

June 30–July 5, Anchorage, Alaska, USA

Anchorage Convention Center: William Egan Center

The Twenty-third (2013) International Ocean (Offshore) and Polar Engineering Conference

Including additional ISOPE symposia:

- 1st Manganese Steel
- 2nd Tsunami & Safety
- 2nd Asset Integrity
- 4th Arctic Science & Technology
- 3rd Arctic Materials
- 4th Renewable Energy & Environment
- 5th Sloshing Dynamics & Design
- 5th Frontier & Clean Energy Tech
- 11th High-Performance Materials
- 6th Strain-Based Design

*Updated
Technical Program*

ISOPE-2013

Anchorage, Alaska, USA, June 30–July 5

646 papers, peer-reviewed in the ISOPE-2013 Conference proceedings and 42 additional papers for oral presentation only in 151 sessions, plus lectures and keynote sessions from 52 countries

General Information, Publication and Program on www.isopec.org

Organized by:

Technical Program Committee, ISOPE

Sponsored by:

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



ISOPE, P.O. Box 189
Cupertino, CA 95015-0189, USA
Fax: +1-650-254-2038
meetings@isopec.org; www.isopec.org

Special Acknowledgement

The ISOPE-2013 participants, Host Committee, ISOPE Technical Program Committee and ISOPE board of directors would like to thank the sponsors:



MOBILE PHONE (Cell or Hand Phone). Please ensure that your cell or mobile phone, pager, etc. are turned off or set to silent/vibrate mode during all technical sessions.

SECURITY. Please wear your conference badge at all times. This will ensure your admittance to the technical sessions.

TICKETS FOR THE LUNCH AND BANQUET EVENTS. Please ensure you bring the appropriate ticket to the event.

MESSAGE BOARD. Update announcements will be posted on the message board located near the conference registration desk. Messages between the ISOPE participants may also be left on the board.

AUTHOR USB TEST. Powerpoint or LCD projector and screen are available in individual session rooms (Monday - Thursday).

CHAIR/CO-CHAIR BRIEFING . On the day of the sessions, session chairs and co-chairs will pick up the session authors-briefing jackets near the conference registration desk.

PRESENTING AUTHORS. Go directly to your session room at least 30 minutes before the session and check out the USB presentation file.

CONFERENCE (POSCO) RECEPTION
Sunday Arteaga

ANNUAL CONFERENCE BANQUET
Wednesday Explorers Hall

Welcome to ISOPE-2013 Conference

We greatly appreciate the excellent response with 1200+ abstracts and help we have received from colleagues around the world in the successful organization of the 23rd International Ocean (Offshore) and Polar Engineering Conference (ISOPE-2013), Anchorage, Alaska, June 30–July 5, 2013. The Conference features 151 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-2013 Conference.

The conference program is issued in 2 versions: printed and internet (www.isopec.org and www.isopec2013.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 Ocean (Offshore) and Polar Engineers (ISOPE) has already held 52 successful international meetings with peer-reviewed papers:

- 1st (1990) European Offshore Mechanics Symposium (EUROMS-90) Trondheim; EUROMS-99 Moscow; EUROMS-2012 Istanbul.
- 1st (1990) Pacific/Asia Offshore Mechanics Symposium (PACOMS-90) Seoul; 1994 Beijing; 1996 Pusan; 2002 Daejeon; 2004 Vladivostok; 2006 Dalian; 2008 Bangkok; 2010 Busan; 2012 Vladivostok.
- Annual ISOPE conferences, starting in Edinburgh, 1991 have been 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, Maui and Rhodes. 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 (High-Performance Materials) Symposium: Started in Honolulu, 2003 and expanded every year.
- ISOPE Series of specialty symposia: ANGT: Seoul 2005-;
- Strain-Based Design SBD:** Lisbon 2007-;
- Nanotechnology NANOS:** Lisbon 2007;
- Frontier Energy 2009;**
- Sloshing Dynamics, Sloshing 2009-;**
- Renewable Energy/Environment, REES-2010;**
- Arctic Science & Tech, Arctic-2010;**
- Arctic Materials-2011;**
- Asset Integrity-2012** and **Manganese Steel-2013.**

On behalf of the Technical Program Committee, it is our pleasure to welcome participants from all over the world to the ISOPE-2013 Conference in Anchorage, Alaska.

Jun S Chung, USA	Raghavan Ayer USA	Demos Angelides Greece
Ronald H Knapp USA	Xizhao Jiang China	Shigeru Naito Japan

Co-chairmen of the ISOPE-2013 Conference

SUNDAY JUNE 30

09:00 ISOPE Board of Directors Meeting
 10:30 ISOPE-2013 Executive Committee Meeting
 EUROMS and PACOMS Executive Committees

15:00-18:00

CONFERENCE REGISTRATION

17:00-18:00

WELCOMS RECEPTION sponsored by POSCO

Tour Information Visit tour desk in ISOPE registration area:

www.isopec.org

Spouse Program Join Tour program: see www.isopec.org

MONDAY JULY 1

On-Site Registration starts at 07:30

07:30 Session Chair/Co-chair Briefing

08:30 Conference Opening

08:30
 1. OCEAN AND ENERGY REVIEW—2013

10:00
 2. LNG SLOSHING I: Model Test I

3. HYDRODYNAMICS I: Shallow-Water
 4. RENEWABLE ENERGY I: Offshore Wind 1
 5. RISK ASSESSMENT& RELIABILITY I
 6. ASSET INTEGRITY I: Integrity Management
 7. VORTEX-INDUCED VIBRATION I: Single ...
 8. SBD I: Toughness Measurements
 9. FERT I: Clean Coal I
 10. ADV SHIP TECH I: Shipbuilding Simulation
 11. HPM I: Fatigue & Fracture 3

14:00
 12. LNG Sloshing II: Model Tests 2
 13. HYDRODYNAMICS II: Fluid-Structure Interactions 1
 14. RENEWABLE ENERGY II: Offshore Wind Tech 2
 15. RISK ASSESSMENT& RELIABILITY II
 16. ASSET INTEGRITY II: Pipeline Integrity
 17. VORTEX-INDUCED VIBRATION II: Multiple..
 18. SBD II: SBD Assessment
 19. FERT II: Clean Coal II
 20. ADV SHIP TECH II: Strength & Vibrations
 21. HPM II: Advances in Welding Technology 1

16:20
 22. LNG Sloshing III: Sloshing Physics
 23. HYDRODYNAMICS III: Fluid-Structure 2
 24. RENEWABLE ENERGY III: Offshore Wind Tech 3
 25. STRUCTURE RESPONSES
 26. ASSET INTEGRITY III: Fatigue Monitoring
 27. VORTEX-INDUCED VIBRATION III: Jumpers ...
 28. SBD III: Materials for SBD
 29. FERT III: Heavy Oil/EOR
 30. ADV SHIP TECH III: Resistance & Propulsion
 31. HPM III: Advances in Welding Technology 2

18:00 Student Forum: Moved to Tuesday 12:30

18:30 Room names on bulletin board
 ISOPE Technical Committee Meetings:

Tuesday JULY 2

07:30 Session Chair/Co-chair Briefing

08:00
 32. LNG Sloshing IV: Numer Simulation ..
 33. HYDRODYNAMICS IV: Fluid-Structure Int...
 34. RENEWABLE ENERGY IV: Offshore Wind 4
 35. STRUCTURAL STRENGTH
 36. ASSET INTEGRITY IV: Fatigue & Corrosion
 37. VORTEX-INDUCED VIBRATION IV: Upstream
 38. SBD IV: Strain Capacity
 39. FERT IV: Shales Gas
 40. ADV SHIP TECH IV: Ship Design
 41. SUBSEA-PIPELINES-RISERS-CABLE I:

10:30
 42. LNG Sloshing V: CFD
 43. HYDRODYNAMICS V: Fluid-Structure
 44. RENEWABLE ENERGY V: Offshore Wind 5
 45. HPM IV: Adv in Welding Technology 3
 46. MANGANESE STEEL FOR ENERGY I: Phase
 47. ARCTIC SCI & TECH I: Arctic Environment
 48. SUBSEA-PIPELINES-RISERS-CABLE II: Install
 49. FERT V: Panel
 50. ADV SHIP TECH V: Maneuvering & Control
 51. UNDERWATER SYSTEMS I: AUV & UUV

10:30 Renewable Energy Journal Meeting

12:30
 Student Forum

14:00
 52. LNG Sloshing VI: Sloshing & Statistics
 53. HYDRODYNAMICS VI: Fluid-Structure 5
 54. RENEWABLE ENERGY VI: Offshore Wind 6
 55. OCEAN TECH I SCS LIWAN 3-1 Field
 56. MANGANESE STEEL FOR ENERGY II: Weld.
 57. COASTAL I: Waves
 58. SUBSEA-PIPELINES-RISERS-CABLE III: Concept
 59. GEOTECH I: Offshore Geotechnics 1
 60. ADV SHIP TECH VI: Impact & Collision
 61. UNDERWATER SYSTEMS II Propulsion ...

16:20
 62. LNG Sloshing VII: Load Prediction & Struct...
 63. HYDRODYNAMICS VII: Fluid-Structure 6...
 64. RENEWABLE ENERGY VII: Offshore Wind 7 Dyn...
 65. OCEAN TECH II SCS LIWAN 3-1 Field Dev
 66. MANGANESE STEEL FOR ENERGY III: Cryogenic
 67. COASTAL II: Waves & Storm Surge 1)
 68. SUBSEA-PIPELINES-RISERS-CABLE IV: Flow...
 69. GEOTECH II: Offshore Geotechnics 2
 70. ENVIRONMENT I: CO₂ Capture and ...
 71. UNDERWATER SYSTEMS III: Control & Maneuver.

15:30 Awards Committee Meeting
 16:30 IJOPE Board of Editors Meeting
 19:30 Technical Program Committee

Lobby

Space1
 Space2
 Space3
 Space4
 Sp13+14
 Sp7+8
 Sp9+10
 Sp11+12
 Space5
 Space6

Space1
 Space2
 Space3
 Space4
 Sp13+14
 Sp7+8
 Sp9+10
 Sp11+12
 Space5
 Space6

ConfRoom

Boardroom

Space1
 Space2
 Space3
 Space4
 Sp13+14
 Sp7+8
 Sp9+10
 Sp11+12
 Space5
 Space6

ConfRoom
 ConfRoom
 RSVP

WEDNESDAY JULY 3

07:30 Session Chair/Co-chair Briefing

Lobby

08:00
 72. LNG Sloshing VIII: Liquid Cargo & Ship Motions ...
 73. HYDRODYNAMICS VIII: MetOcean 1
 74. RENEWABLE ENERGY VIII: Offshore Wind 8
 75. OCEAN TECH III SCS LIWAN 3-1 Install...
 76. HPM V: Adv Materials & Offshore Struct 1
 77. COASTAL III: Waves & Storm Surge 2
 78. SUBSEA-PIPELINES-RISERS-CABLE V: Perform
 79. GEOTECH III: Offshore Anchors
 80. ENVIRONMENT II: Energy & Environment
 81. UNDERWATER SYSTEMS IV: Navigation & ...

10:30
 82. LNG Sloshing IX: Panel 1 CFD 1
 83. HYDRODYNAMICS IX: MetOcean 2
 84. RENEWABLE ENERGY IX: Offshore Wind ...
 85. OCEAN TECH IV: DP & Control
 86. HPM VI: Adv Materials & Structures 2
 87. COASTAL IV: Breakwaters 1
 88. SUBSEA-PIPELINES-RISERS-CABLE VI: Subsea
 89. GEOTECH IV: Foundation 1
 90. ENVIRONMENT III: Oil Spill & Contaminat...
 91. ARCTIC SCI & TECH II: Ice Mech 1

12:00 ISOPE Board of Directors Meeting
 13:15 Plenary Presentation: Arctic in-situ Hydrates
 13:15 Plenary Presentation: Wind Energy

14:00
 92. LNG Sloshing X: Panel 2: Benchmark Model Tests
 93. HYDRODYNAMICS X: NWT 1
 94. RENEWABLE ENERGY X: Offshore Wind 10
 95. OCEAN TECH V: Installation & Operation
 96. HPM VII: ADV Materials & Offshore Structures 3
 97. COASTAL V: Breakwaters 2
 98. SUBSEA-PIPELINES-RISERS-CABLE VII: Fatigue
 99. GEOTECH V: Foundation 2
 100. TSUNAMI & SAFETY I: Recent & Future Tsuna...
 101. ARCTIC SCI & TECH III: Arctic Vessels & ...I

16:20
 102. RENEWABLE ENERGY XI: Ocean Energy 6 Wave
 103. HYDRODYNAMICS XI: NWT 2; CFD
 104. RENEWABLE ENERGY XII: Ocean Energy, OTEC
 105. OCEAN TECH VI: Bottom-Fixed Structures
 106. HPM VIII: Adv Materials & Structures 4
 107. COASTAL VI: Waves-Structures (V. 3)
 108. SUBSEA-PIPELINES-RISERS-CABLE VIII: ...1
 109. GEOTECH VI: Ground Improvement
 110. TSUNAMI & SAFETY II: Generation & ...
 111. ARCTIC SCI & TECH IV: Operations 1



19:00 Explorers Hall
 Annual Conference Banquet
 23rd ISOPE Cultural Event, Best Paper, Best Student Paper, Outstanding
 Students and Awards
 Don't forget the banquet ticket.

07:30 Session Chair/Co-chair Briefing

Lobby

08:00	
112. RENEWABLE ENERGY XIII: Ocean Energy Tidal 1	Space1
113. HYDRODYNAMICS XII: NWT 2; CFD	Space2
114. RENEWABLE ENERGY XIV: Ocean Wave 1	Space3
115. OCEAN TECH VII: TLP and Semisubmersibles	Space4
116. HPM IX: Arctic Materials	Sp13+14
117. COASTAL VII: Harbor & Coast	Sp7+8
118. SUBSEA-PIPELINES-RISERS-CABLE IX: Install	Sp9+10
119. GEOTECH VII: Soil & Rock Mechanics	Sp11+12
120. TSUNAMI & SAFETY III: Warning & Floating	Space5
121. ARCTIC SCI & TECH V: Ice Mech 2	Space6
09:00-11:30 Sloshing Benchmarking Committee Meeting	ConfRoom

09:30 – 11:30 LNG Sloshing Benchmark Committee

ConfRoom

10:30	
122. RENEWABLE ENERGY XV: Ocean Energy Tidal 2	Space1
123. HYDRODYNAMICS XIII: NWT 3; CFD	Space2
124. RENEWABLE ENERGY XVI: Ocean Wave 2	Space3
125. OCEAN TECH VIII: FPS, FPSO & SPAR 1	Space4
126. HPM X: Composite Materials	Sp13+14
127. COASTAL VIII: Tide & Current	Sp7+8
128. SUBSEA-PIPELINES-RISERS-CABLE X: Analysis 2	Sp9+10
129. GEOTECH VIII: Soil Properties 1	Sp11+12
130. TSUNAMI & SAFETY IV Structures & Sediment	Space5
131. ARCTIC SCI & TECH VI: Vessels & ... 2)	Space6

12:00 TBA

ConfRoom

14:00	
132. RENEWABLE ENERGY XVII Ocean Energy Panel	Space1
133. HYDRODYNAMICS XIV: NWT 4; CFD Floating 1	Space2
134. RENEWABLE ENERGY XVIII: Ocean ... Wave 3	Space3
135. OCEAN TECH IX: FPS, FPSO & SPAR 2	Space4
136. HPM XI Fatigue & Fracture 1	Sp13+14
137. COASTAL IX: Beach Erosion	Sp7+8
138. SUBSEA-PIPELINES-RISERS-CABLE XI: Tests...	Sp9+10
139. GEOTECH IX: Soil Properties 1	Sp11+12
140. TSUNAMI & SAFETY V Risk Assessment	Space5
141. ARCTIC SCI & TECH VII: Operations 2	Space6

16:20

142. RENEWABLE ENERGY XIX: Wind Energy Panel	Space1
143. SUBSEA-PIPELINES-RISERS-CABLE XIII: Flex...	Space2
144. RENEWABLE ENERGY XX: Ocean Energy Wave 4	Space3
145. OCEAN TECH X: FLNG and FSRU	Space4
146. HPM XII: Fatigue & Fracture 2	Sp13+14
147. COASTAL X: Sediment & Transport	Sp7+8
148. SUBSEA-PIPELINES-RISERS-CABLE XII: System...	Sp9+10
149. GEOTECH X: Soil Properties 2	Sp11+12
150. TSUNAMI & SAFETY VI Panel	Space5
151. ARCTIC SCIENCE & TECH VIII: Ice Mech 3	Space6

Sunday – Thursday

Individual session rooms
Lobby
O'Malley+Spurr
Registration Desk, Lobby

Author Practice
On-site Registration
ISOPE Headquarters
Proceedings Pickup

TOURS: Visit Hotel concierge desk

ISOPE-2013 Anchorage
The Twenty-third (2013) International
Ocean (Offshore) and Polar Engineering Conference
Anchorage, Alaska, USA, June 30–July 5, 2013



This 23rd annual conference features **151** technical and opening general sessions, 3 plenary presentation and 6 keynote presentations with top experts from industry, academia and government. After peer review of the manuscripts selected from 1,200+ abstracts, some **645** 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 (4,384 pp.) — paginated within each volume — during the conference and later for worldwide post-conference mail order from ISOPE: ISBN 978-1-880653-99-9; ISSN 1098-6189.

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

SESSION LIST BY TOPICS

OCEAN AND ENERGY REVIEW (V. 1)

1. OCEAN AND ENERGY REVIEW)	Cook Hall
FRONTIER ENERGY RESOURCES TECHNOLOGY (V. 1)	
9. FERT I: Clean Coal I	Space11+12
19. FERT II: Clean Coal II	Space11+12
29. FERT III: Heavy Oil/EOR	Space11+12
39. FERT IV: Shales Gas	Space11+12
49. FERT V: Panel	Space11+12

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

4. RENEWABLE ENERGY I: Offshore Wind 1	Space3
14. RENEWABLE ENERGY II: Offshore Wind Tech 2	Space3
24. RENEWABLE ENERGY III: Offshore Wind Tech 3	Space3
34. RENEWABLE ENERGY IV: Offshore Wind 4	Space3
44. RENEWABLE ENERGY V: Offshore Wind 5	Space3
54. RENEWABLE ENERGY VI: Offshore Wind 6	Space3
64. RENEWABLE ENERGY VII: Offshore Wind 7	Space3
74. RENEWABLE ENERGY VIII: Offshore Wind 8	Space3
84. RENEWABLE ENERGY IX: Offshore Wind ...	Space3
94. RENEWABLE ENERGY X: Offshore Wind 10	Space3
102. RENEWABLE ENERGY XI: Ocean 6 Wave ...	Space1
104. RENEWABLE ENERGY XII: Ocean Energy, OTEC	Space3
112. RENEWABLE ENERGY XIII: Ocean Tidal 1	Space1
114. RENEWABLE ENERGY XIV: Ocean Wave 1	Space3
122. RENEWABLE ENERGY XV: Ocean Energy Tidal 2	Space1
124. RENEWABLE ENERGY XVI: Ocean y Wave 2	Space3
132. RENEWABLE ENERGY XVII Ocean Energy Panel	Space1
134. RENEWABLE ENERGY XVIII: Ocean Wave 3	Space3
142. RENEWABLE ENERGY XIX: Wind Energy Panel	Space1
144. RENEWABLE ENERGY XX: Ocean Energy Wave 4	Space3

70. ENVIRONMENT I: CO ₂ Capture and ...	Space5
80. ENVIRONMENT II: Energy & Environment	Space5
90. ENVIRONMENT III: Oil Spill & Contaminat...	Space5

OFFSHORE MECHANICS AND HYDRODYNAMICS (V. 1)

55. OCEAN TECH I SCS LIWAN 3-1 Field	Space4
65. OCEAN TECH II SCS LIWAN 3-1 Field Dev	Space4
75. OCEAN TECH III SCS LIWAN 3-1 Install...	Space4
85. OCEAN TECH IV: DP & Control	Space4
95. OCEAN TECH V: Installation & Operation	Space4
105. OCEAN TECH VI: Bottom-Fixed Structures	Space4
115. OCEAN TECH VII: TLP and Semisubmersibles	Space4
125. OCEAN TECH VIII: FPS, FPSO & SPAR 1	Space4
135. OCEAN TECH IX: FPS, FPSO & SPAR 2	Space4
145. OCEAN TECH X: FLNG and FSRU	Space4

GEOTECHNICAL ENGINEERING (V. 2)

59. GEOTECH I: Offshore Geotechnics 1	Sp11+12
69. GEOTECH II: Offshore Geotechnics 2	Sp11+12
79. GEOTECH III: Offshore Anchors	Sp11+12
89. GEOTECH IV: Foundation 1	Sp11+12
99. GEOTECH V: Foundation 2	Sp11+12
109. GEOTECH VI: Ground Improvement	Sp11+12
119. GEOTECH VII: Soil & Rock Mechanics	Sp11+12
129. GEOTECH VIII: Soil Properties 1	Sp11+12
139. GEOTECH IX: Soil Properties 1	Sp11+12
149. GEOTECH X: Soil Properties 2	Sp11+12

SUBSEA, PIPELINES, RISERS AND UMBILICALS (V. 2)

KEYNOTE: STRAIN-BASED DESIGN	Sp9+10
41. SUBSEA-PIPELINES-RISERS-CABLE I:	Space6
48. SUBSEA-PIPELINES-RISERS-CABLE II: Instal	Sp9+10
58. SUBSEA-PIPELINES-RISERS-CABLE III: Concept	Sp9+10
68. SUBSEA-PIPELINES-RISERS-CABLE IV: Flow...	Sp9+10
78. SUBSEA-PIPELINES-RISERS-CABLE V: Perform	Sp9+10
88. SUBSEA-PIPELINES-RISERS-CABLE VI: Subsea	Sp9+10
98. SUBSEA-PIPELINES-RISERS-CABLE VII: Fatigue	Sp9+10
108. SUBSEA-PIPELINES-RISERS-CABLE VIII: ...1	Sp9+10
118. SUBSEA-PIPELINES-RISERS-CABLE IX: Install	Sp9+10
128. SUBSEA-PIPELINES-RISERS-CABLE X: Analys 2	Sp9+10
138. SUBSEA-PIPELINES-RISERS-CABLE XI: Tests .	Sp9+10
143. SUBSEA-PIPELINES-RISERS-CABLE XIII: Flex	Space2
148. SUBSEA-PIPELINES-RISERS-CABLE XII: System	Sp9+10

UNDERSEA VEHICLE, COMMUNICATION A& CONTROL (V. 2)

51. UNDERWATER SYSTEMS I: AUV & UUV	Space6
61. UNDERWATER SYSTEMS II Propulsion ...	Space6
71. UNDERWATER SYSTEMS III: Control & Maneuver	Space6
81. UNDERWATER SYSTEMS IV: Navigation & ...	Space6

ARCTIC SCIENCE & TECHNOLOGY (V. 1)

47. ARCTIC SCI & TECH I: Arctic Environment	Sp7+8
91. ARCTIC SCI & TECH II: Ice Mech 1	Space6
101. ARCTIC SCI & TECH III: Arctic Vessels & ...1	Space6
111. ARCTIC SCI & TECH IV: Operations 1	Space6
121. ARCTIC SCIENCE & TECH V: Ice Mech 2	Space6
131. ARCTIC SCI & TECH VI: Vessels & ... 2)	Space6
141. ARCTIC SCI & TECH VII: Operations 2	Space6
151. ARCTIC SCIENCE & TECH VIII: Ice Mech 3	Space6

ARCTIC MATERIALS (V. 4)

Part of HPM sessions

HYDRODYNAMICS (V. 3)

3. HYDRODYNAMICS I: Shallow-Water	Space2
13. HYDRODYNAMICS II: Fluid-Structure Interact 1	Space2
23. HYDRODYNAMICS III: Fluid-Structure 2	Space2
33. HYDRODYNAMICS IV: Fluid-Structure Int...	Space2
43. HYDRODYNAMICS V: Fluid-Structure	Space2
53. HYDRODYNAMICS VI: Fluid-Structure 5	Space2
63. HYDRODYNAMICS VII: Fluid-Structure 6...	Space2
73. HYDRODYNAMICS VIII: MetOcean 1	Space2
83. HYDRODYNAMICS IX: MetOcean 2	Space2
93. HYDRODYNAMICS X: NWT 1	Space2
103. HYDRODYNAMICS XI: NWT 2; CFD	Space2
113. HYDRODYNAMICS XII: NWT 2; CFD	Space2
123. HYDRODYNAMICS XIII: NWT 3; CFD	Space2
133. HYDRODYNAMICS XIV: NWT 4; CFD Floating 1	Space2

TSUNAMI AND SAFETY SYMPOSIUM (V. 3)

100. TSUNAMI & SAFETY I: Recent & Future Tsuna...	Space5
110. TSUNAMI & SAFETY II: Generation & ...	Space5
120. TSUNAMI & SAFETY III: Warning & Floating	Space5
130. TSUNAMI & SAFETY IV: Structures & Sediment	Space5
140. TSUNAMI & SAFETY V Risk Assessment	Space5
150. TSUNAMI & SAFETY VI Panel	Space5

SLOSHING DYNAMICS AND DESIGN (V. 3)

2. LNG SLOSHING I: Model Test I	Space1
12. LNG Sloshing II: Model Tests 2	Space1
22. LNG Sloshing III: Sloshing Physics	Space1
32. LNG Sloshing IV: Numer Simulation ..	Space1
42. LNG Sloshing V: CFD	Space1
52. LNG Sloshing VI: Sloshing & Statistics	Space1
62. LNG Sloshing VII: Load Prediction & Struct...	Space1
72. LNG Sloshing VIII: Liquid Cargo & Ship Motions ...	Space1
82. LNG Sloshing IX: Panel 1 CFD I	Space1
92. LNG Sloshing X: Panel 2: Benchmark Model Tests	Space1

FLOW-INDUCED VIBRATIONS (V. 3)

7. VORTEX-INDUCED VIBRATION I: Single ...	Sp7+8
17. VORTEX-INDUCED VIBRATION II: Multiple..	Sp7+8
27. VORTEX-INDUCED VIBRATION III: Jumpers ...	Sp7+8
37. VORTEX-INDUCED VIBRATION IV: Upstream	Sp7+8

COASTAL HYDRODYNAMICS (V. 3)

57. COASTAL I: Waves	Sp7+8
67. COASTAL II: Waves & Storm Surge 1)	Sp7+8
77. COASTAL III: Waves & Storm Surge 2	Sp7+8
87. COASTAL IV: Breakwaters 1	Sp7+8
97. COASTAL V: Breakwaters 2	Sp7+8
107. COASTAL VI: Waves-Structures (V. 3)	Sp7+8
117. COASTAL VII: Harbor & Coast	Sp7+8
127. COASTAL VIII: Tide & Current	Sp7+8
137. COASTAL IX: Beach Erosion	Sp7+8
147. COASTAL X: Sediment & Transport	Sp7+8

HIGH-PERFORMANCE MATERIALS (V. 4)

11. HPM I: Fatigue & Fracture 3	Space6
21. HPM II: Advances in Welding Technology 1	Space6
31. HPM III: Advances in Welding Technology 2	Space6

45. HPM IV: Adv in Welding Technology 3	Space4
76. HPM V: Adv Materials & Offshore Struct 1	Sp13+14
86. HPM VI: Adv Materials & Structures 2	Sp13+14
96. HPM VII: ADV Materials & Offshore Structures 3	Sp13+14
106. HPM VIII: Adv Materials & Structures 4	Sp13+14
116. HPM IX: Arctic Materials	Sp13+14
126. HPM X: Composite Materials	Sp13+14
136. HPM XI Fatigue & Fracture 1	Sp13+14
146. HPM XII: Fatigue & Fracture 2	Sp13+14

MANGANESE STEEL SYMPOSIUM (V. 4)

46. MANGANESE STEEL FOR ENERGY I: Phase Transf	Sp13+14
56. MANGANESE STEEL FOR ENERGY II: Weld.	Sp13+14
66. MANGANESE STEEL FOR ENERGY III: Cryogenic	Sp13+14

ASSET INTEGRITY (V. 4)

6. ASSET INTEGRITY I: Integrity Management	Sp13+14
16. ASSET INTEGRITY II: Pipeline Integrity	Sp13+14
26. ASSET INTEGRITY III: Fatigue Monitoring	Sp13+14
36. ASSET INTEGRITY IV: Fatigue & Corrosion	Sp13+14

STRAIN-BASED DESIGN (V. 4)

8. SBD I: Toughness Measurements	Sp9+10
18. SBD II: SBD Assessment	Sp9+10
28. SBD III: Materials for SBD	Sp9+10
38. SBD IV: Strain Capacity	Sp9+10

RISK, RELIABILITY & STRENGTH (V. 4)

5. RISK ASSESSMENT & RELIABILITY I	Space4
15. RISK ASSESSMENT & RELIABILITY II	Space4
25. STRUCTURE RESPONSES	Space4
35. STRUCTURAL STRENGTH	Space4

ADVANCED SHIP TECHNOLOGY (V. 4)

10. ADV SHIP TECH I: Shipbuilding Simulation	Space5
20. ADV SHIP TECH II: Strength & Vibrations	Space5
30. ADV SHIP TECH III: Resistance & Propulsion	Space5
40. ADV SHIP TECH IV: Ship Design	Space5
50. ADV SHIP TECH V: Maneuvering & Control	Space5
60. ADV SHIP TECH VI: Impact & Collision	Space5



**ISOPE-2013 Conference
Technical Program Committee (TPC)**

Dr. O. M. Akselsen, SINTEF, Trondheim, Norway
Prof. D.C. Angelides (Co-Chair), Aristotle Univ of Thessaloniki, Greece
Dr. S. Araki, Osaka University, Osaka, Japan
Dr. R. Ayer (Co-Chair), ExxonMobil Research & Engineering Co., Annandale, NJ, USA
Prof. S.C. Bang, South Dakota School of Mines and Tech., Rapid City, SD, USA
Prof. A.T. Bekker, Far Eastern Federal Univ., Vladivostok, Russia

Prof. A. S. Bolshev, St Petersburg State Polytechnical Univ., St Petersburg, Russia
Prof. C. Bostater, Florida Inst. of Technology, Melbourne, FL, USA
Dr. H.G. Brandes, University of Hawaii, Honolulu, HI, USA
Dr. F. Bransby, Advanced Geomechanics, Nedlands, Australia
Dr. B.J. Buckham, University of Victoria, Victoria, Canada
Prof. B.B. Budkowska, University of Windsor, Windsor, Canada
Dr. I. Buzin, AARI, St. Petersburg, Russia
Mr. C.C. Capanoglu, I.D.E.A.S., Inc., Burlingame, CA, USA
Prof. D.M. Causon, Manchester Metropolitan University, Manchester, UK
Dr. Cheng-Yo Chen, J. Ray McDermott, Houston, TX, USA
Prof. Guangjin Chen, China University Of Petroleum, Beijing, China
Prof. Hamn-Ching Chen, Texas A&M University, College Station, TX, USA
Mr. Yongjun Chen, DMAR Engineering, Katy, TX, USA
Dr. Wentao Cheng, ExxonMobil Upstream Research Co., Houston, TX, USA
Prof. L.-K. Chien, National Taiwan Ocean Univ., Keelung, Taiwan, China
Dr. Sam J. Cho, SK USA, Houston, TX, USA
Prof. Jin S. Chung (Chairman), ISOPE, Cupertino, CA, USA
Prof. Choong-Ki Chung, Seoul National University, Seoul, Korea
Mr. M.F. Cook, ExxonMobil Development Co., Houston, TX, USA
Prof. H. Dagher, University of Maine, Orono, ME, USA
Mr. S. Damasceno, Petrobras, Rio de Janeiro, Brazil
Prof. F. Dias, University College Dublin, Dublin, Ireland
Dr. L. Diebold, Bureau Veritas, Neuilly-sur-Seine, France
Mr. Weiliang Dong, CNOOC-COSL, Beijing, China
Prof. Menglian Duan, China University of Petroleum, Beijing, China
Dr. A. Duggal, SOFEC, Houston, TX, USA
Dr. H. Eicken, University of Alaska Fairbanks, Fairbanks, AK, USA
Dr. S. Etienne, Ecole Polytechnique de Montreal, Montreal, Canada
Dr. K. Fakharian, Amirkabir University of Technology, Tehran, Iran
Dr. E. Fontaine, AMOG Consulting, Nottinghill, Australia
Dr. J. Fortes, LNEC, Lisbon, Portugal
Dr. R.M.W. Frederking, National Research Council, Ottawa, Canada
Prof. M. Fujikubo, Osaka University, Osaka, Japan
Prof. Fuping Gao, Inst. of Mechanics, CAS, Beijing, China
Prof. C. Gaudin, University of Western Australia, Crawley, Australia
Mr. N. Gazis, JP Kenny, Houston, TX, USA
Dr. N. Goseberg, Leibniz Universitat Hannover, Hannover, Germany
Prof. A.M. Gresnigt, Delft Univ. of Technology, Delft, Netherlands
Prof. S.T. Grilli, Univ. of Rhode Island, Narragansett, RI, USA
Dr. Hai Gu, ABS, Singapore
Dr. E. Hajo, University of Alaska at Fairbank, Fairbank, AK, USA
Dr. Sang Jae Han, Expert Group for Earth & Environment, Anyang, Korea
Dr. T. Hara, Nippon Steel & Sumitomo Metal Corp., Kimitsu, Japan
Dr. M. Hauge, Statoil, Trondheim, Norway
Dr. S. Herion, Karlsruhe Institute of Technology, Karlsruhe, Germany
Dr. T. Hiraishi, Kyoto Univ., Kyoto, Japan
Dr. K. Hirayama, Port and Airport Research Inst., Yokosuka, Japan
Dr. Keyyong Hong, Maritime & Ocean Eng. Res Inst, KIOST, Daejeon, Korea
Dr. Sa-Young Hong, Maritime & Ocean Eng. Res, KIOST, Daejeon, Korea
Dr. Seok-Won Hong, Maritime & Ocean Eng. Res Inst, KIOST, Daejeon, Korea
Dr. Yong-Pyo Hong, HSVA, Hamburg, Germany
Dr. D Hoyt, ExxonMobil Development Co., Houston, TX, USA
Prof. Chun Huh, University of Texas at Austin, Austin, TX, USA
Prof. Beom Soo Hyun, Korea Maritime Univ., Busan, Korea
Prof. T. Ishihara, University of Tokyo, Tokyo, Japan
Dr. A. Izadparast, SOFEC, Houston, TX, USA
Prof. Dong-Sheng Jeng, University of Dundee, Dundee, UK
Dr. A. D. Jenkins, UNI Computing, Bergen, Norway
Mr. J. Jennings, Edison Welding Inst., Columbus, OH, USA
Dr. Junbo Jia, Aker Solutions, Bergen, Norway
Mr. Xizhao Jiang, (Co-Chair), CNOOC-COOEC, Tianjin, China
Dr. HyunWoo Jin, ExxonMobil Research & Engineering, Annandale, NJ, USA
Dr. P. Jukes, MCS Kenny, Houston, TX, USA
Dr. Hyun Jo Jun, Arcelor Mittal Steel USA, East Chicago, IN, USA
Prof. S. Kabdasli, Istanbul Tech. University, Istanbul, Turkey

Prof. H. Kajiwara, Kyushu University, Fukuoka, Japan
 Prof. M. Kaminski, Delft Univ. of Technology, Delft, Netherlands
 Dr. Wan C. Kan, ExxonMobil Development Co., Houston, TX, USA
 Dr. Ki Bong Kang, POSCO, Pohang, Korea
 Prof. T.V. Karambas, Aristotle University of Thessaloniki, Thessaloniki, Greece
 Prof. M. Kashiwagi, Osaka University, Osaka, Japan
 Dr. N. Kato, Osaka University, Osaka, Japan
 Dr. H. Kawai, Port and Airport Research Inst., Yokosuka, Japan
 Dr. Sung-Tai Kee, Seoul National University of Technology, Seoul, Korea
 Dr. Dong Sup Kim, SK Innovation, Daejeon, Korea
 Mr. Gyo Tae Kim, SK Innovation, Daejeon, Korea
 Prof. Moo Hyun Kim, Texas A&M University, College Station, TX, USA
 Prof. Soo-Sam Kim, Korea Land & Housing Corp, Daejeon, Korea
 Dr. Soo Youl, Kim, Tottori University, Tottori, Japan
 Prof. Yonghwan Kim, Seoul National University, Seoul, Korea
 Prof. R.H. Knapp (**Co-Chair**), University of Hawaii, Honolulu, HI, USA
 Dr. J. Kofoed, Aalborg University, Aalborg, Denmark
 Dr. T. Kokkinis, ExxonMobil Upstream Research Co., Houston, TX, USA
 Dr. T. Komai, AIST, Tsukuba, Japan
 Prof. H. Krogstad, NTNU, Trondheim, Norway
 Prof. J.V. Kurián, Universiti Teknologi Petronas, Tronoh, Malaysia
 Prof. Y. Kyojuka, Kyushu University, Kasuga, Japan
 Prof. M. La Rocca, Università Roma TRE, Rome, Italy
 Mr. F. Lalli, ISPRA, Rome, Italy
 Prof. I. Langen, University of Stavanger, Stavanger, Norway
 Dr. T.M.H. Le, NTNU, Trondheim, Norway
 Prof. Joong-Woo Lee, Korea Maritime University, Busan, Korea
 Prof. Sang-Gab Lee, Korea Maritime University, Busan, Korea
 Prof. C.F. Leung, National Univ of Singapore, Singapore
 Prof. Tingqiu Li, Wuhan Univ. of Technology, Wuhan, China
 Prof. Yucheng Li, Dalian University of Technology, Dalian, China
 Dr. Qiu Hua Liang, Newcastle University, Newcastle upon Tyne, UK
 Dr. Frank K. Lim, 2H Offshore Engineering, Surrey, UK
 Prof. Ming-Chung Lin, National Taiwan University, Taipei, Taiwan, China
 Prof. Hua Liu, Shanghai Jiao Tong University, Shanghai, China
 Prof. J.P. Lyanage, University of Stavanger, Stavanger, Norway
 Dr. E. Loukogeorgaki, Aristotle Univ. of Thessaloniki, Thessaloniki, Greece
 Prof. Qingwei. Ma, The City University, London, UK
 Dr. N Ma, ExxonMobil Research & Engineering, Annandale, NJ, USA
 Dr. A. Mahoney, University of Alaska Fairbanks, Fairbanks, AK, USA
 Dr. T. Makogon, BP America, Houston, TX, USA
 Mr. S. Maleki, TWI Ltd, Cambridge, UK
 Dr. G. Mannucci, Centro Sviluppo Materiali, Rome, Italy
 Dr. G. Marani, West Virginia University, Morgantown, WV, USA
 Prof. P.W. Marshall, MHP Systems Engineering, Houston, TX, USA
 Mr. D. Matha, University of Stuttgart, Stuttgart, Germany
 Dr. T. Mathai, The Glosten Assoc., Seattle, WA, USA
 Prof. T. Matsui, Osaka University, Osaka, Japan
 Prof. R.E. Melchers, University of Newcastle, Newcastle, Australia
 Dr. M. Minoura, Osaka University, Osaka, Japan
 Dr. H. Moshagen, BHM Engineering Services, Norway
 Prof. S. Mouring, U.S. Naval Academy, Annapolis, MD, USA
 Prof. K. Murali, IIT Madras, Chennai, India
 Prof. H. Murakawa, Osaka University, Ibaraki, Japan
 Prof. M. Muskulus, NTNU, Trondheim, Norway
 Dr. J K Na, Edison Welding Inst., Columbus, OH, USA
 Dr. R. Nagaosa, AIST, Tsukuba, Japan
 Prof. S. Nagata, Saga University, Saga, Japan
 Prof. S. Naito (**Co-Chair**), Osaka Univ., Osaka, Japan
 Dr. M. Nakamura, Kyushu University, Kasuga, Japan
 Dr. Chiu-On Ng, University of Hong Kong, Hong Kong, China
 Prof. I. Nistor, Univ. of Ottawa, Ottawa, Canada
 Prof. S. Okazawa, Hiroshima Univ., Higashi-Hiroshima, Japan
 Prof. N. Osawa, Osaka University, Osaka, Japan
 Dr. E. Østby, DNV, Høvik, Norway
 Prof. K. Otsuka, Osaka Prefecture University, Sakai, Japan

Dr. N. Otsuka, North Japan Port Consultants Co., Sapporo, Japan
 Prof. Han-II Park, Korea Maritime University, Busan, Korea
 Prof. S K Park, Pusan National University, Busan, Korea
 Prof. N. M. Patrikalakis, MIT, Cambridge, MA, USA
 Mr. G Paulsen, FEDEM Technology, Trondheim, Norway
 Dr. V. Pavlenko, Arkhangelsk Scientific Center, Arkhangelsk, Russia
 Dr. Bor-Feng Peng, J Ray McDermott, Houston, TX, USA
 Dr. S.J. Prinsenber, Bedford Inst of Oceanography, Dartmouth, Canada
 Dr. Yiquan Qi, South China Sea Inst. of Oceanology, Guangzhou, China
 Prof. Wei Qiu, Memorial University of Newfoundland, St. Johns, Canada
 Prof. P. Ruol, Univ. Of Padova, Padova, Italy
 Dr. J.-F. Saint-Marcoux, Subsea 7, Suresnes, France
 Prof. A.J.N.A. Sarmento, IST, UTL, Lisbon, Portugal
 Dr. M. Sayed, National Research Council, Ottawa, Canada
 Dr. S. Schreier, University of Rostock, Rostock, Germany
 Dr. G. Schriever, Biolab Forschungsinstitut, Hohenwestedt, Germany
 Prof. J. Q. Shang, University of Western Ontario, London, ON, Canada
 Prof. T. Shibue, Kinki University Wakayama, Japan
 Prof. J.D. Sørensen, Aalborg University, Aalborg, Denmark
 Dr. T. Soukissian, Hellenic Centre for Marine Research, Anavyssos, Greece
 Prof. G.F.M. Souza, University of Sao Paulo, Sao Paulo, Brazil
 Prof. V. Squire, University of Otago, Dunedin, New Zealand
 Dr. V. Sriram, Leibniz Univ. Hannover, Hannover, Germany
 Dr. Jie Su, Ocean University of China, Qingdao, China
 Prof. Tsung-Chow Su, Florida Atlantic University, Boca Raton, FL, USA
 Prof. B.M. Sumer, Technical Univ. of Denmark, Lyngby, Denmark
 Dr. H G Sung, Maritime & Ocean Eng. Res Inst, KIOST, Daejeon, Korea
 Dr. K Tanizawa, National Maritime Research Inst, Tokyo, Japan
 Dr. P. Teigen, Statoil, Trondheim, Norway
 Prof. B. Teng, Dalian University of Technology, Dalian, China
 Prof. S. Tinti, Univ. of Bologna, Bologna, Italy
 Prof. M.S. Triantafyllou, M.I.T., Cambridge, MA, USA
 Prof. Ching-Piao Tsai, National Chung Hsing Univ., Taichung, Taiwan, China
 Dr. T Tsubogo, Osaka Prefecture University, Sakai, Japan
 Dr. E. Tsuru, Nippon Steel & Sumitomo Metal Corp., Futtsu, Chiba-ken, Japan
 Prof. T. Utsunomiya, Kyoto University, Kyoto, Japan
 Dr. D. Vicinanza, Second University of Naples, Naples, Italy
 Mr. F. Vorpahl, Fraunhofer-IWES, Bremerhaven, Germany
 Prof. Decheng Wan, Shanghai Jiao Tong University, Shanghai, China
 Dr. Alan M. Wang, Offshore Oil Engineering Co., Tianjin, China
 Dr. H.G. Wheat, Univ. of Texas at Austin, Austin, TX, USA
 Prof. K.A. Willems, Delft Univ. of Technology, Delft, Netherlands
 Mr. P.C. Wong, ExxonMobil Development Co., Houston, TX, USA
 Dr. Jer-Fang Wu, American Bureau of Shipping, Houston, TX, USA
 Mr. Mason. Wu, J. Ray McDermott, Houston, TX, USA
 Prof. Yingxiang Wu, Inst. of Mechanics, CAS, Beijing, China
 Dr. Qing Xiao, Univ. of Strathclyde, Glasgow, UK
 Prof. S. Yamaguchi, Kyushu University, Fukuoka, Japan
 Prof. Y. Yamamoto, Tokai University, Hiratsuka, Japan
 Dr. Shiqiang Yan, City University, London, UK
 Prof. Chi Yang, George Mason University, Fairfax, VA, USA
 Prof. Ray-Yeng Yang, National Cheng Kung University, Tainan, Taiwan, China
 Dr. Shaoli Yang, Norwegian Geotechnical Institute, Oslo, Norway
 Prof. T. Yao, Osaka University, Osaka, Japan
 Dr. John Z. Yim, National Taiwan Ocean University, Keelung, Taiwan, China
 Dr. Son-Cheol Yu, Pohang University of Science & Technology, Pohang, Korea
 Dr. Xiaochuan Yu, INTECSEA, Houston, TX, USA
 Dr. Y. Yuksel, Yildiz Technical University, Istanbul, Turkey
 Dr. Jun Zang, Univ of Bath, Bath, UK
 Prof. Jinhai Zheng, Hohai University, Nanjing, China

ISOPE-2013 Conference Co-chair and Executive Committee
 Jin S Chung (Chairman), USA; Raghavan Ayer, USA, Demos Angelides, Greece; Ronald Knapp, USA; Xizhao Jiang, China; Shigeru Naito, Japan

ISOPE-2013 Anchorage Conference Secretariat
 ISOPE, USA

ISOPE-2013 Sponsor
 International Society of Offshore and Polar Engineers (ISOPE)
 More available later from Final Program or www.isoape.org

President (2012–2013): Shigeru Naito, Japan
Past President: Raghavan Ayer, USA
Executive Director: Jin S Chung, USA

ISOPE Board of Directors
 C C Capanoglu (USA), E Fontaine (France), S Herion (Germany), T Hiraishi (Japan), S Y Hong (Korea), H W Jin (USA)

PACOMS Executive Committee
 A T Bekker (Russia), S Chucheeepsakul (Thailand), J S Chung (USA), S W Hong (Korea), M Isaacson (Canada), S Naito (Japan), H I Park (Korea), B Teng (China), H Liu (China), H Zhang (Australia)

EUROMS Executive Committee
 S Berg (Norway), J S Chung (USA), B J Natvig (Norway)

Cooperating Organizations

Canadian Association of Petroleum Producers (CAPP)
 American Society of Civil Engineering (ASCE) - Engineering Mech. Div.
 Korean Society of Ocean Engineers (KSOE, formerly KCORE)
 Canadian Society of Civil Engineering (CSCE) - Engineering Mech. Div.
 Indian National Academy of Engineering (INAE)
 China Petroleum Society (CPS) Offshore Oil Committee
 Chinese Society of Ocean Engineers (CSOE)
 Chinese Society of Naval Architects and Marine Engineers (CSNAME)
 Chinese Society of Theoretical and Applied Mechanics (CSTAM)
 Russian Academy of Sciences (RAS)
 Singapore Structural Steel Society (SSSS)
 Norwegian Petroleum Society (NPF)
 The Institution of Engineers Australia (IE Australia)
 Japan Society of Naval Architects and Ocean Engineers (JASNAOE)
 Technical Research Centre of Finland (VTT)
 The Society of Materials Science, Japan (JMSM)
 The Offshore Engineering Society, United Kingdom (OES)
 IRO, Netherlands (IRO)
 Ukraine Society of Mechanical Engineers (USME)
 Scott Polar Research Institute (SPRI), U.K.
 The Institution of Engineers Indonesia (PII)
 Brazilian Society of Naval Architects and Marine Engineers (SOBENA)
 Korean Society of Civil Engineers (KSCE)
 The Deutsche Gesellschaft für Meeresforschung und Meerestechnik (DKMM)
 The Gesellschaft für Maritime Technik (GMT)
 Taiwan Society of Ocean Engineering (TSOE)
 Technical Chamber of Greece (TCG)
 Turkish Ocean Committee (TOC)
 Engineering Institute of Thailand (EIT)
 International Energy Agency – Ocean Energy Systems (IEA-OES)