki; K Nikolaou, Kanergy Ltd, Greece

Structural Analysis of Rocket Impacting on to Water at High Velocity

KK Pathak, Armament R&D Establishment; AH Ghaisas, KLES College of Engineering & Tech, India

71. ARCTIC I: Navigation in Pack Ice (V. 1)

Tuesday June 19 16:20 Room 10

Chair: T Kokkinis, ExxonMobil Upstream Research, USA.

Keynote

Technical and Operational Development of Icebreaking Ships (Keynote)

G Wilkman, Aker Arctic Technology, Finland

Ships Breaking Through Sea Ice Ridges

D Ehle, Hamburg Ship Model Basin, Germany

Safety Assessment of Membrane Type Cargo Containment Systems in LNG Carrier under the Ice-Ship Repeated Impact

JH Kim, DH Kim, Hyundai Heavy Industries; HC Song, Mokpo National Univ, Korea

Development of the Arctic Fleet in the Russian Federation

VI Pavlenko, Arctic Research Center; EK Glukhareva, Oil and Gas Research Inst; SY Kutsenko, Arctic Research Center, Russia

Realistic Moving Ice Loads and Ship Structural Response

BW Quinton, CG Daley, Memorial Univ of Newfoundland; RE Gagnon, Inst for Ocean Technology, NRC, Canada

Simulation of Ice Loads on Ship Hull

V Trryaskin, V Yakimov, State Marine Tech Univ-St Petersburg, Russia; P Besse, Bureau Veritas, France

Features of Ship Vibration in Ice Operation Conditions
IM Belov, NN Spiridonov, Krylov Shipbldg Resesarch Inst, Russia

WEDNESDAY 08:00

72. RENEWABLE ENERGY XVI: Wave Energy 4 (V. 1)
Wednesday June 20 08:00 Room 1

Chair: F Dias, University College Dublin, Ireland
Co-Chair: KY Hong, Maritime & Ocean Eng Research Inst, Korea

**A Case Study of Short-Term Wave Forecasting based on FIR Filter:
Optimization of the Power Production for the Wavestar Device**
F Francesco, ST Mahdi, P Frigaard, Aalborg Univ, Denmark

**Multi Objective Optimization Performance of a Floating Flexible
System**
CE Michailides, DC Angelides, Aristotle Univ of Thessaloniki, Greece

**Control Influenced Layout Optimization of an Array of Wave Energy
Converters**
P Balitsky, G Bacelli, J Ringwood, National Univ of Ireland Maynooth,
Ireland

**Characteristics of the Electrical Power Output Generated by Float-
Counterweight Type Wave Power Generation System**
K Taneura, CTI Engineering; P Koirala, K Hadano, Yamaguchi Univ; H
Matsuzaki, CTI Engineering, Japan

**How Experiences from the Offshore Wind Industry Can Aid
Development of the Wave Energy Sector: Lessons Learned from EIA**
D Magagna, DM Greaves, D Conley, Univ of Plymouth, UK AMG
O'Hagan, B Holmes, Univ College Cork, Ireland; C McClellan, Univ of
Exeter, UK; T Simas, Wave Energy Centre, Portugal; C Huertas Olivares,
Inabesa, ABENGOA, Spain; J Chambel Leitao, Hidromod Ltd, Portugal;
H Mouslim, Ecole Centrale de Nantes, France; Y Torre-Enciso, Ente
Vasco de la Energia, Spain; J Sundberg, Univ of Uppsala, Sweden; N
Rosseau, European Ocean Energy Association, Belgium

73. HYDRODYNAMICS VI: Floating-Body Dynamics 1 (V. 3)
Wednesday June 20 08:00 Room 2

Chair: TC Su, Florida Atlantic Univ, USA
Co-Chair: YB Lee, Daewoo Shipbldg & Marine Eng, Korea

**Stability Assessment of Anchor Handling Vessel during Operation
Considering Wind Loads and Wave Induced Roll Motions**
G Gunnu, T Moan, NTNU, Norway

A Study on the Roll Reduction by Passive Type Anti-rolling Tank
YB Lee, JO Nahm, DY Lee, YS Kim, Daewoo Shipbldg & Marine
Engineering, Korea

Research on Bifurcation Control Method and its Application on the Parametric Rolling of Ships in Longitudinal Waves

KY Hu, Y Ding, HW Wang, Harbin Engineering Univ, China

Control Design of Fin Roll Stabilization in Beam Seas Based on Feedback Linearization Approach

SC Karakas, E Ucer, Istanbul Tech Univ, Turkey

Control Design of Fin Roll Stabilization in Following and Quartering Seas Based on Lyapunov Method

E Ucer, SC Karakas, Istanbul Tech Univ; E Pesman, Surmene Faculty of Marine Science, Turkey

Research on the System Identification Method of Rolling Motion of Composite Trimaran

F Zhu, SL Yang, HL Li, SL Chen, Jiangsu Univ of Science & Tech, China

Wave Groupiness Effect on a Moored Ship by Numerical Simulation

ZC Sun, XJ Ma, Dalian Univ of Tech, China

On Predicting the Drift of a Survival Suit Clad Person-In-Water under Time-Varying and Uncertain Sea Environment

TC Su, Florida Atlantic Univ, USA; Z Ni, ZP Qiu, Beijing Univ of Aeronautics, China

A Numerical Investigation on Hydrodynamics of Two Floating Bodies of Arbitrary Arrangements in Waves

ZY Zhang, Harbin Engineering Univ, China; QW Ma, City Univ, UK; LP Sun, Harbin Engineering Univ, China

Time Domain Simulation of Wave-Induced Motions of a Towed Ship in Head Seas

Y Nakayama, H Yasukawa, N Hirata, H Hata, Hiroshima Univ, Japan

74. RENEWABLE ENERGY VIII: Offshore Wind 8: Concepts (V. 1)
Wednesday June 20 08:00 Room 3

Chair: T Ummenhofer, Karlsruhe Inst of Tech, Germany

Lift of a Rotating Circular Cylinder in Unsteady Flows

S Carstensen, X Mandviwalla, DHI; L Vita, US Paulsen, Risø/DTU, Denmark

Heave Restrained Wind Turbine Conceptual Designs Suitable for a Wide Range of Water Depths

RW Cople, C Capanoglu, International Design, Engineering & Analysis Services, USA

Intelligent Wind Power Unit with Tandem Rotors Applicable to Offshore Wind Farm (Flow and Performance Simulation of Tandem Wind Rotors)

Y Usui, T Kanemoto, Kyushu Inst of Tech, Japan

Design and Analysis of a Novel Concept Floating Wind Power Platform

SY Hong, JH Kim, SW Hong, KORDI; HJ Kim, SHI, Korea

Modeling of Tower Influence for a Full-height Truss Tower Wind Turbine with the Source Panel Method

L Krause, M Muskulus, NTNU, Norway

Scalable and Customer Oriented Life Cycle Costing Model: A Comparative Case Study of an Innovative Vertical Wind Turbine Concept

I El-Thalji, VTT Technical Research Centre of Finland, Finland; JP Liyanage, Univ of Stavanger; M Hjøllø, Ambientor AS, Norway

Micro Wind Energy Converter for Powering Wireless Sensors

SD Kwon, SH Lee, KM Kim, Chonbuk National Univ, Korea

75. TSUNAMI VIII: Structure & Sediment 2 (V. 3)
Wednesday June 20 08:00 Room 4

Chair: H Krogstad, NTNU, Norway

Co-Chair: R Collins, Univ of Southampton, UK

The Solitary Wave Loads on Submerged Breakwaters: Laboratory Tests

PF Filianoti, Uni Mediterranea di Reggio Calabria; M Di Risio, Univ dell'Aquila, Italy

Hydrodynamic Loads on Jackup Legs Due to Oceanic Internal Waves

SK Lee, DG Yan, ABS, USA

An Experimental Study on Tsunami Induced Sediment Cloud

A Koroglu, SM Kabdasli, Istanbul Tech Univ; E Irtem, Balikesir Univ, Turkey

Influence of Gel Times on Permeability and Efficacy of Ground Improved by Chemical Grouting Method

T Sasaki, Kyokado Engineering; N Suemasa, Tokyo City Univ; S Shimada, Kyokado Co; T Oyama, Kyokado Engineering, Japan

Improvement of Prediction Models of the Toe Scour of a Seawall and the Topographical Change of a Wide Coastal Area due to Tsunami

K Nariyoshi, Y Yamamoto, S Ishii, Tokai Univ, Japan

76. HPM II: Adv Materials & Structures 2 (V. 4)
Wednesday June 20 08:00 Room 5

Chair: KY Kim, POSTECH, Korea

Co-Chair: A Kumar, ExxonMobil Upstream Research, USA

Origin of Intergranular Embrittlement in High Mn Steels at Cryogenic Environment

KH Kwon, IC Yi, BG Kim, POSTECH; K Um, JK Choi, POSCO, Korea; K Hono, National Inst for Materials Science, Japan; NJ Kim, POSTECH, Korea

High Manganese Austenitic Steel for Cryogenic Applications

JK Choi, SG Lee, YH Park, IW Han, POSCO, Korea

Effect of Constituent Phases on Low Temperature Deformation Behavior of Austenite-Base High Mn Steels

YM Ha, KH Kwon, IC Yi, NJ Kim, POSTECH, Korea

Deformation Behavior and Wear Resistance of High Mn Steels at Low Temperatures

K Choi, POSTECH, Korea; HW Jin, R Ayer, ExxonMobil Research & Engineering, USA; NJ Kim, POSTECH, Korea

Raman Spectroscopy for Characterization of Multi-Wall Carbon Nanotubes with a Small Shell Number

SN Bokova, ED Obratsova, AM Prokhorov General Physics Inst, RAS; VL Kuznetsov, Borekov Inst of Catalysis SB, RAS, Russia

Effects of Initial Stress on Residual Stresses along the Thickness Direction Using Inherent Strain Method

JU Park, Chosun Univ; GB An, POSCO; WC Woo, Korea Atomic Energy Research Inst, Korea

Correlation of Cr₂B Borides and Hardness in Fe-based Alloys Used for Powder Injection Molding (PIM) Parts [Oral presentation]

SH Lee, JH Do, HJ Lee, CW Jeon, DJ Ha, BJ Lee, Pohang Univ of Science & Tech, Korea

77. COASTAL V: Breakwaters & Waves 2 (V. 3)
Wednesday June 20 08:00 Room 6

Chair: P Ruol, Univ Of Padova, Italy

Numerical Analysis of a 3D Floating Breakwater Performance

M Kashiwagi, F Mahmuddin, Osaka Univ, Japan

Design Optimization of a 2D Floating Breakwater by Genetic Algorithm

F Mahmuddin, M Kashiwagi, Osaka Univ, Japan

An Experimental Study about Wave Transmission and Reflection Characteristics of a Floating Breakwater Consisting of Horizontal Pipe Elements

A Akgul, SM Kaldasli, Istanbul Tech Univ, Turkey

Risk in Performance of a Free Floating Structure Subjected to Combination of Wave Frequencies

I Diamantoulaki, DC Angelides, Aristotle Univ of Thessaloniki, Greece

A Parametric Analysis of Dissipation Capacity for π -type Floating Breakwaters

P Pezzutto, P Ruol, L Martinelli, Univ of Padova, Italy

Transmission Formulation for Π -Type Floating Breakwaters Effect of Mooring Stiffness

P Ruol, L Martinelli, P Pezzutto, Univ of Padova, Italy

On the Overtopping Behaviour of Smooth Impermeable Low-Crested Slopes

P Troch, L Victor, Ghent Univ, Belgium

A Study on Wave Reflection Coefficients of Wave Dissipating Works for Oblique Incident Waves

K Hirayama, K Kawauchi, I Miyazato, Port and Airport Research Inst, Japan

**78. SUBSEA, PIPELINES, RISERS IV:
Improved System Performance (V. 2)**

Wednesday June 20 08:00 Room 7

Chair: RH Knapp, Univ of Hawaii, USA

Drilling Riser Structural Damping Test

P Padelopoulos, M Ritchie, 2H Offshore; J Chitwood, Chevron; M Tognarelli, BP, USA

An Experimental Study of Riser Stiffing Factor

KA Smith, R Pascali, J Paul, L Chica, Univ of Houston, USA

Risers Model Tests: Scaling Methodology and Dynamic Similarity

F Rateiro, R Salles, GR Franzini, RT Gongalves, CP Pesce, ALC Fajarra, Univ of Sao Paulo; P Mendes, Petrobras, Brazil

Tension, Twist and Bending Experiments to Validate Cable Model

RH Knapp, Univ of Hawaii, USA

Increased Trawl Loads - Criticality during Trawl Pull-Over

P Foss, A Kristoffersen, IKM Ocean Design, Norway

Measurement of Hydrodynamic Force on a Piggyback Pipeline

ZY Hao, Shanghai Maritime Univ, China; TM Zhou, Univ of Western Australia, Australia

Experimental and Numerical Analysis of Dynamic Behaviors of Internal and External Pressure in Offshore Pipelines

H Nakai, K Shibamura, S Aihara, Univ of Tokyo; M Tsukamoto, Research of Material Reliability Co, Japan

Experiment and Calculation on Scour Depth for Submarine Pipeline with Spoiler in Regular Waves

LP Yang, B Shi, Ocean Univ of China, China; YK Guo, Univ of Aberdeen, UK

79. GEOTECH III: Soil Improvement (V. 2)

Wednesday June 20 08:00 Room 8

Chair: K Fakharian, Amirkabir Univ of Tech, Iran

The Behaviors for SCP-improved Soil in Triaxial Compression and Extension Tests

YS Choo, SH Baek, Seoul National Univ; YH Jung, Kyung Hee Univ; CK Chung, Seoul National Univ, Korea

Effect of Cyclic Stress Path in Cement-Treated Sands Using Triaxial and Simple Shear Tests

K Fakharian, A Eghbali, Amirkabir Univ of Tech, Iran

Development of Technology for Preventing Drainpipe Blockage in Deteriorated Tunnel

JH Lee, IC Chu, CK Lee, BS Chun, Hanyang Univ, Korea

Artificial Lightweight Material Obtained by Mixing Diatom Soil and Waste Melting Slag with Stabilizer

K Sawano, S Kikuchi, Nexco Engineering Tohoku; M Tsushima, Akita National College of Tech; H Oikawa, Akita Univ, Japan

Improvement of Marine Sediment by Combined Electrokinetic and Chemical Treatment

PH Liu, North China Univ of Water Resources & Electric Power, China; JQ Shang, Univ of Western Ontario, Canada

Centrifuge Modeling on Seismic Response of Geosynthetic Reinforced Earth Embedment

WY Hung, National Center for Research on Earthquake Engineering; YZ Chiou, JH Hwang, CJ Lee, National Central Univ, Taiwan, China

Design and Installation of Soil Improvement against Liquefaction in Reclaimed Ground with Coal Ash

H Tsuboi, NEWJEC; K Ogura, H Kawamura, M Yoshida, T Harada, Kansai Electric Power; A Sone, N Endo, H Sato, NEWJEC; T Matsui, Ritsumeikan Univ, Japan

**80. FRONTIER ENERGY VI: OCEAN MINING 1:
Deep-Ocean Minerals (V. 1)**

Wednesday June 20 08:00 Room 9

Chair: JS Chung, ISOPE, USA

Co-Chair: SJ Liu, Central South Univ, China

Rare Earth Elements in the Polymetallic Nodules - A New Challenge

J Franzen, Interoceanmetal Joint Organization, Poland; P Balaz, State Geological Inst of Dionyz Stur Markusovska, Slovakia

A Numerical Model Analysis of Environmental Load for Seafloor Resources Development

J Yamamoto, H Oka, Y Nakajima, S Uto, S Masanobu, National Maritime Research Inst, Japan

The Feasibility of HDPE Pipe for the Pilot Test of Manganese Nodules

JH Lee, Chungnam National Univ; CH Yoon, KIGAM; BK Choi, IS Kim, Chungnam National Univ, Korea

81. ARCTIC II: Ice Mechanics (V. 1)

Wednesday June 20 08:00 Room 10

Chair: V Squire, Univ of Otago, New Zealand

Probabilistic Fracture Mechanics Applied to the Compressive Ice Failure

RS Taylor, IJ Jordaan, C-CORE, Canada

Development of New Methodology for Pack Ice Test in Ice Tank

SR Cho, SY Jeong, Korea Ocean Research & Development Inst, Korea

Ice Sample Production Techniques and Indentation Tests for Laboratory Experiments Simulating Ship Collisions with Ice

SE Bruneau, AK Dillenburg, S Ritter, Memorial Univ of Newfoundland, Canada

Theoretical and Experimental Studies of Specific Energy of Mechanical Failure of Sea Ice

VG Tsuprik, Far-Eastern Federal Univ, Russia

A Model of Ice Friction for an Inclined Incising Slider

EP Lozowski, Univ of Alberta; K Szilder, Inst for Aerospace Research, NRC; S Maw, Mount Royal Univ, Canada

Multi-Stepping Ice Prediction on Cylinders Using an Automated Procedure

PG Verdin, Cranfield Univ, UK

Challenges in Determination of Ice Action on Offshore Structures

MM Karulina, EB Karkulin, Krylov Shipbldg Research Inst; LB Blagovidov, IL Blagovidova, CDB CORALL, Ukraine; IY Bardin, VolgogradNIPImorneft, Russia

Concrete Abrasion Due to Ice-Indentation Pore Pressure

S Jacobsen, NTNU, Norway; L Kim, E Pomnikov, Far-Eastern Federal Univ, Russia

WEDNESDAY 10:30

82. RENEWABLE ENERGY XVII: Wave Energy 5 (V. 1)
Wednesday June 20 10:30 Room 1

Chair: BS Hyun, Korea Maritime Univ, Korea

Co-Chair: A Grilli, Univ of Rhode Island, USA

Use of a Rectangular Liquid-Filled Bottom-Mounted Distensible Device to Harness Nearshore Wave Power

N Choplain, Univ of Southampton, UK

Experimental Study Seeking Optimal Geometry of a Heaving Body for Improved Power Absorption Efficiency

RE Hager, N Fernandez, MH Teng, Univ of Hawaii, USA

Control and Monitoring Application for 50kW Class Wave Energy Converter

SY Park, BY Cho, DS Yang, KS Choi, Korea Electric Power Research
Inst, Korea

The Oscillating Wave Surge Converter in an Open Channel

L O'Brien, E Renzi, F Dias, Univ College Dublin, Ireland

Is Biofouling a Critical Issue for Wave Energy Converters?

R Tiron, Univ College Dublin, Ireland; C Pinck, Ecole Polytechnique, France;
EG Reynaud, F Dias, Univ College Dublin, Ireland

83. HYDRODYNAMICS VII: Floating-Body Dynamics 2 (V. 3)
Wednesday June 20 10:30 Room 2

Chair: J Zang, Univ of Bath, UK

Co-Chair: T Soukissian, Hellenic Centre for Marine Res, Greece

**A 3D Fully Nonlinear Numerical Wave Tank with a Moored Floating
Body in Shallow Water**

JK You, OM Faltinsen, NTNU, Norway

**Empirical Mode Decomposition vs. Wavelets in Neural Network Based
Vessel Motion Prediction**

G De Masi, R Bruschi, F Gaggiotti, Saipem, Italy

**Study on the Added Mass and Added Damping Coefficients of the
Immersed Tube in Six Degrees of Freedom**

XB Li, ZJ Lao, X Wei, Y Li, Wuhan Univ of Tech, China

Numerical Study of Wave Trapping within Cylindrical Arrays

J Li, HX Liu, SK Tan, Nanyang Technological Univ, Singapore

**Time-Domain Simulation of Second-Order Wave-Body Interaction
Based on MTF Coupled with DZ Method for Radiation Condition**

G Xu, AMS Hamouda, Qatar Univ, Qatar; WY Duan, Harbin Engineering
Univ, China

**Influence of Manoeuvring on Mooring Geometry and Load during
Anchor Handling Operation**

G Gunnu, XP Wu, T Moan, NTNU, Norway

Dynamics and Stability of Floating Crane under Heave Motions

ZY Chang, Ocean Univ of China; XL Zhao, China Offshore Oil
Engineering; DX Gao, ZQ Zheng, ZJ Yu, Ocean Univ of China, China

**Leg Spacing Effect on Wave Run-Up and Nonlinear Wave Disturbance
along Semi-Submersible Columns**

TB Shan, X Li, LF Xiao, HN Lu, J Li, Shanghai Jiao Tong Univ, China

**84. RENEWABLE ENERGY IX: Offshore Wind 9: Standards,
Design (V. 1)**
Wednesday June 20 10:30 Room 3

Chair: C Capanoglu, I.D.E.A.S., Inc., USA

Co-Chair: TA Nygaard, Inst for Energy Tech, Norway

Experience with the Certification of Offshore Wind Farms in Europe
T Faber, Flensburg Univ of Applied Sciences, Germany

State-of-the-art Comparison of Standards in Terms of Dominant Sea Ice Loads for Offshore Wind Turbines Support Structures in the Baltic Sea
W Popko, Fraunhofer Inst for Wind Energy; Germany; J Heinonen, VTT Technical Research Centre of Finland, Finland

Grouted Connections - Offshore Standards Driven by the Wind Industry
M Klose, M Mittelstaedt, Germanischer Lloyd ; P Schaumann, L Lohaus, Leibniz Univ Hannover, Germany

A Design Procedure for Foundations Supported Offshore Wind Energy Systems
CH Choi, Korea Inst of Construction Tech; SR Kim, Dong-A Univ; YE Jang, Univ of Science & Tech, Korea

A Review of Current Guidelines to Determine Wind Design Parameters for Offshore Wind Turbines
C Obhrai, S Kalvig, OT Gudmestad, Univ of Stavanger, Norway

Identification and Evaluation of RAMS+I Factors Affecting the Value Added by Different Offshore Wind Turbine Concepts in Nordic Context
R Tiusanen, J Jannes, VTT Technical Research Centre of Finland, Finland; JP Liyanage, Univ of Stavanger, Norway

85. TSUNAMI IX: Risk Assessment 1 (V. 3)
Wednesday June 20 10:30 Room 4

Chair: C Synolakis, Univ of Southern California, USA
Co-Chair: R Nagaosa, National Inst of AIST, Japan

Probable Maximum Tsunami along the Dutch Coastline
J Dababneh, B Ferguson, D Barton, Paul C Rizzo Associates, USA

Aegean Sea Vulnerability Maps due to Tsunamis Generated by Underwater Landslides
TV Karambas, Aristotle Univ of Thessaloniki; T Hasiotis, Univ of the Aegean, Greece

Tsunami Analysis for Southern Aegean Sea
O Yaprak, Univ of Hawaii, USA; AC Yalciner, METU, Turkey

New Tsunami Intensity Scale 2012
EL Lekkas, E Andreadakis, I Kostaki, E Kapourani, Univ of Athen, Greece

Tsunami Hazard Risk of a Future Volcanic Eruption of Kolumbo Submarine Volcano, NE of Santorini Caldera, Greece
P Nomikou, Univ of Athen, Greece; S Carey, Univ of Rhode Island, USA; D Papanikolaou, Univ of Athens, Greece; K Croff Bell, Univ of Rhode

Island, USA; K Bejelou, Univ of Athens; M Alexandri, Hellenic Centre for Marine Research, Greece; K Cantner, Univ of Rhode Island, USA

86. HPM III: Adv Materials & Composites (V. 4)
Wednesday June 20 10:30 Room 5

Chair: HG Wheat, Univ of Texas at Austin, USA
Co-Chair: S Mouring, U.S. Naval Academy, USA

Modelling the Influence of Structural and Compositional Parameters on the Abrasion Resistance of Concrete

NV Makarova, Fas Eastern Federal Univ; MV Polonik, Inst of Automation & Control Processes, RAS, Russia

Correlation of Microstructure and Tensile and Cup Forming Properties of Aluminum-added TWinning Induced Plasticity (TWIP) Steels [Oral presentation]

SH Lee, SM Hong, SY Shin, HS Kim, Pohang Univ of Science & Tech; SK Kim, KG Chin, POSCO; NJ Kim, Pohang Univ of Science & Tech, Korea

Bearing Capacity of the Pile-tip Protection Using Ductile-fiber-reinforced Cementitious Composites under Different Support Conditions

Y Matsuki, K Watanabe, M Fujii, H Kato, Tokai Univ; Y Asai, Toyoasano Foundation, Japan

Compression Fracture Behavior of Ductile-Fiber-Reinforced Cementitious Composites Using Various Type of Fine Aggregate

K Watanabe, Y Matsuki, M Fujii, Tokai Univ; JM Arai, System Measure Co, Japan

Inspection of Failure Caused by Ballistic Impact on Body Armors Composed of Laminated Dyneema™

V Alankaya, Yildiz Tech Univ; HK Senyilmaz, Gazi Univ, Turkey

Tensile Behaviour of Drilling Induced Damage of Hybrid Composites

F Ahmad, ZA Zailnal Alam, MR Latif, MA Maisor, Universiti Teknologi PETRONAS, Malaysia

Influence of Ceramic Oxide on the Microstructure and Properties of ODS Composite

OS Olaniran, PA Olubambi, Tshwane Univ of Tech, South Africa; BO Ahewuyi, Federal Univ of Tech, Nigeria

Reinforced Concrete Jacketing for Seismic Upgrading of RC Frames with Poor Reinforcing Details in Beam-Column Joints

YC Wang, National Central Univ, Taiwan, China

87. COASTAL VI: Breakwaters & Waves 3 (V. 3)
Wednesday June 20 10:30 Room 6

Chair: DS Jeng, Univ of Dundee, UK

Reliability-Based Optimization of Tetrapod-Armored Rubble Mound Breakwater

SW Kim, KD Suh, Seoul National Univ, Korea

Effective Prediction of Wave Scattering by Multiple Row Curtainwall-Pile Breakwaters

O Nejadkazem, AR Mostafa Gharabaghi, Sahand Univ of Tech, Iran

Deformation of Tetrapod Units under Cyclic Loading

K Cihan, Y Yuksel, Yildiz Tech Univ, Turkey

Extreme Wave Loads on a Submerged Caisson Breakwater

PF Filianoti, Univ Mediterranean of Reggio Calabria, Italy

Innovative Submerged Structures for Coastal Protection: Numerical Modeling of Hydro-Morphological Processes

TV Karambas, Aristotle Univ of Thessaloniki, EV Koutandos, TEI of Crete; PE Prinos, Aristotle Univ of Thessaloniki, Greece

Assessing the Design Elements of a Submerged Breakwater for Coastal Protection by Numerical Modelling

PC Matsoukis, Democritus Univ of Thrace, Greece

**88. SUBSEA, PIPELINES, RISERS V:
Key Component Development (V. 2)**
Wednesday June 20 10:30 Room 7

Chair: E Fontaine, IFP Energie Nouvelle, France

Co-Chair: JC Price, Gate Engineering, USA

Pile Foundation Design in Deepwater

H Zhang, 2H offshore Engineering, China; FK Lim, G Jewell, 2H Offshore Engineering, UK

A New Safety and Stability Enhanced Riser Control System - An Integrated Electrical Riser Tensioning System

Y Wu, E Bourgeau, Transocean; R Baldick, Univ of Texas at Austin, USA

Numerical Study of the Hydrodynamic Properties of a Mid-Water Arch System

WI Koolhof, SH Chai, Univ of Tasmania; H Morand, Technip Oceania, Australia

An Optimal Design Model of Locking Mechanism for Mechanical Collet Connector

JP Liu, ML Duan, XL Luo, China Univ of Petroleum; H Guo, CNOOC Research Inst; K Tian, China Univ of Petroleum, China

Design Challenges and Concept Solutions for 46-inch Diameter Deepwater PLEM

BA Abdalla, J P Kenny, USA; P Damsleth, J P Kenny Norge, Norway

Structural Design and Analysis of Subsea Camera Shell in Deep Water
HD Wei, MZ Zhou, Y Jiang, CT Wang, China Offshore Oil Eng. Corp,
China

Fault Protection on Direct Electrical Heating Cables [Oral presentation]

A Bruaset, H Kulbotten, SINTEF Energy Research, Norway

Design by Analysis Approach for Elasto-Plastic Design of HPHT Pipe-In-Pipe Bulkheads

K Farahani, S Elgebaly, P Cooper, INTECSEA, UK

Thermal Expansion and Global Buckling Mitigation of HPHT Deepwater Pipelines, Sleeper or Buoyancy?

JJ Sun, P Jukes, H Shi, Woodgroup Kenny, USA

89. GEOTECH IV: Cyclic Loading (V. 2)

Wednesday June 20 10:30 Room 8

Chair: CF Leung, National Univ of Singapore, Singapore

Cyclic Triaxial Tests on Unconsolidated Undrained Strain and Strength of a Remoulded Soft Clay

SZ Li, JH Wang, Tianjin Univ, China

Experimental Comparison of Statically and Cyclically Loaded Non-Slender Piles in Sand

SPH Sørensen, LB Ibsen, Aalborg Univ, Denmark

On the Modelling of Wave Induced Liquefaction, Taking Into Account the Effect of Preshearing

P Meijers, D Luger, Deltares, Netherlands

Survey Report of Liquefaction Damage of Urayasu Area

CH Kim, Hokoku Engineering; M Fujii, Tokai Univ; K Shinagawa, Lasting Co; M Ogawa, Hokoku Engineering, Japan

Effect of Long Term Cyclic Loads over Cyclic Degradation of Soil

JM Kim, SW Son, S Muhammad, MN Kim, Pusan National Univ, Korea

CPT-Based Liquefaction Assessment by Using Support Vector Machine

CY Lin, SG Chern, National Taiwan Ocean Univ, Taiwan, China

An Analytical Solution for Wave (Current)-Induced Pore Pressure in a Porous Seabed: Full Dynamic Model

CC Liao, Shanghai Jiao Tong Univ, China; DS Jeng, Univ of Dundee, UK

90. FRONTIER ENERGY VII: OCEAN MINING 2: Systems & Tech (V. 1)

Wednesday June 20 10:30 Room 9

Chair: J Franzen, Interoceanmetal Joint Organization, Poland

Robust Design Optimization of Test Miner Tracked Vehicle for Collecting Operation Considering Deep-sea Environmental Noise Factors

TH Lee, SG Cho, MU Lee, Hanyang Univ; JS Choi, HW Kim, MOERI; SH Park, Hanyang Univ; S Hong, MOERI, Korea

Static and Dynamic Modeling of Miner Track System

U Samaila, SH Liu, QJ Han, D Yu, Central South Univ, China

Performance Characteristics of Tandem Heat Pump System Using Deep Ocean Water

HS Lee, HJ Kim, DH Jung, SW Lee, DS Moon, Korea Ocean Research & Development Inst, Korea

91. ARCTIC III: Coastal Arctic Properties (V. 1)

Wednesday June 20 10:30 Room 10

Chair: CA Willemse, Delft Univ. of Tech, Netherlands

Field Measurements of the Material Properties of Sea Ice at Chukchi Borderland

SY Jeong, SR Cho, Korea Ocean Research & Development Inst, Korea

Structural Reliability Approach to Design of Buried Pipeline Routes at Ice Actions for “Sakhalin-II” Project

AT Bekker, OA Sabodash, Far-Eastern Federal Univ, Russia

Evaluation of the Applicability of Active Air-Cooled Thermal Pile to a Site in Antarctica

JM Kang, JG Lee, YS Kim, SS Hong, Korea Inst of Construction Tech, Korea

External Structures for Protection of Subsea Equipment against Ice Contact

EA Drover, S Kenny, Memorial Univ of Newfoundland, Canada

Advanced Continuum Modeling of the Ice Gouge Process: Assessment of Keel Shape Effect, Geotechnical Data and Finite Element Formulation

KP Pike, SP Kenny, Memorial Univ of Newfoundland, Canada

Numerical Analysis of Rapid Gas Decompression from a Pipeline in Different Natural Gas Mixtures under Low Temperature Conditions and Water Presence in a Pipe

E Burlutskiy, Inst of High Performance Computing, Singapore

Reducing the Cost of Protecting Arctic Marine Pipelines against Ice Gouging

AC Palmer, National Univ of Singapore, Singapore

Assessment of Ice/Soil Interactions: Continuum Modelling in Clays

CP Rossiter, S Kenny, Memorial Univ of Newfoundland, Canada

WEDNESDAY 13:10

Wednesday **Plenary Presentation** June 20 13:15 Room 7

High Strain Capacity Pipeline Qualification for the PNG LNG Project (Plenary)

R Noecker, B Newbury, S Ford, D Lillig, M Hukle, W Kan, M Cook L Hales, J Everts, ExxonMobil Development; S Kibey, D Fairchild, ExxonMobil Upstream Research, USA
Introduction by H Moshagen, BHM Engineering, Norway

92. RENEWABLE ENERGY XVIII: Wave Energy 6: Ocean Resources (V. 1)

Wednesday June 20 14:00 Room 1

Chair: MH Teng, Univ of Hawaii, USA

Experimental Investigation of Wave Transmission from a Floating Wave Dragon Wave Energy Converter

J Nørgaard, TL Andersen, Aalborg Univ, Denmark

Estimation of Wave Conditions Close to the Danish Wave Energy Centre at Hanstholm Harbour, Using the Numerical Model MILDwave

V Stratigaki, P Troch, Ghent Univ, Belgium; L Margheritini, JP Kofoed, Aalborg Univ, Denmark

Wind and Wave Potential in Offshore Locations of the Greek Seas

TH Soukissian, D Fytilis, A Papadopoulos, G Korres, A Prospathopoulos, Hellenic Centre for Marine Research; NS Gizari, National Tech Univ of Athens, Greece

3D Numerical Simulation of LMMHD for Wave Energy Conversion

YZ Hu, Y Peng, C Ye, Inst of Electrical Engineering, CAS, China

The Force of a Tsunami on a Wave Energy Converter

L O'Brien, Univ College Dublin, Ireland; P Christodoulides, Cyprus Univ of Tech, Cyprus; D Dutykh, Univ of Savoie, France; F Dias, UCD, Ireland/ENS-Cachan, France

Effect of Viscous Forces on the Performance of a Surging Wave Energy Converter

MA Bhinder, A Babarit, L Gentaz, P Ferrant, Ecole Centrale de Nantes, France

Hydrodynamic Loading on a Bottom Hinged Oscillating Wave Surge Converter

PM Schmitt, S Bourdier, Queen's Univ Belfast, UK; D Sarkar, E Renzi, F Dias, Univ College Dublin, Ireland; K Doherty, J van't Hoff, Aquamarine Power; T Whittaker, Queen's Univ Belfast, UK

93. HYDRODYNAMICS VIII: Floating-Body Dynamics 3 (V. 3)
Wednesday June 20 14:00 Room 2

Chair: HC Chen, Texas A&M Univ, USA
Co-Chair: JV Kurian, Universiti Teknologi Petronas, Malaysia

Fully Nonlinear Investigation of Resonant Wave Motion in the Gap between Multiple 3D Structures
S Yan, QW Ma, City Univ London, UK

On Moonpool Resonance for Two Floating Cylinders in a Two-layer Stratified Fluid
XS Zhang, Univ of Michigan, USA

Numerical Analysis of Fluid Characteristic during Ship-to-Ship Operations
R Sugimoto, E Shimizu, Tokyo Univ of Marine Science & Tech, Japan

An Experimental and Numerical Study on Relative Motions between Three Barges in Floatover Installation
X Xu, X Li, HN Lu, LF Xiao, Shanghai Jiao Tong Univ, China

Recurrence Wave Run-up on a Large Volume Semi-Submersible
A Priyanto, A Maimun, M Pauzi, N Ismail, Universiti Teknologi Malaysia, Malaysia

Dynamic Responses of Float-over Barge Subjected to Random Waves
AM Hashim, NH Baharuddin, VJ Kurian, Universiti Teknologi PETRONAS; AR Magee, Technip Malaysia, Malaysia

Dynamic Response of Semi-submersibles with Damaged Mooring Line
MA Yasir, Sudan Univ of Science & Tech, Sudan; VJ Kurian, ISH Harahap, Universiti Teknologi PETRONAS, Malaysia

On the Calculation Method of Surface Pressure Distribution of a Container Ship in Waves
T Momoki, T Fukasawa, T Kaneko, Osaka Prefecture Univ, Japan

Experimental and Numerical Seakeeping Analysis of Self-Installing Offshore Platforms (MOAB)
T Habekost, OVERDICK GmbH; S Handschel, D Beyer, Hamburg Univ of Tech; K Oltmann, OVERDICK GmbH; M Abdel-Maksoud, Hamburg Univ of Tech, Germany

Estimation of Response Transfer Functions of Offshore Structures Using the Time-Varying State-Space Model Based on Field Measurements
MS Liew, E Yazid, S Parman, VJ Kurian, Universiti Teknologi PETRONAS, Malaysia

94. RENEWABLE ENERGY X: Offshore Wind 10: Resources (V. 1)
Wednesday June 20 14:00 Room 3

Chair: W Popko, Fraunhofer Inst for Wind Energy; Germany

FIT and the Development of Offshore Wind Energy in Taiwan

KJ Hsu, Univ of Kang Ning, Taiwan, China

Metocean Data Requirements for Near-shore Wave Modelling

SM Lengden, G Bryans, Aquamarine Power, UK

Validation of a Markov-based Weather Model for Simulation of O&M for Offshore Wind Farms

M Scheu, NTNU, Norway/ Univ of Stuttgart, Germany; M Muskulus, NTNU, Norway; D Matha, Univ of Stuttgart, Germany

Generic Extreme Sea State Conditions - An Engineering Approach

C Wehmeyer, J Skourup, Rambøll A/S, Denmark

Nearshore Wave Climate: A Focus on the West Coast of Ireland

S Gallagher, R Tiron, F Dias, Univ College Dublin, Ireland

Offshore Wind Farm Siting: Design of a Test Bed in Rhode Island Coastal Waters

A Grilli, S Hansel, C O'Reilly, Univ of Rhode Island, USA

Scoping for Marine Environmental Impact of Offshore Wind Farms Construction

KH Eom, GY Kim, DI Lee, National Fisheries Research & Development Inst, Korea

Multi-Body System Analysis for Optimizing Offshore Wind Power System

JS Lee, SJ Baik, S Kondaraju, Yonsei Univ; SK Na, POSCO, Korea

95. TSUNAMI X: Risk Assessment 2 (V. 3)
Wednesday June 20 14:00 Room 4

Chair: WC Yang, Taiwan Ocean Research Inst, Taiwan, China

Co-Chair: TV Karambas, Aristotle Univ of Thessaloniki, Greece

Probably Maximum Tsunami due to an Earthquake in the Makran Subduction Zone

AA Dababneh, BK Ferguson, DJ Barton, Rizzo Associates, USA

NEARToWARN: A Proposal for Near-field Tsunamis in the Mediterranean Sea - Potential Assessment, Early Warning & Risk Mitigation

GA Papadopoulos, National Observatory of Athens, Greece

Far-Field Tsunami Hazard of the Potential Flank Collapse of the Cumbre Vieja Volcano

JC Harris, ST Grilli, Univ of Rhode Island, USA; S Abadie, Univ de Pau et des Pays de l'Adour, France

Tsunamis Monitor and Simulate Observation

WC Yang, CC Wu, JM Liao, Taiwan Ocean Research Inst, Taiwan, China

Attempting to Avert a Tsunami Catastrophe, the US National Tsunami Hazard Program Tsunami Ready Initiative in Puerto Rico

WR Diaz, Univ of Texas-Pan American; C von Hillebrandt-Andrade, V Huerfano, Univ of Puerto Rico-Mayaguez, USA

Tsunami Risk and Vulnerability Analysis for the City of Rhodes
ET Flouri, FORTH; DA Mitsoudis, ACMAC; N Chrysoulakis, FORTH;
CE Synolakis, Hellenic Center for Marine Research, Greece

96. HPM IV: Fatigue & Fracture 1 (V. 4)
Wednesday June 20 14:00 Room 5

Chair: E Østby, SINTEF, Norway
Co-Chair: WT Cheng, ExxonMobil Upstream Research, USA

Numerical and Experimental Analysis of Brittle Crack Propagation and Arrest in Steels

S Aihara, Y Watabe, K Shibamura, Univ of Tokyo; T Inoue, T Koseki, Nippon Steel, Japan

Failure Modeling of Pipeline X100 Material in Transition Temperature Region

A Nonn, Salzgitter Mannesmann Forschung; C Kalwa, Europipe GmbH, Germany

The Condition of Occurrence of Separation for Line Pipe Steels in the Fracture Surface of Toughness Tests for Line Pipe Steels

T Hara, Y Shinohara, Nippon Steel, Japan

Analyses of Arrow-Head Marking Formation in Drop-Weight Tear Tests

T Namegawa, S Aihara, K Shibamura, Univ of Tokyo; S Igi, JFE Steel, Japan

Impact Toughness Behaviour of Hot-Finished Hollows Sections at Low Temperatures

N Stranghoener, Univ of Duisburg-Essen; J Krampen, V&M Deutschland; C Lorenz, Univ of Duisburg-Essen, Germany

Quantitative Evaluation on Influence of Microstructures on Cleavage Fracture Toughness in Ferrite-Cementite Steel

K Shibamura, Univ of Tokyo; M Matsubara, Kubota Corp; S Aihara, Univ of Tokyo, Japan

97. COASTAL VII: Wave-Structure Interaction (V. 3)
Wednesday June 20 14:00 Room 6

Chair: S Araki, Osaka Univ, Japan

Application of PIV and BIV Techniques in the Wave-Structure Interaction and Turbulent Flows in a Stepped-Type Slope Porous Structure

T Bhirawa, TW Hsu, National Cheng Kung Univ; SH Ou, Tajen Univ; JW Lai, National Cheng Kung Univ, Taiwan, China

Wave Transformations over a Submerged Crescent Shoal

CM Hsu, YS Tsai, CJ Tseng, Taiwan Ocean Research Inst; MC Lin,
National Taiwan Univ, Taiwan, China

Interaction of Random Sea Waves with Floating Structures in General Bathymetry Regions

KA Belibassakis, Y Georgiou, GA Athanassoulis, National Tech Univ of Athens, Greece

Analysis of Wave Interaction with Submerged Double-Layer Horizontal Porous Plate Breakwater

Y Liu, ZL Yao, LQ Xie, Ocean Univ of China, China

Analysis of Wave Interaction with Closely Adjacent Poro-Elastic Submerged Breakwaters

YJ Lan, TW Hsu, CY Chen, National Cheng Kung Univ, Taiwan, China

Three-Dimensional Model for Wave Interaction around Breakwater Heads

Y Zhang, Shanghai Jiao Tong Univ, China; DS Jeng, J Zhang, C Zhang, Univ of Dundee, UK;

A Numerical Study of Wave Transmission in Coastal Structures through Flushing Culverts

V Katsardi, IK Boundris, VK Tsoukala, KA Belibassakis, National Tech Univ of Athens, Greece

Sea Wall-Beach Profile Interaction on Run-Up Zone

E Cevik, Y Yuksel, B Aydogan, E Senturk, B Kiziloz, Yildiz Tech Univ, Turkey

On The Mechanisms of Bottom of Disturbances

II Potapov, Far Eastern Branch of RAS, Russia

**98. SUBSEA, PIPELINES, RISERS VI:
Fatigue Assessment (V. 2)**

Wednesday June 20 14:00 Room 7

Chair: L Vitali, Saipem Energy Services, Italy

Life Time Assessment of Offshore Water Injection Pipelines as a Function of Microbiologically Influenced Corrosion (MIC)

I Comnescu, Swerea KIMAB, Sweden; RE Melchers, Univ of Newcastle, Australia; C Taxen, Swerea KIMAB, Sweden

Defect Tolerance in Fatigue of Steel Catenary Riser Girth Welds - Two Stage Model

G Tamponi, E Mecozzi, LF Di Vito, Centro Sviluppo Materiali, Italy; P Darcis, I Marines-Garcia, H Quintanilla, Tenaris Tamsa, Mexico

Seabed Trench Formation and its Impact on Fatigue Life of Steel Catenary Risers in Touchdown Area

K Rezaaddeh, Harbin Engineering Univ, China; H Shiri, Urmia Univ of Tech, Iran; L Zhang, Y Bai, Harbin Engineering Univ, China

Assessment of Deflected Mode and Lifetime of Anchor Lines and Risers

OA Grigoryeva, St Petersburg State Polytech Univ, Russia; OT Gudmestad, Univ of Stavanger, Norway; AS Bolshev, SA Frolov, St Petersburg State Polytech Univ, Russia

Sensitivity Study of SCR Fatigue at Touch Down Point

Y Li, Tianjin Univ, China

Simplified Approximation of Peak Fatigue Damage in Touchdown Area of Steel Catenary Risers Based on Seabed Soil Rigidity

H Hashemi, A Sadeghi, H Shiri, Urmia Univ of Tech, Iran; K Rezazadeh, Harbin Engineering Univ, China

Improvement of Fatigue Characteristics of Pipeline at Lateral Buckling Locations

P Kumar, R Reddy, McDermott Middle East, UAE

99. GEOTECH V: Slope Stability (V. 2)
Wednesday June 20 14:00 Room 8

Chair: HG Brandes, Univ of Hawaii, USA

Probabilistic Slope Stability Analysis: A Case Study for a Deposit Slope in Reservoir Region, A-Hai Hydropower Project

ZJ Wu, H Tang, Inst of Rock & Soil Mechanics, CAS, China

Effects of Shear Band Propagation on Submarine Landslide

R Dey, B Hawlader, Memorial Univ of Newfoundland; R Phillips, C-CORE, Canada; K Soga, Univ of Cambridge, UK

Slope-failure Disasters & Countermeasures in Korea

JR Oh, YJ Son, AR Cha, TH Kim, National Disaster Management Inst, Korea

Construction Methodology of Fill Placement over Sabkha

F Ahtchi-Ali, MB Vitiello, Saudi Arabian Bechtel, Saudi Arabia

Electrokinetic (EK) Dewatering of Orr Dam Sediment

JQ Shang, R Elazar, Univ of Western Ontario; R Goldt, Upper Thames River Conservation Authority, Canada

Numerical Analysis for Undrained Bearing Capacity of Eccentrically Loaded Footings near Slopes

YG Zhan, H Wang, Jiangsu Univ of Science & Tech, China

Modeling of Rockfall Hazards Using Three-Dimensional Topography Based on High Resolution DEM

CY Ku, National Taiwan Ocean Univ, Taiwan, China

Case Study of Ji-Lou Landslide Triggered by Typhoon Morakot

MC Chung, CH Tan, GS Wang, Sinotech Engineering Consultants; LY Fei, Central Geological Survey, Taiwan, China

100. OFFSHORE MECHANICS V: Deepwater Installation (V. 1)
Wednesday June 20 14:00 Room 9

Chair: LF Boswell, City Univ London, UK
Co-Chair: JF Wu, American Bureau of Shipping, Singapore

Keynote

Jackup Installation Method near Existing Footprints (Keynote)

WL Dong, JJ Wang, China Oilfield Services; J Zhao, China Univ of Petroleum; LS Song, China Oilfield Services; ML Duan, MH Zhang, China Univ of Petroleum, China

Deepwater Well Drilled by Two MODU in Black Sea, Turkey

R Atalay, S Kirbiyik Pamir, Turkish Petroleum Corp, Turkey

Latest Progress in Deepwater Installation Technologies

AM Wang, Y Yang, SH Zhu, HL Li, JK Xu, M He, Offshore Oil Engineering, China

Design Considerations of Leg Mating Units for Floatover Installations

RH Yuan, AM Wang, HL Li, LC Qin, JK Xu, M He, Offshore Oil Engineering, China

Design Selection Analysis for Mooring Positioning System of Deepwater Semi-submersible Platform

DS Qiao, JP Ou, Dalian Univ of Tech, China

101. ARCTIC IV: Ice Environment & Forecasting (V. 1)
Wednesday June 20 14:00 Room 10

Chair: N Otsuka, North Japan Port Consultants Co, Japan
Co-Chair: V Pavlenko, Arctic Research Centre, RAS, Russia

Study on Wave Resistance of a Submarine Moving under an Ice Sheet

VM Kozin, Inst of Machine Science & Metallurgy, FEB RAS; VL Zemlyak, Amur State Univ, Russia

Interannual Changes in Sea Ice Coverage on the Northwest Passage Obtained by Satellite Microwave Data

H Shibata, Kitami Inst of Tech; K Izumiyama, North Japan Port Consultants; K Tateyama, Kitami Inst of Tech; H Enomoto, National Inst of Polar Research, S Takahashi, Kitami Inst of Tech, Japan

Better Operational Forecasting for the Contemporary Arctic via Ocean Wave Assimilation

VA Squire, Univ of Otago, New Zealand; L Bertino, TD Williams, Nansen Environmental & Remote Sensing Center, Norway; LG Bennetts, Univ of Adelaide, Australia; D Dumont, Univ du Quebec a Rimouski, Canada

Ice and Snow Property Variabilities of the Pack Ice off the Labrador Coast, Canada

S Prinsenberg, I Peterson, Bedford Inst of Oceanography, Canada

An Automated Sea Ice Analysis System

T Carrieres, M Buehner, A Caya, L Pogson, P Pestieau, Environment
Canada, Canada

**Deriving Snow Thickness Information on Sea Ice Using Polarimetric
SAR Data**

JJ Yackel, J Gill, Univ of Calgary, Canada

**Advanced Radar and System Technology for Ice Monitoring and Ice
Berg Detection and Response System Ice Management**

HF Wentzell, Rutter Inc, Germany

WEDNESDAY 16:20

102. RENEWABLE ENERGY XIX: Tidal & Current Energy 1 (V. 1)
Wednesday June 20 16:20 Room 1

Chair: Q Xiao, Univ of Strathclyde, UK
Co-Chair: MC Kim, Pusan National Univ, Korea

**Fundamental Study on Tidal Currents in Obatake Seto from
Viewpoint of Tidal Energy Generation**

K Sasa, Hiroshima National College of Maritime Tech; S Shimizu, M
Fujii, E Koga, Oshima National College of Maritime Tech, Japan

**Preliminary Numerical Estimates on Tidal Stream Energy Resources
of the Coastal Areas of Shandong Peninsula**

BC Liang, LL Yang, GX Wu, Ocean Univ of China, China

**Characterisation of Marine Turbulence Using ADCP Field
Measurements**

I Masters, M Togneri, Swansea Univ, UK

**A Numerical Wave Channel for the Design of Offshore Structures with
Consideration of Wave-Current Interaction**

D Markus, R Wüchner, K-U Bletzinger, TU München, Germany

**Evaluation of Flow around Circular Cylinder at Reynolds Numbers for
Tidal Energy Device Applications: Commercial and Open Source
URANS Solvers**

RM Stringer, J Zang, Univ of Bath, UK

**Simulation of the Impact of a Tidal Current Turbine on the Seabed in
Shallow Waters**

L Vybulkova, Univ of Glasgow; RE Brown, Univ of Strathclyde; H
Karunarathna, M Vezza, Univ of Glasgow, UK

**A Lattice Boltzmann - Immersed Boundary Method for Simulating
Design Tidal Turbine Loads and Optimazition**

JS Lee, JY Moon, S Kondaraju, Yonsei Univ, Korea

103. HYDRODYNAMICS XIII: DP & Control (V. 3)
Wednesday June 20 16:20 Room 2
I

Chair: W Koterayama, Kyushu Univ, Japan
Co-Chair: L Wang, Shanghai Jiao Tong Univ, China

An Adaptive Backstepping Control Design for Motion Control of Stewart Platforms

HR Karimi, Univ of Agder, Noway; JM Rossell, F Palacios-Quiqonero, J Rubio-Massegu, Univ Politecnica de Catalunya, Spain

Application of RBF Neural Network based Dynamic Surface Control in Dynamic Positioning System

HZ Liang, LY Li, DS Qiao, JP Ou, Dalian Univ of Tech, China

Research on 3-D Dynamic Positioning System for Offshore Platform

I Yamamoto, Univ of Kitakyushu; K Maeda, T Asanuma, Japan Oil, Gas & Metals National Corp, Japan

A Study of Long & Ultra-Short Base Line in the South China Sea

W Cai, LP Liu, Offshore Oil Engineering, China

Impact of Thruster Failure on Mooring-Assisted Dynamic Positioning System

F Zhang, L Wang, F Yan, Shanghai Jiao Tong Univ, China

A Research of the Effect of Heeling and Trimming on a Specific Semi-Submersible Platform with Dynamic Positioning System

HL Liu, L Wang, F Yan, Shanghai Jiao Tong Univ, China

Motion Response Control of DWSC Craneship Based on the State-Space Model ([Proceedings Only](#))

XC Yu, FloaTEC; J Falzarano, Texas A&M Univ, USA

104. RENEWABLE ENERGY XI: Offshore Wind 11: Power 4 (V. 1)
Wednesday June 20 16:20 Room 3

Chair: JP Liyanage, Univ of Stavanger, Norway

Aerodynamic Inflow Conditions on Floating Offshore Wind Turbine Blades for Airfoil Design Purposes

D Matha, T Lutz, F Wendt, PW Cheng, Univ of Stuttgart, Germany

Voltage Forecasting in a Very Short Time Through the Application of Fuzzy Systems

ED Garcia, CERTAJA ENERGIA; LN Canha, AR Abaide, PRP Silva, RG Milbradt, Federal Univ of Santa Maria, Brazil

Stability Analysis of Four Parallel-Operated DFIG-based Offshore Wind Farms Fed to a Large Power Grid through a VSC-HVDC Link

L Wang, MS Nguyen Thi, National Cheng Kung Univ, Taiwan, China

From the Installation of Submarine Cable to Probe the Prospective Development of Ocean Energy in Taiwan

CK Lin, SR Liaw, CECI Engineering Consultants; HH Lee, National Sun Yat-sen Univ, Taiwan, China

Passive Locomotion of a Self-propelled Three-dimensional Flapping Wing

JX Hu, Q Xiao, Univ of Strathclyde, UK

105. ADVANCED SHIP TECH III: Collision & Vibration (V. 4)
Wednesday June 20 16:20 Room 4

Chair: T Shibue, Kinki Univ, Japan

Co-Chair: G Damblans, PRINCIPIA, France

Position Incidents during Offshore Loading with Shuttle Tankers on the Norwegian Continental Shelf 2000-2011

A Kvitrud, Petroleum Safety Authority, Norway

Falling Behavior Simulation of a Standing Human Body on a Carriage at Experimental Collision, to Simulate a Collision between a High Speed Ship and a Quay

T Shibue, R Misumi, T Hayami, T Sawai, M Ohmasa, N Hirokawa, Kinki Univ, Japan

Structural Safety Assessment of Ship Collision Using FSI Analysis Technique

SG Lee, JH Nam, Korea Maritime Univ, Korea

Improved Structural Redundancy of Tank in Collision by Applying Steel Plates with High Uniform Elongation to Hull Structure

K Hirota, S Nakayama, Mitsubishi Heavy Industries; K Nakashima, K Hase, H Shiomi, S, Tsuyama, JFE Steel, Japan

Numerical and Experimental Investigations on Slamming Load Prediction of Subsea Structures

G Damblans, B Christian, R Marcer, PRINCIPIA; G de Hauteclouque, Bureau Veritas; A Cinello, F Petrie, OCEANIDE, France

Seismic Behavior of Fixed Jacket Platforms - A Case Study in Persian Gulf

S Rezaei, AR Mostafa Gharabaghi, MR Chenaghloou, Sahand Univ of Tech, Iran

Simulating Multibody Water Impact with a Two-Phase Solver

TQ Li, Wuhan Univ of Tech, China

106. HPM V: Fatigue & Fracture 2 (V. 4)
Wednesday June 20 16:20 Room 5

Chair: T Hara, Nippons Steel, Japan

Co-Chair: S Aihara, Univ of Tokyo, Japan

Brittle Failure in Impact Tension Tests using Steel Wires

T. Tamano, M Kanaoka, Osaka Sangyo Univ; H Ishikawa, Daitetsu Kogy; H Tsuboi, NEWJEC, Japan

Effect of Nonlinear Distribution Stress on Surface Crack Growth at Thick Welded Joints

G Liu, Y Huang, Dalian Univ of Tech, China

Constraint Loss Correction between SENB and SENT Welded Joint Specimens Based on Weibull Stress Criterion

T Sakimoto, S Igi, S Endo, S Suzuki, JFE Steel, Japan

Establishment of Required Brittle Crack Arrest Toughness Kca Value with Actual Scale Model Tests

T Inoue, Nippon Steel; T Matsumoto, Nippon Kaiji Kyokai; H Yajima, Nagasaki Inst of Applied Science; S Aihara, Univ of Tokyo; H Yoshinari, National Maritime Research Inst; K Hirota, Mitsubishi Heavy Industry; M Toyoda, IHI Marine United; T Kiyosue, Kawasaki Shipbldg; T Handa, JFE Steel; T Kawabata, Sumitomo Metal Industries; T Tani, Kobe Steel, Japan

Evaluation Method for Crack Arrestability of Steel Plates Using Small-Scale Fracture Test Results

T Ishikawa, T Inoue, Y Funatsu, J Ootani, Nippon Steel, Japan

107. COASTAL VIII: Estuary Hydraulics (V. 3)
Wednesday June 20 16:20 Room 6

Chair: LK Chien, National Taiwan Ocean Univ, Taiwan, China

River Run Off on Circulation Pattern over Complex Topography

SX Liang, Dalian Univ of Tech, China; MJ Olascoaga, Univ of Miami, USA; GS Liu, SL Han, Dalian Univ of Tech, China

Impact of the Namgam Dam Water Discharge on the Circulation in the Chinju Bay in Korea

CK Kim, Gyeongnam Provincial Namhae College, Korea

Development of Surface Current Observation System Using GPS Sensor Network and its Application to a Bathing Beach

H Shibata, Hiroshima National College of Maritime Tech; T Okabe, Toyohashi Univ of Tech; T Ishikawa, Public Works Research Center; T Horiguchi, Crearia Inc; S Aoki, Toyohashi Univ of Tech; T Komine, Ryutsu Keizai Univ, Japan

Numerical Simulations of the Hydrodynamics in the Coastal Waters of the Nan-Wan Bay in Southern Taiwan

JM Liau, YS Tsai, Taiwan Ocean Research Inst; WJ Juang, MOTC; TW Hsu, SY Chen, National Cheng Kung Univ, Taiwan, China

Experimental Investigation of Cross-Shore Profile Changes

M Demirci, Mustafa Kemal Univ; MS Akoz, Cukurova Univ, Turkey

Riverbed Evolution of Yangtze Estuary under the Effect of Large-Scale Hydraulic Engineering at Upstream

NL Jiang, YP Chen, CK Zhang, Hohai Univ, China

Analysis of Seabed Evolution in the Min Estuary with Surfer Software

P Dai, JH Zheng, Y Ju, Y Zhang, Hohai Univ, China

**108. SUBSEA, PIPELINES, RISERS VII:
Advanced Analysis 1(V. 2)**

Wednesday June 20 16:20 Room 7

Chair: H Moshagen, BHM Engineering Services, Norway
Co-Chair: FP Gao, Inst of Mechanics, CAS, China

**Prediction of Surge and Swab Pressure using a Dynamic-hydraulic
Coupled Model**

LQ Huang, YS Cao, GV Tahchiev, MARINTEK USA, USA

Efficient Truncation Scheme for Modelling Deepwater Mooring Lines

A Argyros, RS Langley, Univ of Cambridge; RV Ahilan, GL Noble Denton, UK

**Advanced Finite Element Analysis for Qualification of Spiral Welded
Pipe for Offshore Application**

AH Eltaher, S Jafri, MCS Kenny; A Panikkar, DNV; P Jukes, MCS Kenny; G Heiberg, DNV, USA

**Complexities in Combined Mooring System and Drilling Riser Analysis
of MODU**

R Kadiyala, J Pyke, A Whooley, MCS Kenny, USA

**Seabed Interaction Effects on Stress Distribution Along the J-lay
Pipelines**

H Shiri, A Sadeghi, Urmia Univ of Tech, Iran

**An Investigation about the Shape of the Collapse Mode of Flexible
Pipes**

ER Malta, CA Martins, A Gay Neto, FG Toni, Univ of Sao Paulo, Brazil

Transient Analysis of Sea Water Intake Using CFD Model

M Assadi Niazi, Ardabil Regional Water; S Barzegar, Iran Marine Industrial; AE Amiri, Sharif Univ of Tech; HN Haleh, Islamic Azad Univ of Ardabil, Iran

109. GEOTECH VI: Piles & Foundations (V. 2)

Wednesday June 20 16:20 Room 8

Chair: SC Bang, South Dakota School of Mines & Tech, USA

**Comparison of Design Methods for Axially Loaded Driven Piles in
Cohesionless Soil**

K Thomassen, LV Andersen, LB Ibsen, Aalborg Univ, Denmark

**The Study for the Influence of Super Large Diameter and Deep
Penetration Pile Driving on Clay Properties**

S Li, YZ Wu, Tianjin Univ; YR Zhou, BF Jiang, China Oilfield Services Limited, China

**Site-Specific Adaptive Resistance Factor Calibrations of Axially
Loaded Driven Piles**

DW Kim, JH Park, KS Kwak, MK Chung, Korea Inst of Construction Tech; CK Chung, Seoul National Univ, Korea

Analysis of Load Transfer Behavior of a Large-Scale Bored Pile Socketed on Rock

ZC Kim, KK Kim, ET Kim, SB Lee, Samsung C&T, Korea

Collapse of a Strip Footing Subjected to Combined Loading

ML Cocjin, Tokyo Inst of Tech; O Kusakabe, Ibaraki National College of Tech; M Kitazume, Tokyo Inst of Tech, Japan

Model Test Study on the Behavior of Geosynthetic-encased Sand Pile in Soft Clay Ground

WJ Cho, Dankook Univ; WK Yoo, IJ Moon, BI Kim, Myongji Univ, Korea

110. OFFSHORE MECHANICS VI: Design & Installation (V. 1)
Wednesday June 20 16:20 Room 9

Chair: ML Duan, China Univ of Petroleum, China

The Numerical Analysis of Wind Load for Jack-up Drilling Unit

Y Lin, AK Hu, Harbin Engineering Univ; F Xiong, Shanghai CIMC R&D Centre, China

The Performance Study of Jack Up Drilling Unit with Different Leg Structure

XG Ren, Harbin Engineering Univ; MH Cao, Shanghai Offshore Petroleum Bureau, China

Modal Parameters Identification of Offshore Platform Using Improved HHT Method

JF Liu, SM Li, ZR Song, LX Li, China Offshore Oil Engineering, China

Application of Hamilton-Dirichlet's Principle to Analysis of Hydroelastic Behavior of an Elastic Floating Plate of Arbitrary Plan Geometry in Waves

S Nagata, Saga Univ; H Niizato, Hitachi Zosen; H Isshiki, Inst of Mathematical Analysis; K Toyota, Y Imai, Saga Univ, Japan

Investigation of the Accuracy of "Time Snapshot" Based Structural Analysis and Design of Jacket Type Platforms

G Farmakis, DC Angelides, Aristotle Univ of Thessaloniki, Greece

Vibration Analysis of Tube-Spring Systems for Downhole Seismic Measurement

Y Namba, M Kyo, E Araki, T Kimura, K Kitada, JAMSTEC, Japan

111. LNG SLOSHING VIII: Panel
Wednesday June 20 16:20 Room 10

Model-scale Experiment for Sloshing-Impact Measurements

Panelists

E Gervaise: GTT, France
and another to be announced

THURSDAY 08:00

112. RENEWABLE ENERGY XX: Tidal & Current Energy 2 (V. 1)
Thursday June 21 08:00 Room 1

Chair: BS Hyun, Korea Maritime Univ, Korea

Optimal Heat Transfer Design of an Ocean Turbine Pressure Vessel using Soft Computing

NI Xiros, Univ of New Orleans; K Kaiser, Virginia Tech, USA

Experimental Study on New Type of Vertical Axis Tidal Current Energy Converter

HG Kang, W Guo, B Chen, Y Xie, Dalian Univ of Tech, China

Efficiency Test of Multi-layer Vertical Axis Tidal Current Turbine

YU Ryu, KO Ko, CB Park, Hyundai Engineering & Construction, Korea

Demonstrative Power Generation by Twin-Runner Darrieus Turbine in Kanmon Strait

K Hiraki, R Wakita, T Kanemoto, Kyushu Inst of Tech; M Takao, Matsue College of Tech, Japan

Steady Flow Simulation of a Vertical Axis Marine Current Turbine

SM Camporeale, M Torresi, B Fortunato, G Pascazio, Politecnico di Bari, Italy

Flow Control for VATT by Fixed and Oscillating Flap

Q Xiao, W Liu, Univ of Strathclyde, UK

A Numerical Study of Darrieus Water Turbine

I Paraschivoiu, NV Dy, École Polytechnique de Montréal, Canada

113. HYDRODYNAMICS IX: CFD 1 (V. 3)
Thursday June 21 08:00 Room 2

Chair: P Ferrant, Ecole Centrale de Nantes, France

Co-Chair: V Sriram, Leibniz Univ Hannover, Germany

A Hybrid Particle-Grid Scheme for Computing Hydroelastic Behaviors Caused by Slamming

S Baso, H Mutsuda, K Hashihira, Y Doi, Hiroshima Univ, Japan

A Numerical Method to Predict Fluid-Structure Interaction of Flow past an Elastically Mounted Circular Cylinder

MC Kara, T Stoesser, KM Will, Georgia Inst of Tech, USA

Numerical Study on the Slamming Impact of Wedge Shaped Obstacles Considering Fluid-Structure Interaction (FSI)

Y Yamada, T Takami, National Maritime Research Inst, Japan

Application of a Nonlinear Time Domain Hybrid Method to the Study of a Semi-Submersible in Waves

A Papanikolaou, SK Liu, National Tech Univ of Athens, Greece

Relative Roll Motion Prediction of Skin-to-Skin Connected Replenishment in Waves by Elman Neural Network Combined with Chaos Theory

PA Shi, JW Ye, South China Univ of Tech, China

CFD Modeling and Analysis of an Open Quay Wall

A Tsolaridou, DC Angelides, Aristotle Univ of Thessaloniki, Greece

Non-Reflection Numerical Wave Flume with Smoothed Particle Hydrodynamics (SPH) Method

J Chang, SX Liu, JX Li, Dalian Univ of Tech, China

114. RENEWABLE ENERGY XII: Offshore Wind 12: General (V. 1)
Thursday June 21 08:00 Room 3

Chair: SY Hong, Maritime & Ocean Eng Research Inst, Korea

Gain Scheduling for Output H_∞ Control of Offshore Wind Turbine Systems

T Bakka, HR Karimi, Univ of Agder, Norway; N Duffie, Univ of Wisconsin-Madison, USA

Semi-active Mixed H_2/H_∞ Control Design for Offshore Wind Turbine Systems

HR Karimi, Univ of Agder, Norway

Approach of a Port Inventory Control System for the Offshore Installation of Wind Turbines

M Luetjen, BIBA GmbH, Germany; HR Karimi, Univ of Agder, Norway; B Scholz-Reiter, BIBA GmbH, Germany

115. ADVANCED SHIP TECH IV: Slamming & Load (V. 4)
Thursday June 21 08:00 Room 4

Chair: S Okazawa, Hiroshima Univ, Japan

Co-Chair: SG Lee, Korea Maritime Univ, Korea

Hydroelastic Loading and Response of Ultra Large Container Ships

I Senjanovic, N Vladimir, Univ of Zagreb, Croatia; S Malenica, Bureau Veritas, France

Numerical Analysis for Slamming Impact Load and Dynamic Structural Responses of a Containership

JH Yang, Hyundai Heavy Industries, Korea; SE Kim, ABS, USA; BH Jung, Hyundai Heavy Industries, Korea

CFD Simulation of Slamming Loads on a Containership with Energy-Saving

SK Lee, K Yu, ABS, USA; RKC, Tseng, CSBC, Taiwan, China

Experimental Study and Numerical Simulation of Regular Wave Impact Acting on a Tilting Plate

Z Ma, GJ Zhai, CZ Song, Dalian Univ of Tech, China

Prediction of Slamming Coefficient during Vertical Water Entry at Constant Speed

A El Malki Alaoui, A Neme, ENSTA-Bretagne, France

116. HPM VI: Fatigue & Fracture 3 (V. 4)
Thursday June 21 08:00 Room 5

Chair: T Tsakalakos, Rutgers Univ, USA

Co-Chair: A Nonn, Salzgitter Mannesmann Forschung, Germany

Analytical and Experimental Study on the Thickness Effect to Fatigue Strength (1st Report: Results of Fundamental Specimens)

N Yamamoto, Nippon Kaiji Kyokai; M Mouri, IHI Corp; T Nakamura, Universal Shipbldg; S Tanaka, Mitsui Eng & Shipbldg; T Sugimura, Mitsubishi Heavy Industries; H Negayama, Sumitomo Heavy Industries; R Yasunaga, Kawasaki Heavy Industries; T Okada, IHI Marine United; H Shimanuki, Nippon Steel; Y Morikage, JFE Steel; N Furukawa, Kobe Steel; T Mori, Hosei Univ; Y Sumi, Yokohama National Univ, Japan

Load Sequence Effects in the Fatigue Design of Welded Spatial Tubular Joints in Jackets

A Raba, P Schaumann, S Lochte-Holtgreven, Leibniz Univ Hannover, Germany

Fatigue Analysis on a Multi-Planer Tubular KK Joints Based on Scaled Model Test

JX Yue, Y dong, J Gan, WG Wu, Wuhan Univ of Tech, China

Prediction of the Fatigue Crack Propagation in Large-Scale Tubular Joint Specimens

XD Qian, CT Nguygen, National Univ of Singapore, Singapore

Fatigue Performance of Welded Steel Longitudinal Stiffeners

J Hensel, T Nitschke-Pagel, K Dilger, TU Braunschweig, Germany

Behavior of Concrete Filled GFRP-Steel Tube under Cyclic Loading

CY Zhu, YH Zhao, XF Li, Dalian Maritime Univ, China

117. COASTAL IX: Coastal Sediment 1 (V. 3)
Thursday June 21 08:00 Room 6

Chair: BM Sumer, Technical Univ of Denmark, Denmark

Co-Chair: Y Yamamoto, Tokai Univ, Japan

Experimental Study on Scour and Hydrodynamic Loading for Sea-Crossing Bridge Piers

HH Chen, H H Hwung, RY Yang, SL Yu, PC Kup, National Cheng-Kung Univ, Taiwan, China

Residual Liquefaction under Standing Waves

VSO Kirca, Istanbul Tech Univ, Turkey; BM Sumer, J Fredsøe, Tech Univ of Denmark, Denmark

Mud Coastal Protection using Triangular Modules of Breakwater made of Bamboos

C Chinnarasri, S Kittirart, King Mongkut's Univ of Tech, Thailand

A Study on the Use of Semi-Open Groin System for Protecting the North-West Coast of Egypt Along the Mediterranean Sea

AM Mostafa, Cairo Univ; MA Hasan, Banha Univ, Egypt

Modelling Shore Parallel Breakwaters Effects on Coastal Morphology Change in Various Hydrodynamic Conditions

YL Du, HD Zhou, WQ Peng, China Inst of Water Resources & Hydropower Research, China; SQ Pan, Univ of Plymouth, UK

Coupled Wave-Bed Dynamics, Atchafalaya Shelf, Louisiana

C Sahan, Univ of Florida; I Safak, Univ of Virginia; A Sheremet, Univ of Florida, USA

Investigating the Application of Beach Nourishment in Eresos Beach in Lesvos, Greece; Proposed Solutions Based on 8 Different Scenarios

A Chatzipavlis, I Monioudi, AF Velegerakis, Univ of the Aegean, Greece

Morphodynamic and Current Characteristics in Min Estuary, China

JH Zheng, Y Ju, P Dai, Z Wang, Hohai Univ, China

**118. SUBSEA, PIPELINES, RISERS VIII:
Installations & Fabrications (V. 2)**

Thursday June 21 08:00 Room 7

Chair: M Wu, J Ray McDermott, USA

Deepwater Reel-Lay Installation Based on Risk Assessment and Reliability Analysis

XW Hu, ML Duan, YT Kang, JJ Sun, X Gao, China Univ of Petroleum, China

O-lay, Shallow and Deep Water Offshore Pipeline Laying

JG Buijvoets, Industrial Innovations, Netherlands

New Developments of Direct Electrical Heating for Flow Assurance

JK Lervik, SINTEF Energy Research; O Iversen, Nexans Norway; M Høyer-Hansen, SINTEF Energy Research, Norway

CO₂ Full Scale Facilities Challenges for EOR/CCTS Testing on Transportation Issues

CM Spinelli, ENI, A Lucci, M Di Biagio, CSM, Italy

119. GEOTECH VII: Consolidation & Seepage (V. 2)

Thursday June 21 08:00 Room 8

Chair: JW Chen, National Cheng Kung Univ, Taiwan, China

A Study of Vacuum Consolidation Accompanied by the Substitution of Pore Water by Air

H Oikawa, T Ogino, Akita Univ; M Tsushima, Akita National College of Tech; J Komatsu, Okuyama Boring Co; M Igarashi, DIA Consultants, Japan

Pore Pressure Model Based on Stress History
DH Park, JK Ahn, BJ Kim, KK Kim, Hanyang Univ, Korea

One-Dimensional Consolidation Model Based on Sub-Superloading Surface Theory and its Applicability to Consolidation Behavior of Pleistocene Clays in Kansai International Airport
K Oda, MS Lee, Osaka Univ, Japan

Development of the Seepage Flow Monitoring Method by the Hydraulic Head Loss Rate in Tide Embankment
SJ Han, Expert Group for Earth & Environment; SS Kim, Land & Housing Inst, Korea

Permeability Measurement and Seepage Modeling of Tropical Volcanic Island Soils
HG Brandes, J Ripple, PG Nicholson, Univ of Hawaii, USA

Permeability and Mechanical Properties of Fine Sand Improved by Microbial Carbonate Precipitation
M Tsukamoto, Y Inagaki, T Sasaki, Public Works Research Inst, Japan

Assessing Improvement Effect of Sand Compaction Pile in an Ash Pond
JH Hwang, National Central Univ, Taiwan, China

120. OFFSHORE MECHANICS VII: Moored Structures (V. 1)
Thursday June 21 08:00 Room 9

Chair: MH Kim, Texas A&M Univ, USA,
Co-Chair: AM Wang, Offshore Oil Engineering, China

Investigation on the Use of Different Approaches to Mooring Analysis and Appropriate Safety Factors
S Vasudevan, P Westlake, InterMoor Marine Services, UK

Mooring Analysis of Ultra Large Floating System
JH Liu, WJ Zhong, HY Zeng, Offshore Oil Engineering, China

A Challenging Mating Operation between VLCC Class FPSO and Soft Yoke Mooring System in Extremely Shallow Water
AM Wang, RH Yuan, SH Zhu, HL Li, WW Xie, M He, Offshore Oil Engineering, China

Effects of Mooring Line Failure on the Wave Frequency Responses of Truss Spar Platforms
MMA Wahab, AO Montasir, JV Kurian, SM Liew, Universiti Teknologi PETRONAS, Malaysia

Hydrodynamic Evaluation for Spar Platform Subject to Mooring Line Failure

AC Feng, ZM Chen, Univ of Southampton, UK; YX You, Shanghai Jiao
Tong Univ, China; JT Xing, Univ of Southampton, UK

121. ARCTIC V: Ice Structure Interaction (V. 1)
Thursday June 21 08:00 Room 10

Chair: AT Bekker, Far Eastern Federal Univ, Russia .

**An Application of Potential Theory to a Problem of Dynamically
Loaded Ice Sheet in Shallow Water**

H Kitagawa, Ocean Policy Research Foundation, Japan

**Model Test Studies on Ice-Induced Dynamic Behavior of Moored
Marine Structures**

EM Appolonov, KE Sazonov, NY Klementieva, AA Dobrodeev, Krylov
Shipbldg Research Inst, Russia

**Feasibility Study of a Unmanned Floating Moored Platform Located in
the Svalbard Archipelago for Monitoring of Ice Induced Responses
and Ice Conditions Simultaneously**

PK Bruun, Aker Solutions; A Gürtner, Statoil, Norway

Design of Platform for Shallow Water in the Arctic Region

BR Livshyts, DY Nesin, VF Lenskiy, JS CDB Corall, Ukraine

Failure Modes Analyses of Ice-Resist Jacket Platforms in Bohai Sea

DY Zhang, Dalian Ocean Univ; QJ Yue, Dalian Univ of Tech, China

**Seasonal Variations in the Occurrence of Ice Induced Vibration of a
Bottom Fixed Structure**

M Bjerkas, Reinertsen AS; C Lønøy, Det Norske Veritas; A Gürtner,
Statoil, Norway

**Lightweight Structures in Extreme Environments: Cases from
Antarctic and Sub-Antarctic Areas**

J Fernandoy, P Shepherd, PN Richens, Univ of Bath, UK

THURSDAY 10:30

122. RENEWABLE ENERGY XXI: Tidal & Current Energy 3 (V. 1)
Thursday June 21 10:30 Room 1

Chair: JH Ko, Korea Ocean Research & Develop Inst, Korea

**The Influence of Flow Acceleration on Tidal Stream Turbine Wake
Dynamics: A Numerical Study Using the Non-Uniformly Loaded
Actuator Disk Method**

R Malki, I Masters, AJ Williams, TN Croft, Swansea Univ, UK

Study on the Comparison of Three Type Tidal Stream Generators

JH Ko, Korea Ocean Research & Development Inst, Korea

Performance Prediction and Structural Integrity Assessment of 50kW Tidal Turbine using Unidirectional FSI Method

SY Bae, BS Kim, WJ Kim, SL Lee, Korean Register of Shipping, Korea

Performance Prediction of a Cavitating Marine Current Turbine

D Usar, S Bal, Istanbul Tech Univ, Turkey

Foundations and Loadings on In-Stream Tidal Turbine Systems

TA Newson, Univ of Western Ontario, Canada; P Larkin, Senergy; R Maynard, RM Associates, UK

Development of HAT Impeller with Low Tip Vortex and High Efficiency for 1 Mw Class Marine Current Turbine

MC Kim, IR Do, WJ Lee, Pusan National Univ; BS Hyun, Korea Maritime Univ; SH Rhee, Seoul National Univ, Korea

123. HYDRODYNAMICS X: CFD 2 (V. 3)

Thursday June 21 10:30 Room 2

Chair: K Tanizawa, National Maritime Research Inst, Japan

A Boltzman-based Numerical Model for the Study of Large Scale Instabilities in Free Surface Shallow Shear Flows

MS Ghidaoui, MY Lam, Hong Kong Univ of Science & Tech, China

Assessment of an Advanced Adaptive-Meshing Finite Element Tool for the Simulation of Gravity Water Waves

J Spinneken, V Heller, S Kramer, M Piggott, A Vire, Imperial College London, UK

Study on a Hybrid Water Wave Radiation Condition in 3D Numerical Wave Tank

WY Duan, CW Zhang, Harbin Engineering Univ, China

Simulation of Breaking Waves by Using an Improved SPH Method

X Zheng, QW Ma, City Univ London, UK; WY Duan, Harbin Engineering Univ, China

Directional Wave Generation with the Internal Wave Maker in the Navier-Stokes Equations Model

YS Cho, TM Ha, Hanyang Univ, Korea; PZ Lin, Sichuan Univ, China

A Pseudo-Compressibility Finite Difference Method for Single-Phase Free Surface Flow Computations

JT Huang, W Qiu, Memorial Univ of Newfoundland; D Hally, Defence R&D Canada, Canada

Research on Unsteady Shear Layer Oscillation in 3D Open Cavity based on LES Method

S Dai, LP Sun, Harbin Engineering Univ, China

Numerical Modelling of Solitary Wave Propagation over Underwater Steps with SPH

HX Liu, J Li, SK Tan, Nanyang Technological Univ, Singapore

Numerical Simulation of Regular Wave Motion Based on SPH Method
N Mei, Ocean Univ of China, China; H Lin, Iowa State Univ, USA

124. RENEWABLE ENERGY XIII: Wave Energy 1 (V. 1)
Thursday June 21 10:30 Room 3

Chair: S Nagata, Saga Univ, Japan

The Learning and Development Process of the Oyster. Wave Energy Converter

JE Skelton, K Doherty, G Bryans, Aquamarine Power, UK

Design and Construction of a Hydraulic Power Take-Off Applied to a Wave Energy Converter

P Beirco, C Malga, Inst Superior de Engenharia de Coimbra, Portugal

Floating Type Ocean Wave Power Station at Various Wave Circumstances

S Okamoto, T Kinoshita, T Kanemoto, Kyushu Inst of Tech, Japan

Concept Study on Converting Wave Energy by a Large Amplitude Surging Floater

GJ Chen, LF Xiao, X Li, Shanghai Jiao Tong Univ, China

Water Spider Wave Power Device: Conceptual Study

Y Li, LJ Wu, DS He, XQ Zheng, SL Zhou, Chongqing Jiaotong Univ, China

125. ADVANCED SHIP TECH V: Propulsion (V. 4)
Thursday June 21 10:30 Room 4

Chair: S Kinnas, Univ Of Texas at Austin, USA

Development of an Experimental Methodology for Self-Propulsion Test with a Marine Diesel Engine Simulator

K Tanizawa, Y Kitagawa, T Takimoto, T Yoshiaki, National Maritime Research Inst, Japan

Hydrodynamic Analysis of Biometric Wing Systems for Augmenting Ship Propulsion

KA Belibassakis, G Politis, National Tech Univ of Athens, Greece

Prediction of Steady and Unsteady Cavitating Performance of Ducted Propulsors

SA Kinnas, SH Chang, Y Tian, CH Jeon, Univ of Texas at Austin, USA

Influence Analysis of Blade Fracture on Hydrodynamic Performance of Ducted Propellers Based on CFD

LJ Ou, DY Li, W Zhang, South China Univ of Tech, China

126. HPM VII: Shipbuilding Steels (V. 4)
Thursday June 21 10:30 Room 5

Chair: KB Kang, POSCO, Korea

Co-Chair: A Kubo, Nippon Kaiji Kyokai, Japan

Proposal for Brittle Crack Arrest Methods Using Various Weld Arresters: Development of Higher Toughness YP47(460N/mm²) Class Steel Plate for Ultra Large Container Ships-4

T Inoue, Y Funatsu, J Otani, H Shirahata, T Ishikawa, Y Hashiba, Nippon Steel, Japan

Experimental Study on Brittle Crack Propagation Behavior with Large Scale Structural Component Model Tests - Brittle Crack Arrest Design for Large Container Ships -5 -

A Kubo, Nippon Kaiji Kyokai; H Yajima, Nagasaki Inst of Applied Science; S Aihara, Univ of Tokyo; H Yoshinari, National Maritime Research Inst; K Hirota, Mitsubishi Heavy Industries; M Toyoda, IHI Marine United; T Kiyosue, Kawasaki Heavy Industries; T Inoue, Nippon Steel; T Handa, JFE Steel; T Kawabata, Sumitomo Metal Industries; T Tani, Kobe Steel; Y Yamagushi, Nippon Kaiji Kyokai, Japan

Thickness Effect on the Brittle Crack Arrest Toughness Value (K_{IC}) - Brittle Crack Arrest Design for Large Container Ships -6 -

K Sugimoto, Nippon Kaiji Kyokai; H Yajima, Nagasaki Inst of Applied Science; S Aihara, Univ of Tokyo; H Yoshinari, National Maritime Research Inst; K Hirota, Mitsubishi Heavy Industries; M Toyoda, IHI Marine United; T Kiyosue, Kawasaki Heavy Industries; T Inoue, Nippon Steel; T Handa, JFE Steel; T Kawabata, Sumitomo Metal Industries; T Tani, Kobe Steel, Japan

Validation of Different Fatigue Assessment Approaches for Thick Plate Structures Made of High Tensile Strength Steel YP47

O Doerk, Future Ship GmbH; W Fricke, Hamburg Univ of Tech; H vonSelle, Germanischer Lloyd SE, Germany

Effect of Welding Residual Stress in Brittle Crack Propagation Path of Welded Joint with Thick Steel Plate

GB An, KM Ryu, POSCO; WC Woo, KAERI; JU Park, Chosun Univ; JS Lee, POSCO, Korea

The Effect of Shear-Lips on Arrestability of Thicker Steel Plates

Y Funatsu, H Shirahata, J Otani, T Inoue, Y Hashiba, Nippon Steel, Japan

127. COASTAL X: Coastal Sediment 2 (V. 3)
Thursday June 21 10:30 Room 6

Chair: I Deguchi, Osaka Univ, Japan

Determination of Longshore Sediment Transport with a Numerical Model: A Case Study

HN Ari Guner, Y Yuksel, E Ozkan Cevik, Yildiz Tech Univ, Turkey

Computer Simulation of Taichung Harbor for improving Sediment Siltation

LH Tsai, Inst of Transportation; CC Wen, Hungkuang Univ; TL Lee, Univ of Kang Ning, Taiwan, China

Elucidation of Seasonal Sediment Transport Process in Kirinda Fishery Harbour in Sri Lanka using Xbeach Model

DPC Laknath, Taisei Corp; J Sasaki, Yokohama National Univ, Japan

Investigation and Modelling of Turbidity due to Suspended Particulate Matter in Port Phillip Bay

A Belski, AV Babanin, Swinburne Univ of Tech, Australia; M Dobrynin, Danish Meteorological Inst, Denmark; AL Pleskachevsky, German Aerospace Center, Germany; S Zieger, Swinburne Univ of Tech, Australia

Calculation of Total Longshore Sediment Transport Rate in the Surf Zone and Swash Zone with Application to Shoreline Change Model

HX Le, S Kato, S Aoki, Toyohashi Univ of Tech, Japan; H Hanson, M Larson, Lund Univ, Sweden

Assessment of Bottom Sediment Distribution over Short Time as a Quick Indicator of Anthropogenic Impact in a Coastal Lagoon

C Senduran, TUBITAK MRC; B Ustun, Yildiz Tech Univ, Turkey

Wave-Induced Suspended Sediment Flux Degradation after Emergent Vegetation

A Koroglu, N Elginöz, E Oguz, SM Kabdasli, Istanbul Tech Univ, Turkey

Characteristics of Sediments Distribution near Estuary of Cho-Shui River in Taiwan

SS Hsiao, HM Fang, HY Wang, National Taiwan Ocean Univ, Taiwan, China

Modelling of the State of Sand Particles in the Turbidity Current

R Tsurumi, Osaka Prefecture Univ, Japan

The Effect of Sediment Size on the Propeller Induced Scour

A Yuksel Ozan, Yildiz Tech Univ, Turkey

Response Relation between Sediment Particle-size Distribution and Hydrodynamic Characteristics in Offshore Area of Jiangsu Province

JJ Zhou, CK Zhang, JF Tao, Hohai Univ, China

**128. SUBSEA, PIPELINES, RISERS IX:
Advanced Analysis 2 (V. 2)**

Thursday June 21 10:30 Room 7

Chair: AM Gresnigt, Delft Univ of Tech, Netherlands

Co-Chair: Y Bai, Zhejiang Univ, China

Development of a Novel 2D Pipe-Soil-Fluid Interaction Model for Subsea Pipeline Stability Design

TJ Griffiths, JP Kenny, Australia

Dynamic Behavior for Buried Flexible Pipe Subjected to Ground Shear Deformation

Y Iwasaki, T Kawabata, Y Sonoda, Kobe Univ, Japan

Finite Element Modeling of Partially Embedded Offshore Pipelines

S Dutta, B Hawlader, Memorial Univ of Newfoundland; R Phillips, C-CORE, Canada

Axial Pipe Clay Seabed Interaction of Offshore Pipelines Using PIV
S Muthukrishnan, Monash Univ, Australia

Wave-induced Dynamic Response of a Layered Poro-elastic Seabed around an Offshore Pipeline
XL Zhou, Shanghai Jiao Tong Univ, China; HJ Zhang, Univ of Dundee, UK; JS Zhang, Hohai Univ, China

An Enhanced 3D Elasto-Plastic Pipe-Soil Interaction Model - Coupled vs. Uncoupled Interaction
O Hededal, Tech Univ of Denmark; T Strandgaard, GeoLine ApS, Denmark

Wet and Dry Collapse of Straight and Curved Flexible Pipes: A 3D FEM Modeling Approach
A Gay Neto, CA Martins, ER Malta, Univ of Sao Paulo; CAF Godinho, TF Barbosa Neto, Prysmian Cables and Systems, Brazil

Numerical Simulation of Buried Steel Pipelines Subjected to Seismic-Fault-Induced Deformations
P Vazouras, S Karamanos, P Dakoulas, Univ of Thessaly, Greece

Simulating Seismic Wave Motions for Pipeline Design
AH Younan, ExxonMobil Upstream Research, USA

129. GEOTECH VIII: Material Testing (V. 2)
Thursday June 21 10:30 Room 8

Chair: C Gaudin, Univ of Western Australia, Australia

Analysis of Lateral Load Test on Batter Pile Groups at I-10 Twin Span Bridge
MY Abu-Farsakh, Louisiana State Univ; XB Yu, Univ of Texas at Arlington, USA

A Preliminary Comparison Study on Consolidated-Drained Triaxial Tests according to BS and DIN
G Spagnoli, C Hotz, Fugro Consult GmbH, Germany

Classification of Soil Strata Using Screwdriver Sounding Test
T Tanaka, N Suemasa, A Ikegame, Tokyo City Univ; S Yamato, Inspection Organization; T Katada, Tokyo City Univ, Japan

Experimental Setup for Cyclic Lateral Loading of Monopiles in Sand
HR Roesen, LV Andersen, LB Ibsen, A Foglia, Aalborg Univ, Denmark

Dynamic Centrifuge Tests on Normally Consolidated Deep Silt Deposit
WJ Cho, Dankook Univ; JT Han, Seoul National Univ, Korea

An Experimental Comparison between the Shear and the Primary Waves by Using Resonant Column Test

M Onur, Anadolu Univ; SU Umu, VD Okur, Eskisehir Osmangazi Univ;
M Tuncan, A Tuncan, Anadolu Univ, Turkey

**The Use of Vertical Electrical Sounding (VES) Method as an
Alternative to Standard Penetration Test (SPT)**

BA Syed, F Siddiqui, Universiti Teknologi PETRONAS, Malaysia

130. OFFSHORE MECHANICS VIII: FSRU 1 (V. 1)
Thursday June 21 10:30 Room 9

Chair: HG Sung, Maritime & Ocean Eng Research Inst, Korea

Co-Chair: SA Mavrakos, National Tech Univ of Athens, Greece

**Experimental and Numerical Studies on Interaction between Two
Moored Bodies**

Y Gou, JF Wen, B Teng, Dalian Univ of Tech, China

**Numerical Simulation of Impact Loads by Sloshing in a 3-D
Rectangular Tank Using Eulerian and Lagrangian Approaches**

SM Jeong, SC Hwang, JC Park, Pusan National Univ, Korea

**Experimental Study on the Side-By-Side Offloading Operation of
FSRU and LNGC**

SK Cho, HG Sung, SY Hong, SW Hong, MOERI/KORDI; YS Kim,
Daewoo Shipbldg & Marine Engineering; MK Ha, Samsung Heavy
Industries; YD Choi, STX Offshore & Shipbldg; BS Yu, Total Marine
Services; RD Jang, Korea Register of Shipping, Korea

**Numerical Study on the Motions and Drift Forces of the Side-By-Side
Moored FSRU and LNGC Containing Sloshing**

SK Cho, HG Sung, BW Nam, MOERI/KORDI; HS Choi, Seoul National
Univ, Korea

Fatigue Life Assessment of FSRU Mooring System

BW Kim, SY Hong, HG Sung, SW Hong, MOER/KORDI, Korea

**An Experimental Study on Response of FSRU in Shallow Water in
Comparison of Mooring Systems**

YS Kim, HG Sung, JH Kim, SY Hong, MOERI/KORDI, Korea

131. ARCTIC VI: Operations in Ice (V. 1)
Thursday June 21 10:30 Room 10

Chair: SJ Prinsenber, Bedford Inst of Oceanography, Canada.

**On Full-Scale Onboard Ship Measurements in Various Ice Conditions, a
Review of Existing Data Base at Aker Arctic Technology**

GW Wilkman, E Ranki, T Leiviskd, T Heinonen, Aker Arctic Technology,
Finland

An Integrated Ice Management Alert System

AH Younan, JM Hamilton, VY Garas-Yanni, JD Blunt, CJ Holub, T
Kokkinis, ExxonMobil Upstream Research, USA

Ice Management: Analysis of Efficiency

EM Appolonov, KE Sazonov, OY Timofeev, AA Dobrodeev, Krylov
Shipbldg Research Inst, Russia

**Study of Operational Characteristics for an All Year Intervention Vessel
for the Barents Sea**

TE Berg, BO Berge, MARINTEK; H Borgen, STXOSV, Norway; S
Hanninen, VTT; RA Suojanen, Aker Arctic Tech, Finland

**Structural Safety Assessment of LNGC CCS under Iceberg Collision Using
FSI Analysis Technique**

SG Lee, JK Kim, JH Nam, Korea Maritime Univ, Korea

Acoustic Communications and Navigation under Arctic Ice

LE Freitag, P Koski, J Partan, S Singh, A Morozov, Woods Hole
Oceanographic Institution, USA

THURSDAY 14:00

132. RENEWABLE ENERGY XXII: Thermal Energy (V. 1)
Thursday June 21 14:00 Room 1

Chair: Y Ikegami, Saga Univ, Japan

**Feasibility Study on Commercial Ocean Thermal Energy Conversion
Plant**

HJ Kim, HS Lee, YK Jung, DH Jung, DS Moon, SW Hong, Korea Ocean
Research & Development Inst, Korea

**Research on Double Stage-Rankine Cycle for Ocean Thermal Energy
Conversion (OTEC) Using Ammonia as Working Fluid**

Y Ikegami, T Morisaki, Saga Univ, Japan

**Research on Ocean Thermal Energy Conversion (OTEC) System Using
HFC245fa as Working Fluid**

T Morisaki, Y Ikegami, Saga Univ, Japan

Energy Generation Based on Combined Salinity and Heat Differences

VV Knyazhev, Inst of Marine Tech Problem, Russia; IK Kaikov, R Zorn,
Karlsruhe Inst of Tech, Germany

Optimal Design of a Solar Hot Water Plant with Economic Evaluation

YD Kim, K Thu, King Abdullah Univ of Science & Tech, Saudi Arabia;
KC Ng, CS Bhatia, National Univ of Singapore, Singapore

133. HYDRODYNAMICS XI: CFD 3 (V. 3)
Thursday June 21 14:00 Room 2

Chair: QW. Ma, City Univ London, UK

Co-Chair: M La Rocca, Univ Roma TRE, Italy

**Lattice Boltzmann Methods for Direct Numerical Simulations of
Turbulence Flows**

LS Luo, Y Peng, W Liao, Old Dominion Univ; LP Wang, Univ of Delaware, USA

Numerical Simulation of 3D Dam-break Flow by FEM-Level Set Method

JF Wang, RZ Zou, DC Wan, Shanghai Jiao Tong Univ, China

CFD Simulation of Directional Short-Crested Waves on a Platform

HC Chen, Texas A&M Univ, USA

Development of a New Computational Powering Evaluation System, 'SoLuTion'

SK Choi, HT Kim, JS Kim, JH Bae, CB Hong, Samsung Heavy Industries, Korea

RANS Simulation of Viscous Flow around Ship in Heading Waves

ZR Shen, DC Wan, Shanghai Jiao Tong Univ, China

Progress in the Application of Lattice Boltzmann Method (LBM) for Turbulent Flows

SS Girimaji, Texas A&M Univ, USA

134. RENEWABLE ENERGY XIV: Wave Energy 2 (V. 1)
Thursday June 21 14:00 Room 3

Chair: SW Hong, Maritime & Ocean Eng Research Inst, Korea

Performance of the OWC Pico Plant - Comparison between Real-Scale Data and Wave-to-Wire Model Results

I Le Crom, Wave Energy Centre, Portugal

Numerical Analysis of a Fixed-type Oscillating Water Column with Irregular Waves

WC Koo, Univ of Ulsan, Korea; MH Kim, Texas A&M Univ, USA

Effects of Wave Direction on the Performance of OWC-type Wave Energy Converter

BS Hyun, JY Jin, Korea Maritime Univ, Korea; Z Liu, Ocean Univ of China, China; KY Hong, MOERI/KORDI, Korea

A Prediction Method and Performance of OWC Type WEC with Projecting Walls

T Ikoma, K Masuda, Nihon Univ; H Osawa, T Miyazaki, JAMSTEC; H Omori, Nihon Univ, Japan

A Finite Element Model of the Response of OWCs to Weakly Nonlinear Coastal Waves

J-R Nader, SP Zhu, P Cooper, Univ of Wollongong, Australia

An Alternative Approach to Match the Turbine to the Characteristics of a OWC Plant

F Castro, B Pereiras, M Rodriguez, Univ Valladolid, I Lopez, Univ Santiago Compostela, Spain

135. ADVANCED SHIP TECH VI: System design (V. 4)
Thursday June 21 14:00 Room 4

Chair: DQ Yang, Shanghai Jiao Tong Univ, China
Co-Chair: R Inoue, Tokyo Univ of Marine Sci & Tech, Japan

Developing Small Unmanned Tilt-Rotor Flying Robot for Operations at the Sea

R Inoue, M Ozawa, E Shimizu, Tokyo Univ of Marine Science & Tech, Japan

A Study on IT Solution for Ship Design Based on Virtual Ship Concept

SH Godghate, S Yamaguchi, Kyushu Univ, Japan

Efficient Use of an API in Ship Structural Design - A Biomechanical Optimization Example

R Tschullik, S Schenk, P Kaeding, Univ of Rostock, Germany

Study on the Pressured Inert Gas Storage System in Ballast Tank

H Hayashibara, C Murakami, S Oka, M Hirakata, K Yamane, National Maritime Research Inst, Japan

Fix-bed Experimental Study on Shipyard Engineering Planning

JH Zheng, F Ding, P Dai, T Wu, Y Ju, Hohai Univ, China

Navigation Support System for Electric Boats

M Nishimura, E Shimizu, T Oode, T Takamasa, Tokyo Univ of Marine Science & Tech, Japan

The Study of the Safety and Collocation of Sail Type of Sail Boat in Wave Based on Instantaneous Wet Surface

ZL Xu, W Cai, N Si, Wuhan Univ of Tech, China

Model Experimental Research on Coastal Rescue Planning Vessel

WY Duan, X Zhu, YS Chen, Harbin Engineering Univ, China

136. HPM VIII: Advances in Welding Technology 1 (V. 4)
Thursday June 21 14:00 Room 5

Chair: H Murakawa, Osaka Univ, Japan
Co-Chair: R Steel, Megastir, USA

Capabilities of Combined Welding Technologies Composed of Beam and Submerged Arc Welding for Fabricating Large Steel Structures

M Collmann, P Schaumann, Leibniz Univ Hannover; S Priebe, SIAG Tube & Towers; TA Deisser, Kjellberg; T Hassel, R Konya, F-W Bach, Leibniz Univ Hannover, Germany

Weldability of High Strength Seamless Pipes for Fixed Offshore Structures

C Bruns, J Krampen, V&M; J Wiebe, SZMF, Germany

Optimisation of Heat Pressure Welding of Steel Wire in Flexible Riser Manufacture, Applying Taguchi Design-of-experiment Approaches

JG Rafferty, G Karabelas, Wellstream International, UK

FE Analysis of Hot Cracking in Welded Pipe Structure

M Shibahara, T Iwamoto, Osaka Prefecture Univ; K Ogawa, Sumitomo Metal Industries; H Murakawa, Osaka Univ, Japan

Heat Conduction Analysis of Welding Moving Heat Source Problem Using Idealized Explicit FEM

K Ikushima, O Takashi, S Itoh, M Shibahara, Osaka Prefecture Univ, Japan

Friction Stir Welding of Thick Section Steel for Oil and Gas

RJ Steel, MegaStir/Schlumberger, USA

Three-Dimensional Numerical Analysis for Friction Stir Welding of Ferritic Stainless Steel

HH Cho, Seoul National Univ; ST Hong, JH Roh, Univ of Ulsan; HS Choi, Seoul National Univ, Korea; RJ Steel, MegaStir Technologies, USA; SJ Kim, POSTECH; HN Han, Seoul National Univ, Korea

Failure Characteristics of Friction Stir Spot Welded Joint of Dissimilar Ferrous Alloys

MAM Hossain, MT Hasan, Univ of Ulsan; HH Cho, Seoul National Univ; ST Hong, Univ of Ulsan; HN Han, Seoul National Univ, Korea

137. COASTAL XI: Coastal Sediment 3 (V. 3) Room 6
Thursday June 21 14:00

Chair: S Kabdasli, Istanbul Tech Univ, Turkey

Co-Chair: G Tsujimoto, Kobe City College of Tech, Japan

Five-Month Observations of Multiple Beach Cusp Systems on a Meso-Tidal, Steeply-Sloping Beach

MI Voudoukas, Univ Hannover, Germany

Seasonal Variation of an Artificial Beach Profile with a Gravel Filter Layer

G Tsujimoto, Kobe City College of Tech; F Yamada, Kumamoto Univ; M Tamai, Osaka Univ; T Kakinoki, K Uno, Kobe City College of Tech, Japan

Shoreline Changes in Ilan Coast

WJ Chen, YH Hwung, National Chiayi Univ, Taiwan, China

Topography Change of Natural Beach in Semi-Closed Water Area

K Uno, G Tsujimoto, T Kakinoki, Kobe City College of Tech, Japan

Topographical Change Prediction of the Beach or the Seabed in the Front of a Coastal Structure

Y Yamamoto, Tokai Univ, Japan; N Charusrojtandech, S Uba, King Mongkut's Inst of Tech, Thailand

Numerical Simulations of Offshore Sandbar Development

YC Chiang, Tzu-Chi Univ; MC Lin, CL Ting, HJ Lin, National Taiwan Univ, Taiwan, China

**138. SUBSEA, PIPELINES, RISERS X:
Internal/External Flow Effects (V. 2)**

Thursday June 21 14:00 Room 7

Chair: P Jukes, MCS Kenny, USA

Physical Simulations of Seabed Scouring by Ice: Review and Database
P Barrette, D Sudom, National Research Council, Canada

Jumper Analysis with Interacting Internal Two-Phase Flow
L Chica, R Pascali, Univ of Houston; B Ozturk, P Jukes, MCS Kenny; M Gamino, KA Smith, Univ of Houston, USA

Vibroacoustics Analysis and Reduction of Liquid-filled Pipelines
YL Jiang, DQ Yang, XZ Lin, MH Bao, Shanghai Jiao Tong Univ, China

Dynamic Effect of Internal Flow on Curved Pipe
ZS Chen, Zhejiang Ocean Univ, China; WJ Kim, Mokpo National Univ, Korea

Effects of Fully Developed Turbulent Internal Flow on Marine Risers' Dynamics
SA Katifeorgiou, IK Chatjigeorgiou, SA Mavrakos, National Tech Univ of Athens, Greece

Collapse of Granular Rectangular Blocks
MH Babaei, National Research Council Canada; T Dabros, Natural Resources Canada; S Savage, McGill Univ; M Sayed, National Research Council Canada, Canada

Numerical Analysis of Risers in Combination of Uniform Flow and Oscillatory Flow
Y Deng, WP Huang, Ocean Univ of China, China; S Huang, Univ of Strathclyde, UK; JL Zhao, Shandong Marine Fisheries Research Inst, China

139. GEOTECH IX: Soil Properties (V. 2)

Thursday June 21 14:00 Room 8

Chair: T Matsui, Ritsumeikan Univ, Japan

Unsaturated Shear Strength Characteristics of Levee Materials in Nakdong River
DY Lee, Korea Inst of Construction Tech; NK Cho, Seoyeong Engineering; JM Kim, Korea Inst of Construction Tech, Korea

Large Deformation Coupled Analysis of T-Bar Penetration
D Wang, MF Randolph, Univ of Western Australia, Australia

Applicability of Artificial Neural Network to Spatial Interpolation of Soil Properties in Kansai International Airport
K Oda, MS Lee, S Kitamura, Osaka Univ, Japan

Geotechnical Characterization of Natural Zeolites
AH Oren, T Ozdamar, Dokuz Eylul Univ, Turkey

Engineering Characteristics of Lightweight Foamed CLSM Using Coal Ash According to Final Mixing Time and Dilution Ratio

BS Chun, YH Kim, SK Kim, Hanyang Univ, Korea

Thixotropic Hardening Behavior of Clays with High Water Content

SC Seng, H Tanaka, Hokkaido Univ, Japan

Effects of Diatom Content on Physical Properties of Clays

M Tanaka, Port & Airport Research Inst; R Tomita, Koa Kaihatsu Co; T Kamei, Miyazaki Univ, Japan

Prediction of the Compression Index and Preconsolidation Pressure Using Artificial Neural Network

HI Park, DJ Hwang, Samsung C&T, Korea

140. OFFSHORE MECHANICS IX: FSRU 2 (V. 1)
Thursday June 21 14:00 Room 9

Chair: HG Sung, Maritime & Ocean Eng Research Inst, Korea

Co-Chair: SG Lee, KOGAS, Korea

The Use of Bayesian Network to Reliability Analysis of the LNG Regasification System on a FSRU under Different Scenarios

AM Schleder, MR Martins, Univ of Sao Paulo, Brazil

270k cbm LNG FSRU Operator Training System

JI Lee, WJ Choi, GR Lim, TS Jeong, JH Heo, STX Offshore & Shipbldg, Korea

Holding Capacity of Suction Anchor Anchored In Cohesionless Soil for Horizontal Load Induced By Catenary Mooring Line

YW Cho, SR Kim, JH Kim, KAIST; DJ Kim, HDEC; DS Kim, KAIST, Korea

An Experimental and Numerical Study on the Mooring and Offloading Characteristics of Hyundai LNG-FPSO

IH Lee, MK Park, WS Sim, HS Shin, Hyundai Heavy Industries, Korea

Advanced Ship Maneuvering and Mooring Support System at Ship-to-ship Transfer Operations by Fender Monitoring System of Pneumatic Fenders

S Yamada, S Sakakibara, Yokohama Rubber, Japan

Viscous Flow Calculations around Transverse Sections of a Floating LNG Storage Terminal in Heave and Roll Motions

G Tzabiras, GM Katsaounis, VK Papakonstantinou, SA Mavrakos, National Tech Univ of Athens, Greece

Conceptual Design of LNG FSRU Topside Regasification Plant

YS Sohn, SS Kim, DH Kim, YM Yang, Korea Gas, Korea

141. ARCTIC VII: Ice Modeling & Operations (V. 1)
Thursday June 21 14:00 Room 10

Chair: J Regina, ExxonMobil Development, USA

Welcome to Arctic Symposium

Simon Prinsenber, Jin Chung and Ted Kokkinis

Probabilistic Modeling of Ice Environment from Lighthouses Zone in the Gulf of Bothnia

AT Bekker, OA Sabodash, RG Kovalenko, DS Rusakov, Far-Eastern Federal Univ, Russia

A Method to Determine Inward Boundary of Marginal Ice Zone Using AMSR-E Dual-polarized Brightness Temperature at 36.5GHz

SG Zhang, T Li, Ocean Univ of China, China

Effect of Bottom Slope on the Wave Resistance of an Air-Cushion Vehicle in Unsteady Motion over an Ice Sheet

AV Pogorelova, Inst of Machining & Metallurgy, FEB RAS, Russia

A Portable Raman and Surface Enhanced Raman (SERS) Sensor System Applied for Seawater and Sediment Investigations on an Arctic Sea-Trial

A Kolomijeca, YH Kwon, HD Kronfeldt, TU-Berlin, Germany

Technique for Determining the Architectural and Structural Type and Main Dimensions of Floating Drilling Unit for Drilling Exploration Wells in Russian Arctic Shallow Water Conditions

DF Khalikova, Krylov Shipbldg Research Inst, Russia

Procedure for Selection of General Project Parameters of Turret Production Platforms for Shelf Fields of the Arctic Regions

OV Shinkarenko, Krylov Shipbldg Research Inst, Russia

Environment Safety of Oil Resources Exploitation in Offshore Arctic Regions

VI Pavlenko, Arctic Research Center; EK Glukhareva, Oil and Gas Research Inst; SY Kutsenko, Arctic Research Center, Russia

THURSDAY 16:20

142. RENEWABLE ENERGY XXIII: Marine Bioenergy (V. 1)
Thursday June 21 16:20 Room 1

Chair: A Sarmento, IST, UTL, Portugal

The Simulation of the Hydrodynamic Properties of Gravity Cage for Flatfish Culture in Waves

YP Zhao, XF Chen, TJ Xu, GH Dong, CT Guan, Dalian Univ of Tech, China

Capturing Carbon Dioxide by a Self-Sustained Coral Reef Park with Renewable Energy

TC Su, Florida Atlantic Univ, USA; Z Ni, Beijing Univ of Aeronautics & Astronautics, China; PC Quiray, U Raja, Florida Atlantic Univ, USA

Experimental Study of Anaerobic Digestion of Marine Biomass

K Kuroda, Y Akiyama, N Kotera, Y Keno, N Nakatani, K Otsuka, Osaka Prefecture Univ, Japan

143. HYDRODYNAMICS XII: CFD 4 (V. 3)
Thursday June 21 16:20 Room 2

Chair: W Qiu, Memorial Univ of Newfoundland, Canada

Co-Chair: SQ Yan, City Univ London, UK

Numerical Simulation of Breaking Waves Using Hybrid Coupling of FNP (FEM) and NS (IMLPG R) Solver

V Sriram, Univ of Hannover, Germany; QW Ma, City Univ London, UK; T Schlurmann, Univ of Hannover, Germany

An Improved Two-Phase Lattice Boltzmann Model for High Fluid Density Ratios: Application to Wave Breaking

A Banari, C Janssen, ST Grilli, Univ of Rhode Island, USA

Lattice Boltzmann Simulation of 3D Gravity Currents around Obstacles

M La Rocca, P Prestininzi, C Adduce, G Sciortino, Univ Roma TRE, Italy; R Hinkelmann, Tech Univ Berlin, Germany

Three-Dimensional Numerical Simulation of Air-Sea Interaction with a Coupled LB-Point-Particle Approach

Y Mauzole, C Janssen, ST Grilli, T Hara, Univ of Rhode Island, USA

Efficient Approaches for Ship Response Statistics using RANS

J Oberhagemann, J Ley, Univ of Duisburg-Essen; V Shigunov, Germanischer Lloyd SE; O El Moctar, Univ of Duisburg-Essen, Germany

Analysis of the Mechanism of Slamming on the Bow Flare Region Using RaNS CFD Method

MM Rahaman, Univ of Tokyo, Japan; H Akimoto, Korea Advanced Inst of Science & Tech, Korea

Time Domain Simulation of Steady Ship Wave Problem by a Higher-Order Boundary Element Method

GH He, M Kashiwagi, Osaka Univ, Japan

144. RENEWABLE ENERGY XV: Wave Energy 3 (V. 1)
Thursday June 21 16:20 Room 3

Chair: H Kajiwara, Kyushu Univ, Japan

Co-Chair: WC Koo, Univ of Ulsan, Korea

Geometry Optimization of 1.5 km Overtopping Wave Energy Device Implemented into the New Breakwater for Hanstholm Port Expansion in North-West Denmark

L Margheritini, Aalborg Univ, Denmark

A Submerged OWC Breakwater for Wave Energy Conversion and Coastal Protection

SM Camporeale, Politecnico di Bari; PGF Filianoti, Mediterranean Univ of Reggio Calabria, Italy

Development of Wave Overtopping Type Wave Power Generation Devices

H Tanaka, M Yodokawa, N Nikawadori, O Yamanashi, Tokai Univ, Japan

Study on the Wave Response and Efficiency of a Pendulum Wave Energy Converter

JY Park, SH Shin, KY Hong, SH Kim, MOER/KORDI, Korea

Prediction of the Hydrodynamic Performance of the Floating Pendulum Wave Energy Converter in Regular and Irregular Waves

BW Nam, SY Hong, SW Hong, SH Shin, MOERI/KORDI, Korea

The Heave and Pitch Power Output of a Vertical Cylindrical Wave Energy Converter in Finite-Depth Water

MT Hariri Nokob, Masdar Inst of Science and Tech, UAE; D K-P Yue, MIT, USA

Wave Power Absorption of a Vertical Cylinder Heaving about a Pole in Finite Depth Water

MT Hariri Nokob, Masdar Inst of Science & Tech, UAE

2D Numerical Analysis on Floating Type Pendulum Wave Energy Converter in Regular Waves

K Toyota, S Nagata, Y Imai, T Setoguchi, Saga Univ, Japan

145. ADVANCED SHIP TECH VII: Seakeeping & Resistance (V. 4)

Thursday June 21 16:20 Room 4

Chair: S Yamaguchi, Kyushu Univ, Japan

Co-Chair: C Kawakita, Mitsubishi Heavy Industries, Japan

Safety Assessment of Ship-to-Ship Lightering Operation by Means of Collision Danger Zones Due to Interaction Effects (2nd Report: Evaluation for Difficulty of Maneuver)

K Kirimoto, NTNU, Norway; E Shimizu, Tokyo Univ of Marine Science & Tech, Japan; E Pedersen, NTNU, Norway

Computation on Added Resistance Based on Near-Field and Far-Field Methods

YH Kim, MG Seo, DM Park, KH Kim, Seoul National Univ, Korea

A Comparison of Surface Modification Approaches for Hull Form Optimization

HY Kim, C Yang, LJ Wang, George Mason Univ, USA

**Study on Optimal Design of Bulbous Bow for Deep Sea Trawlers
Based on Viscous Flow Theory**

YH Xie, GQ Li, W Wang, Zhejiang Ocean Univ, China

**Study on Influencing Factors of Drag Reduction by Air Layer to a Flat
Plate with Bottom Steps**

YP Ou, WC Dong, Naval Univ of Engineering, China

**Hull Form Design and Preliminary Evaluation of Surface Planing
Submersible Ship**

Y Zheng, WC Dong, Naval Univ of Engineering, China

146. HPM IX: Advances in Welding Technology 2 (V. 4)
Thursday June 21 16:20 Room 5

Chair: N Osawa, Osaka Univ, Japan

Co-Chair: JG Rafferty, Wellstream International, UK

**Ultra Large Scale Computation for Welding Mechanics Using Idealized
Explicit FEM Accelerated by GPU**

K Ikushima, S Itoh, M Shibahara, Osaka Prefecture Univ, Japan

Residual Stresses of X80 Pipe Girth Weld

XB Ren, NTNU; SK Ås, SINTEF; OM Akselsen, NTNU/SINTEF; E
Østby, B Nyhus, SINTEF, Norway

**Measurement of Welding Deformation Based on Stereo Imaging
Technique**

M Shibahara, T Yagi, S Itoh, Osaka Prefecture Univ, Japan

**A Study on Remained Correction Heating Efficiency of Ship Blocks
after Lifting**

MS Yi, YS Ha, Samsung Heavy Industries, Korea

**Prediction of Laser Welding Deformation of Sandwich Panel in 2D
Thermal Elasto-Plastic Analysis**

BS Jang, JW Kim, CD Jang, Seoul National Univ, Korea

**Numerical Estimation of Inherent Deformation of Thin Plates Induced
by Induction Heating**

K Yamaguchi, N Osawa, Osaka Univ; M Ishiyama, IHI Engineering
Marine; Y Tango, IHI AMTEC, Japan

**Numerical Simulation in Welding Process: LSND Distortion Reduction
Study**

J Souto Grela, EB Blanco Viana, MR Perez-inigo, D Martinez, AIMEN,
Spain

147. COASTAL XII: Storm Surge & Inundation (V. 3)
Thursday June 21 16:20 Room 6

Chair: H Kawai, Port and Airport Research Inst, Japan

Effect of Coupling Wave and Flow Dynamics on Hurricane Surge and Inundation

J Veeramony, D Hebert, Naval Research Lab, USA

Storm Surge Modelling in the Black Sea

YN Krestenitis, Y Androulidakis, K Kombiadou, Aristotle Univ of Thessaloniki, Greece

Consideration on Handling of Open Boundary Conditions in a Storm Surge Prediction Model

SY Kim, Y Matsumi, Tottori Univ; T Yasuda, H Mase, Kyoto Univ, Japan

Storm Related Coastal Hydrodynamic Phenomena in Waters off Mackenzie Delta

FM Xu, Hohai Univ, China; W Perrie, S Solomon, Bedford Inst of Oceanography, Canada

Cost-Benefit Analysis of Adaptation to Sea Level Rise in Major Vulnerable Regions along the Coast of China

JC Zuo, YQ Yang, Hohai Univ; L Du, Ocean Univ of China; MX Chen, Q Xu, Hohai Univ, China

Coastal Hazard Due to the Elevation of the Sea Level in Mexican Ports by Climatic Change Impact

G Cardoso-Landa, Instituto Tecnológico de Chilpancingo, Mexico

Impact Analysis of the Flood on the Reinforced Rural Building

SY Xiao, Dalian Univ of Tech, China

**148. SUBSEA, PIPELINES, RISERS XI:
System Integrity (V. 2)**

Thursday June 21 16:20 Room 7

Chair: RE Melchers, Univ of Newcastle, Australia

Co-Chair: PR Nystrøm, IKM Ocean Design, Norway

MAPS-FR Structural Integrity Monitoring for Flexible Risers

JC McCarthy, DJ Buttle, MAPS Technology, UK

Quantitative Risk Approach in GBS Tier I Structure Based in Reliability Test Planning: SCR Application

M Coitinho, MB Conti, Univ of Sao Paulo, Brazil

Pre-sweeping of Two Flowline Route Corridors in the Southern North Sea

AA Small, Subsea 7, UK; BW Baan, Boskalis Offshore, Netherlands

Innovative Inspection, Monitoring and Repair Techniques for Unbonded Flexible Pipes
S Duthie, Flexlife Ltd, UK

Impact Damage on Pipe-in-Pipe Systems
JX Zheng, AC Palmer, National Univ of Singapore; W Lipski, P Brunning, Subsea7, Singapore

Risk Assessment on a Pipeline Passing Through a Shipping Anchoring Area
SW Yan, RH Zhuo, LQ Sun, R Liu, Tianjin Univ, China

External Corrosion of Carbon Steel Pipeline Weld Zones
RE Melchers, I Chaves, Univ of Newcastle, Australia

Pipe-in-Pipe Global Buckling and Trawl Design on Uneven Seabed
AS Kristoffersen, ZG Tu, IKM Ocean Design, Norway

Ductile Fracture of Pipelines under Energy Limited Severe Loading
SF Yasseri, Safe Sight Tech, UK

Predicting Crack Arrest in Line Pipes
A Voelling, M Erdelen-Peppler, Salzgitter Mannesmann Forschung; C Kalwa, Europipe GmbH; H Brauer, Salzgitter Mannesmann Line Pipe; B Ouaisa, H Meuser, Salzgitter Mannesmann Grobblech, Germany

Wrinkling of Lined Pipes under Bending
SA Karamanos, D Vasilikis, Univ of Thessaly, Greece

Experimental Investigation on Scour around Marine Pipelines in Silt Beds by Jet Trenching
ZG Bai, Tianjin Univ, China

Crack Detection Based on Guided Wave Sensing for Subsea Pipelines
X Feng, XW Hu, J Zhou, Dalian Univ of Tech, China

A Simplified Method to Analyze the Seismic Response of the Cracked Subsea Pipelines
J Zhou, X Li, X Feng, Dalian Univ of Tech, China

Influence of Liquid-Gas Physical Parameters on Severe Slugging in a Pipeline-Riser System
S Gao, YX You, W Li, Shanghai Jiao Tong Univ, China; C Yang, George Mason Univ, USA

Free Span VIV Assessment of Pipe In Pipe (PIP) Flowline Systems
PO Asklund, A Kristoffersen, IKM Ocean Design, Norway

149. GEOTECH X: Construction & Materials (V. 2)
Thursday June 21 16:20 Room 8

Chair: SJ Han, Expert Group for Earth & Environment, Korea

Geotechnical Characterization of Gulf of Mexico Clay

G Biscontin, CJ Rutherford, M Murali, Y Yurrtas, Texas A&M Univ, USA

New Construction Method for Reclamation Ground by Mixing of Dredged Soil and Coal Ash Aggregates

HY Shin, KO Kim, YJ Kim, Daewoo E&C; DH Chae, Dankook Univ, Korea

Development of Artificial Aggregates for Tide Embankment Construction Materials Using Coal Ash

HY Shin, KO Kim, Daewoo E&C; SJ Han, Expert Group for Earth & Environment, Korea

Deposited Muddy Soil Reuse Technique Using Industrial Waste for Reconstruction of Small Earth-fill Dams

M Suzuki, T Kawabata, K Uchida, Kobe Univ, Japan

Effects of Adjacent Rock Face Inclination on Earth Pressure At-Rest

YS Fang, FJ Wang, C Liu, National Chiao Tung Univ, Taiwan, China

Back Analysis of Creep Model Parameters and Long-term Settlement Prediction of Layered Soft Ground

DD Shi, Shanghai Maritime Univ; J Zhou, Tongji Univ; WB Liu, YB Deng, Shanghai Maritime Univ, China

150. OFFSHORE MECHANICS X: LNG Transport (V. 1)

Thursday June 21 16:20 Room 9

Chair: AJ Voogt, MARIN USA, USA

Study on the Development of Super Large LNG Storage Tank

MS Kim, JH Kim, KOGAS; GH Kim, Dasan Consultants; KM Lee, KW Lee, IS Yoon, KOGAS, Korea

The Performance Study of Closed Mock-up Tank for LNG Carrier

YK Kim, IS Yoon, YC Yang, BT Oh, Korea Gas, Korea

The Study on Natural Gas Liquefaction Cycle Development for LNG-FPSO

SG Lee, YB Lee, SH Jeon, YM Yang, KOGAS, Korea

Optimal Synthesis of LNG FPSO Liquefaction Cycles

JH Hwang, SBM Atlantia, USA; NK Ku, JC Lee, Seoul National Univ; MI Roh, Univ of Ulsan; KY Lee, Seoul National Univ, Korea

Analysis of Flow and Thermal Characteristics of Leaked LNG in Glass Wool for the Mark 3 CCS

SW Choi, JU Roh, WI Lee, Seoul National Univ, Korea

Fatigue Damage Assessment including Springing Loads on a Large Container Ship

YW Lee, S Fletcher, N White, J Tong, Lloyd's Register, UK

Numerical Study of Flow Induced Membrane Deformation and Billowing

W He, P Morgan, L Cheng, Univ of Western Australia; M Zhao, Univ of Western Sydney, Australia

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