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The Royal Institute of Engineers
in the Netherlands (KIVI NIRIA)

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**Program at a Glance**

**Saturday, June 18**
- Welcome
- Outreach Presentations, Welcome & Introductions, Industry Presentations 13:00 – 17:30 Goudriaan Room I & II
- Refreshment Break 10:00 – 10:30
- Conference Registration 13:00 – 20:00 Mercurius Hall

**Sunday, June 19**
- Welcome Reception & Opening of Exhibition 18:00 – 20:00 Shipping Hall
- Networking Drinks 17:30 – 19:00
- Refreshment Break 15:00 – 15:30
- Welcome from Technical Chair

**Monday, June 20**
- Opening and Plenary Session 09:00 – 10:00 Rotterdam Hall
- Refreshment Break 10:00 – 10:30
- Plenary Session ‘Going Deep’ (Challenges of New Activities Offshore) 10:30 – 12:00 Rotterdam Hall
- Refreshment Break 10:00 – 10:30
- Refreshment Break 15:00 – 15:30
- Opening Lunch 12:00 – 13:30 Exchange Hall, sponsored by Transocean Offshore Deepwater Drilling Inc.

**Tuesday, June 21**
- Refreshment Break 10:00 – 10:30
- Concurrent Sessions 10:30 – 12:00
- Opening and Plenary Session 10:30 – 12:00 Rotterdam Hall
- Refreshment Break 10:00 – 10:30
- Welcome from Conference Chair
- Refreshment Break 10:00 – 10:30
- Welcome from Technical Chair
- Refreshment Break 10:00 – 10:30
- Refreshment Break 15:00 – 15:30
- Opening Lunch 12:00 – 13:30 Exchange Hall, sponsored by Transocean Offshore Deepwater Drilling Inc.

**Wednesday, June 22**
- Networking Drinks 17:30 – 19:00 Shipping Hall
- Refreshment Break 15:00 – 15:30
- Opening and Plenary Session 09:00 – 10:00 Rotterdam Hall
- Refreshment Break 10:00 – 10:30
- Welcome from Conference Chair
- Refreshment Break 10:00 – 10:30
- Welcome from Technical Chair
- Refreshment Break 10:00 – 10:30
- Refreshment Break 15:00 – 15:30
- Opening Lunch 12:00 – 13:30 Exchange Hall, sponsored by Transocean Offshore Deepwater Drilling Inc.

**Thursday, June 23**
- Refreshment Break 10:00 – 10:30
- Concurrent Sessions 10:30 – 12:00
- Opening and Plenary Session 10:30 – 12:00 Rotterdam Hall
- Refreshment Break 10:00 – 10:30
- Welcome from Conference Chair
- Refreshment Break 10:00 – 10:30
- Welcome from Technical Chair
- Refreshment Break 10:00 – 10:30
- Refreshment Break 15:00 – 15:30
- Opening Lunch 12:00 – 13:30 Exchange Hall, sponsored by Transocean Offshore Deepwater Drilling Inc.

**Friday, June 24**
- Refreshment Break 10:00 – 10:30
- Concurrent Sessions 10:30 – 12:00
- Opening and Plenary Session 10:30 – 12:00 Rotterdam Hall
- Refreshment Break 10:00 – 10:30
- Welcome from Conference Chair
- Refreshment Break 10:00 – 10:30
- Welcome from Technical Chair
- Refreshment Break 10:00 – 10:30
- Refreshment Break 15:00 – 15:30
- Opening Lunch 12:00 – 13:30 Exchange Hall, sponsored by Transocean Offshore Deepwater Drilling Inc.

**Key to Symposium Abbreviations:**
- OFT: Offshore Technology
- SSR: Structures, Safety and Reliability
- MAT: Materials Technology
- PRT: Pipeline and Riser Technology
- OSU: Ocean Space Utilization
Wednesday, June 22

Conference Registration
08:00 – 16:00 | Mercurius Hall

Exhibition Open 10:00 – 16:00 | Shipping Hall

Optional Sightseeing Tour – Royal the Hague and Delft
09:00 – 13:00
Meeting Point: WTC

08:30
Concurrent Sessions 08:30 – 10:00
OFT 1-7 Subsea Systems – I
OFT 1-20 Impact Loadings
SSR 2-13 Probabilistic Response Modelling – III
SSR 2-20 Fracture & Fatigue Reliability – II
MAT 3-2 LNG/FLNG Tank and Pipe Design and Materials
Workshop – I
PRT 4-6 Mechanical Behavior – III
PRT 4-29 Flexible Pipes – III
OE 6-4 Model Tests – I
OE 6-17 Marine Vehicles and Structures – III
GDW 8-9 BV Suppression, Waves & Free Spans
GDW 8-13 Riser – I
OEG 9-9 Wave Energy – II
ORE 9-10 Wind Energy – III
OG 10-4 Seabed Processes and Mechanics
JWS 13-1 Mooring Systems

10:00
Refreshment Break 10:00 – 10:30 | Shipping Hall

10:30
Concurrent Sessions 10:30 – 12:00
OFT 1-8 Subsea Systems – II
OFT 1-24 LNG Challenges
SSR 2-21 Fracture & Fatigue Reliability – IV
MAT 3-6 Fatigue of Welded Joints
MAT 3-14 LNG/FLNG Tank and Pipe Design and Materials
Workshop – II
PRT 4-7 Mechanical Behavior – IV
PRT 4-30 Flexible Pipes – II
OSU 5-10 VLFS and New Type of Floating Facilities – I
OE 6-18 Marine Vehicles and Structures – IV
OE 6-23 Model Tests – II
GDW 8-10 Pipeline and Multi-Phase Flow
GDW 8-14 Riser – Fatigue & Suppression
ORE 9-11 Current Energy – III
ORE 9-13 Wind Energy – IV
JWS 13-2 Low Frequency Motions Moored Vessels

12:00
Networking Lunch 12:00 – 13:00 | Exchange Hall
Sponsored by Heerema Marine Contractors

13:30
Concurrent Sessions 13:30 – 15:00
OFT 1-16 Hydrodynamics – II
OFT 1-64 Hydrodynamics – II
SSR 2-22 Probabilistic and Spectral Wave Models
SSR 2-33 Structural Analysis and Optimisation – I
MAT 3-16 Fatigue Improvement & Welding Repair
PRT 4-8 Mechanical Behavior – V
PRT 4-31 Flexible Pipes – III
OSU 5-19 VLFS and New Type of Floating Facilities – II
OE 6-7 Coastal Engineering – I
OE 6-24 Model Tests – III
GDW 8-11 CFD Applications
GDW 8-15 Risers – II
ORE 9-13 Wind Energy – IV
ORE 9-14 Current Energy – IV
OG 10-8 Scour and Submarine Landslides
JWS 13-3 FPSO Responses

15:00
Refreshment Break 15:00 – 15:30 | Shipping Hall

15:30
Concurrent Sessions 15:30 – 17:30
OFT 1-16 Hydrodynamics – II
OFT 1-64 Hydrodynamics – II
SSR 2-23 Extreme and Freak Waves
SSR 2-34 Structural Analysis and Optimisation – II
MAT 3-29 Dynamic Embodiment Under Static and Dynamic Loading
PRT 4-9 Mechanical Behavior – VI
PRT 4-32 Flexible Pipes – IV
OSU 5-3 Water Front and Coastal Design and Planning
OE 6-25 Model Tests – IV
OE 6-29 Coastal Engineering – II
PAST 7-1 Numerical Ice Modelling
GDW 8-12 CFD Methods & Cylinder VIV
GDW 8-16 Flexible Pipe Maneuvering & Roll
ORE 9-15 Wave Energy – V
ORE 9-16 Wave Energy – V

Evening
Maritime Banquet
19:00 – 23:00
Location: Maritime Museum, Leuvehaven 1, Rotterdam

Thursday, June 23

Outreach Breakfast/ Feedback Session
07:30 – 09:00 | WTC Art Gallery II

Conference Registration
08:00 – 16:00 | Mercurius Hall

Exhibition Open 10:00 – 16:00 | Shipping Hall

Optional Sightseeing Tour – Castles and River Vecht
09:00 – 15:00 | Meeting Point: WTC

08:30
Concurrent Sessions 08:30 – 10:00
OFT 1-11 Installation – Commissioning – I
OFT 1-21 Ships and Ship Dynamics – I
SSR 2-26 Extreme Seas – II
SSR 2-35 Structural Analysis and Optimisation – IV
SSR 2-39 Risk Analysis and Safety Management – I
MAT 3-1 HSE/PSA Workshop on Ageing and Life Extension of Offshore Installations – Regulatory Perspective
PRT 4-13 Fracture and Fatigue – I
PRT 4-15 Installation
OE 6-26 Model Tests – V
OE 6-30 Coastal Engineering – III
PAST 7-2 Ice Model Tests and Analysis of Full Scale Data
IDW 8-17 Risers – III
IDW 8-20 Floaters – Semi-submersibles & Spurs
ORE 9-17 Current Energy – V
ORE 9-18 Wave Energy – VI
OG 10-6 Jack-Up and Spud Can Foundations

10:00
Refreshment Break 10:00 – 10:30 | Shipping Hall

10:30
Concurrent Sessions 10:30 – 12:00
OFT 1-12 Installation – Commissioning – II
OFT 1-22 Ships and Ship Dynamics – II
SSR 2-27 Extreme Seas – II
SSR 2-36 Structural Analysis and Optimisation – IV
SSR 2-40 Risk Analysis and Safety Management – II
MAT 3-3 HSE/PSA Workshop on Ageing and Life Extension of Offshore Installations – Ageing Management
PRT 4-14 Fracture and Fatigue – II
PRT 4-25 Steel Riser – I
OE 6-5 Underwater Technology
OE 6-31 Coastal Engineering – IV
PAST 7-3 Structures in Ice
IDW 8-18 Risers – IV
IDW 8-21 Floaters – Semi-submersibles
ORE 9-19 Wind Energy – I
ORE 9-20 Current Energy – VI
OG 10-7 Pipeline Geotechnics

12:00
Technical Session Organizers Lunch 12:00-13:30
Exchange Hall, Sponsored by SBM GustoMSC
Open to all attendees

13:30
Concurrent Sessions 13:30 – 15:00
OFT 1-16 Hydrodynamics – II
OFT 1-64 Hydrodynamics – II
OFT 1-25 QA/QC, Global Processes, Optimisations and Environmental Challenges of Offshore Projects
SSR 2-24 CEA/CMT
SSR 2-37 Structural Analysis and Optimisation – V
SSR 2-41 Risk Analysis and Safety Management – III
MAT 3-4 HSE/PSA Workshop on Ageing and Life Extension of Offshore Installations – Mobile & Fixed Installations
PRT 4-26 Steel Riser – II
PRT 4-33 Flexible Pipes – V
OE 6-6 Towed and Undersea Cables and Pipes, Mooring, and Buoy Technology – I
OE 6-10 Computational Mechanics and Design Applications
PAST 7-4 Operations in Ice and Structural Integrity
IDW 8-19 Risers – V
IDW 8-22 Floaters – Ships & Multi Column Floaters
ORE 9-21 Wave Energy – VII

15:00
Refreshment Break 15:00 – 15:30 | Shipping Hall

15:30
Concurrent Sessions 15:30 – 17:30
OFT 1-13 Drilling – Risers and Flow Assurance
OFT 1-18 Hydrodynamics – II
OFT 1-25 QA/QC, Global Processes, Optimisations and Environmental Challenges of Offshore Projects
SSR 2-24 CEA/CMT
SSR 2-37 Structural Analysis and Optimisation – V
SSR 2-42 Risk Analysis and Safety Management – IV
MAT 3-5 HSE/PSA Workshop on Ageing and Life Extension of Offshore Installations – Assessment & Maintenance
PRT 4-27 Steel Riser – III
PRT 4-34 Flexible Pipes – I
OE 6-8 Marine Environmental Engineering
OE 6-28 Towed and Undersea Cables and Pipes, Mooring, and Buoy Technology – II
PAST 7-5 Evacuation in Ice
ORE 9-12 Wave Energy – IV
IDW 8-23 Panel on CFD & IVW Benchmarking

Evening
Brazilian Farewell Drinks
17:30 – 20:00
Location: Rotterdam Hall

Friday, June 24

Conference Registration
08:00 – 16:00 | Mercurius Hall

Exhibition Open 10:00 – 16:00 | Shipping Hall

Optional Sightseeing Tour – Royal the Hague and Delft
09:00 – 18:00
Meeting Point: WTC

• IHC Shipyard
• MARIN Test Facilities

Daily Program Handout
An updated daily program handout will be available each morning near the Registration Desk. The handout will incorporate any last minute program changes and show the time-synchronized order of presentations in each session for that day. You can use this handout as a general reference and to easily plan your personal attendance schedule for the day.

Sightseeing Tours
(See pg. 84 & 85 for more information)

Rotterdam by Foot including Splashtours
Date: Monday, June 20
Time: 09:00 – 13:00

Amsterdam Panoramic City Tour
Date: Tuesday, June 21
Time: 09:00 – 15:00

Royal the Hague and Delft
Date: Wednesday, June 22
Time: 09:00 – 13:00

Casts and River Vecht
Date: Thursday, June 23
Time: 09:00 – 15:00

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Map of Beurs-World Trade Centre Rotterdam and Surrounding Area

Beurs-World Trade Centre Rotterdam
Beursplein 37
3011 AA Rotterdam
Tel: 31-10-405-44-44
Web: www.wtcro.nl
Email: info@wtcro.nl
Welcome from the Conference Chair

I have the pleasure to welcome you to the City and Port of Rotterdam! Rotterdam is best characterized by its famous saying ‘Geen woorden maar daden’, which says as much as ‘Actions speak louder than words’. That is why Rotterdam was our first choice as the OMAE 2011 location in the Netherlands: it’s a port, not a resort! This is where this important offshore conference, with its ideal mix of people from industry and academia, belongs. With a record number of more than 800 reviewed papers, OMAE 2011 in Rotterdam is an ideal forum for offshore engineers, researchers, managers and students to present their progress in research and innovative technology. The opportunity to see real offshore structures during the Rotterdam Offshore Boat Tour makes it an even more unique event. The 30th OMAE in Rotterdam should therefore be ‘the Offshore Experience’!

OMAE 2011 has been organized by KIVI NIRIA (Royal Institute of Engineers) and a team of volunteers from the Dutch offshore and shipbuilding industry. The unique thing about this OMAE conference is that it has been developed by a team of 25 young engineers, together with the regular Local Organizing Committee. This team has organized special events and has given the conference a special flavor. This co-operation not only makes the conference itself a wonderful event, but also stimulates young engineers to be involved in research and innovation.

OMAE 2011 is a ‘special product’ of the broad offshore industry in the Netherlands with contributions from Allseas, Biglift, Bluewater, Bosch Rexroth, Boskalis, Dockwise, GustoMSC, Heerema Marine Contractors, Huisman Equipment, IHC Merwede, KeppelVerolme, MARIN, Shell, Smit, The Offshore Partners and TU Delft. This has resulted in the following highlights:

- An interesting Technical Opening Session entitled ‘Going Deep!’ that discusses the challenges of new activities offshore: floating wind, deep water salvage and deep-sea mining
- Three special Symposia for Dutch researchers who gave important contributions to offshore research: Jan Vugts, Jo Pinkster and Johan Wichers (in addition to the ten regular Symposia on all topics relevant in offshore engineering)
- The Rotterdam Offshore Boat Tour on Tuesday and the special Banquet in the Maritime Museum on Wednesday.

On behalf of the Local Organizing Committee and the rest of the OMAE 2011 team I wish you a very good conference!

—Dr. ir. Bas Buchner
Conference Chair, OMAE 2011
President, MARIN (Maritime Research Institute Netherlands)
Welcome from the Technical Program Chair

As the OMAE 2011 Technical Program Chair, I am proud of the rich and varied technical program for the 30th International Conference on Ocean, Offshore and Arctic Engineering.

You will have the chance over the next four days to choose from over 800 presentations of peer-reviewed papers, representing the state-of-the-art in ocean, offshore, and arctic engineering. This is a record number, and it reflects the long-term growth of the OMAE series of conferences. ASME-IPTI has organized five short courses for the Saturday and Sunday preceding the conference. The Tuesday evening boat tour of the Rotterdam port will be a new addition to the usual OMAE schedule. As well, the local organizers have planned exciting technical tours on Friday, showcasing some impressive engineering accomplishments and capabilities of our host country, the Netherlands. Over 18 companies are conference sponsors, showcasing the value the offshore industry places on OMAE. The Outreach for Engineers Specialty Forum continues to focus on drawing students, who are the next generation, into the fold. Exciting social programs are planned for accompanying persons, showcasing the culture and history of our host country. Over 18 companies are conference sponsors, showcasing the value the offshore industry places on OMAE. The Outreach for Engineers Specialty Forum continues to focus on drawing students, who are the next generation, into the fold. Exciting social programs are planned for accompanying persons, showcasing the culture and history of our host country.

The papers are organized into ten continuing symposia:

1. Offshore Technology
2. Structures, Safety and Reliability
3. Materials Technology
4. Pipeline and Riser Technology
5. Ocean Space Utilization
6. Ocean Engineering
7. Polar and Arctic Sciences and Technology
8. CFD and VIV
9. Ocean Renewable Energy
10. Offshore Geotechnics

There are three special symposia honoring the contributions to offshore research of prominent Dutch researchers:
1. Jan Vugts Symposium on ‘Design Methodology of Offshore Structures’
2. Jo Pinkster Symposium on ‘Second Order Wave Drift Forces on Floating Structures’
3. Johan Wichers Symposium on ‘Mooring of Floating Structures in Waves’

Traditionally, each OMAE conference honors an outstanding academician or engineer who has made significant contributions to our profession. This year we have the opportunity to honor these three individuals who have made significant contributions during their careers.

While many of the continuing symposia have existed for some years, several are relatively recent additions and reflect the intention of the OMAE conferences and the OOAE Division to maintain leadership in emerging areas. Ocean Renewable Energy (ORE) is one such symposium, which has 85 papers and which typically hosts some of the best attended sessions. Ocean Space Utilization is continuing to grow to include Deepsea Mining and Aquaculture.

No matter which symposia interest you, be assured that the papers therein represent the state-of-the-art in research and applications. The program and conference CD will be a valuable resource for your own work, whether in academics or in industry.

I must issue a heartfelt thanks to all of the authors, symposia coordinators, session organizers and chairs, and reviewers who made this excellent technical program possible. And of course, I would like to congratulate the Local Organizing Committee, led by Bas Buchner, for the outstanding job they have done in organizing such a wonderful conference!

—Dr. H. Ronald Riggs
Technical Program Chair, OMAE 2011
Professor, University of Hawaii
Welcome to the 30th International Conference on Offshore Mechanics and Arctic Engineering (OMAE 2011). It is with great personal pleasure that I welcome all of the attendees this year to Rotterdam, the Netherlands. Exactly five years ago, when I chaired OMAE 2006 in Hamburg, I talked with Bas Buchner about having an OMAE Conference again in the Netherlands, and now, here we are and I even have the honor to open the Conference.

The Ocean, Offshore and Arctic Engineering Division of ASME features a wide range of social and technical issues, like environmental protection, education, HSE, energy supplies, environmental loading, hydrodynamic behavior, arctic engineering, materials selection, and structural strength. Aside from all oil and gas related topics which are still playing an important role, nowadays ocean renewable energies like waves, tides, currents and offshore wind have provided new and very interesting areas for scientists and engineers.

The Conference Chair, Bas Buchner and his dynamic and enthusiastic team put together a very exciting program, starting with an interesting Technical Opening Session under the title ‘Going Deep!’ on the challenges of new activities offshore: floating wind, deep water salvage and deepsea mining. Special highlights of the social program are the Rotterdam Offshore Boat Tour on Tuesday and the special Banquet in the Maritime Museum on Wednesday. Every conference day will conclude with informal drinks where you can meet all your offshore colleagues and make plans for dinner, etc.

Technical Chair Ron Riggs and the Symposium Coordinators have put together an outstanding program. This year, there are three specialty symposia in addition to our ten regular symposia. The specialty symposia are honoring Jan Vugts, Jo Pinkster and Johan Wichers, three worldwide, well known, outstanding offshore pioneers from the Netherlands.

Thank you very much for joining us in Rotterdam and I look forward to meeting and exchanging ideas with you over the next four days.

—Dr. Walter L. Kuehnlein
Chair, OOAE Division of ASME
Managing Director, SEA2ICE Ltd. & Co. KG
The deeper the challenge, the further we go

As a pioneer in offshore drilling systems and the first to explore beyond 2000 metres water depth, it’s no surprise that Shell is a leader in deepwater. Our innovative excellence continues to push the boundaries, from the world’s largest deepwater wells at Norway’s Ormen Lange to the world’s deepest drilling and production facility, Perdido, Gulf of Mexico. Deploying cost-effective solutions using a global team of experts and cutting-edge technologies, we’re doing more than digging deeper – we’re breaking new ground. Want to dig deeper?

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Prof. Dr. ir. Jan H. Vugts has served a career of more than 40 years in science and industry. After graduating in 1963 as a naval architect, he was a researcher at the Ship Hydromechanics Laboratory in Delft with Professor Gerritsma, obtaining his Doctoral degree for research on hydrodynamic forces and ship motions in waves. In 1970, he joined the Offshore Engineering Department of Shell for a career in industry. Contrary to common practice at the time, he recognized the impact of the random dynamic environment on the behaviour of statically as well as dynamically responding marine structures, which necessitated accounting for the broad range of excitation frequencies and using a probabilistic instead of the usual deterministic approach. He retired from Shell in 1996 as Senior Offshore Engineering Consultant, having been involved with floating as well as bottom founded structures of all kinds. In 1992, he accepted a part-time Professorship in Offshore Technology at the Technical University of Delft, where besides his continued educational and research contributions he entered the field of offshore wind energy.

During his entire career he operated on the interface of R&D and practical applications, developing and promoting the development of necessary expertise in combination with realistic design and analysis methods for marine structures in their physical environment. Subjects ranged inter alia from probabilistic workability assessments for floating equipment, to dynamic and fatigue analysis of deep water fixed structures and (re)assessment of existing offshore structures. In the 1970s, he developed and performed the first ever spectral fatigue analyses for a semi-submersible and the first two fixed steel structures for Shell in the central and northern North Sea. From the 1980s, he was further active on marine safety, particularly as the instigator of present-day site-specific assessments of jack-ups.

From the start in 1991 of efforts under the auspices of ISO to produce international standards for the petroleum and natural gas industries, he has been the Dutch representative and a prominent member of Committee ISO/TC 67/SC 7. After retirement from Shell as well as from TU Delft he continued this activity making major contributions to the ISO 19900 series for offshore structures.

He was awarded the Research Prize 1978 for Offshore Engineering of the Royal Institution of Engineers in the Netherlands and is an Honorary Member of its Offshore Engineering Department. In 2007, he received the ASCE OTC Hall of Fame Award for Pioneering Innovation and Lasting Impact of his 1976 OTC paper ’Probabilistic fatigue analysis of fixed structures’. In 2009, he was one of three nominees for the Award of Excellence for personal achievements during an entire career from IRO, the Dutch Association of Suppliers in the Oil & Gas Industry.
Jo A. Pinkster Symposium on ‘Second Order Wave Drift Forces on Floating Bodies’

After his graduation in 1970 in Naval Architecture, Jo Pinkster joined MARIN, the Maritime Research Institute of the Netherlands. At MARIN he was responsible for many projects involving either model tests or computations or both, which were carried out for the international offshore industry. Many of these projects were concerned with mooring of floating production units in open sea. While working at MARIN, the pressure integration method for determining the mean and low-frequency second order wave drift forces on floating structures was developed. In 1980, he got his PhD on this topic. The subjects of the many JIPs at MARIN at that time were on wave drift forces on moored tankers in deep and shallow water as well as on semi-submersibles. Other research interests which resulted in publications included weathervaning DP, wave-feed-forward in DP and wave energy devices. As of 1990, he was appointed as full-time Professor Ship Hydromechanics at the Delft University of Technology.

While at Delft University of Technology, he developed a new multi-body diffraction code, a code for passing vessel effects and a code for the behaviour of air-cushion supported floating structures in waves. The new diffraction code was extended to include time-domain input from non-linear wave propagation models, which were coupled to allow the prediction of passing vessel effects on moored vessels including long wave effects arising from the interaction between the passing vessel induced flow field and the port geometry.

In 2006, he retired from the Delft University of Technology and since then he started Pinkster Marine Hydrodynamics (PMH) consultancy.

Jo Pinkster has contributed to international co-operation in research by membership of committees of ITTC and ISSC. In the Netherlands, he served as Secretary to the Offshore Department and Chairman of the Marine Technology department of the Royal Institute of Engineers.

In 2008, he was awarded the ASCE OTC Hall of Fame Award for Pioneering Innovation. He has published approximately 70 papers on subjects related to the behaviour of floating offshore structures in waves, dynamic positioning and (more recently) on the effects of passing vessels on moored ships.

Johan E.W Wichers Symposium on ‘Mooring of Floating Structures in Waves’

Johan Wichers received his MS degree in Coastal and Offshore Engineering in 1973 and his PhD in Applied Mathematics in 1988, both from the University of Technology of Delft. Johan Wichers started as Project Manager in the Offshore Department of MARIN in 1973. From 1989 to 1998, he was the Manager of the Seakeeping and Offshore Project Department. Johan Wichers was initiator of the new basins of MARIN and as a result he was strongly involved in the design of the new facilities from 1993 to 1998. In 1998, he became Vice President of MARIN and managed the MARIN affiliation in Houston.

The contribution of Johan Wichers to the fields of mooring of floating structures in wave, wind and current made a profound impact in the way the design of moorings systems were carried out. His personal contributions included the development of the concept of wave drift damping which was found to be a crucial element in the assessment of the extreme loads in the mooring. He also pioneered in many studies on the viscous contributions induced by the low frequency motions. He was also mainly responsible for the development of the MARIN mooring programs for SPMs, jetty moorings and moored FPSOs. He published more than 60 papers on the topic of floating moored structures.

Since 2006, he is President of WMooring, Inc., a consultancy office in Houston, Texas. In 2007, he was awarded the Fellowship of the SNAME and received in 2010 the ASCE OTC Hall of Fame Award for Pioneering Innovation and Lasting Impact for OTC Paper No. 2548, 1976.
Invited Plenary Lectures

Date: Monday, June 20
Time: 10:30 – 12:00
Location: Rotterdam Hall

Deep Sea Mining: From the Experimental to the Industrial Phase
Jan Willem van Bloois, General Manager, IHC Deep Sea Dredging & Mining

IHC Deep Sea Dredging & Mining (IHC DSDM, part of IHC Merwede) designs, builds and maintains high quality, remotely operated marine excavation and slurry transport systems. The largest technical challenge in this sector is to define the parameters for the excavation process for deep water areas (>2000m). However, the existing offshore industry can support the design process with know-how, for example, about riser technology. New to develop are the vertical ore transport systems (pumping technology). Lab tests, simulations (DEM) and CFD are important aspects in the development of the deep water mining installations, whereas DEM simulations are of particular importance in defining rock characteristics in relation to the excavation process.

Jan Willem has over 25 years experience performing various management functions within engineering and business development. Holding a Bachelor’s degree in Mechanical Engineering, technology has always been his passion. In his career, this has expressed itself in companies associated with high end technology like Fontijne Holland and IHC Merwede. At IHC Merwede, he has been responsible for the engineering and production of the first deep water dredging installations and the set up of a new global network of service and support activities. He started his current position in 2007 with the assignment of the development of the new market for the deep sea mining industry including new technology as an extension of the IHC Merwede’s product portfolio.
Floating Supports for Offshore Wind: Small Structures – Big Challenges
Wim de Boom, Product Manager, SBM GustoMSC

The market outlook for offshore wind farms on floating supports is very positive. However, large scale application of floating support structures requires careful planning based on offshore industry knowledge. System dynamics, mooring configuration and cable technology all have to be understood, while in the end the overall concept has to fit within tight commercial boundaries.

Wim de Boom started his career in 1976 with MARIN, the Maritime Research Institute Netherlands. As a project manager in the Offshore Section of MARIN, he was involved in many frontier developments in the offshore industry. In 1986, he joined SBM Inc. in Monaco, dealing with various types of mooring systems in SBM’s Concept Department. In 1990, he relocated to the Netherlands to GustoMSC, the Dutch operating company of the SBM Offshore Group. Since 2009, he has been responsible for product development at GustoMSC, and liaises with SBM Inc. in Monaco for the group’s interests in renewable energy, when it concerns Offshore Wind.

Mr. De Boom has a Master’s degree in Civil Engineering from the Delft University of Technology. He currently chairs the Section Offshore Technology of KIVI NIRIA, the Royal Institute of Engineers in the Netherlands.

Managing Innovation in Salvage: R&D in an Increasing Complex Environment
Bert van der Velden, Manager, Innovation & Business Development, SMIT Salvage

There are three main drivers for innovation in modern marine salvage. The first seeks greater efficiency in the performance of a salvage operation. The second one is public awareness for the necessity of a sustainable marine environment. The third (and perhaps the single most important stimulus) addresses new challenges in salvage, particularly those arising from the rapid growth of scale of (container) ship design and the prospects of ever larger and more complex vessels. This lecture reflects on these technical developments in the salvage industry related to the developments in the shipping, offshore and subsea industry.

As Manager, Innovation & Business Development at SMIT Salvage, Bert van der Velden is responsible for the development and implementation of innovative solutions in SMIT’s worldwide salvage operations and environmental care services to the industry. Prior to working for SMIT Salvage, he worked for more than ten years in various positions in the international port industry providing turn key container handling systems. Mr. van der Velden has a Master’s degree in Mechanical Engineering from the Delft University of Technology.
GustoMSC is a leading design and engineering company for mobile offshore units like jack-ups, semi-submersibles, ships and barges. We deliver turn-key special mechanical equipment associated with our designs, such as heavy lift offshore cranes, jacking systems and skidding systems. Our scope covers a wide range of activities ranging from feasibility studies, basic-/detailed engineering, project management services to procurement services. As member of the SBM Offshore Group, GustoMSC is also responsible for the design and engineering of complete FPSO’s and FLNG units.

Technology Creating Value
www.GustoMSC.com
Short Courses

Ice Engineering
Date: Saturday, June 18
Instructors: Walter L. Kuehnlein, Ph.D., Managing Director, sea2ice; Ibrahim Konuk, Director of Arctic Engineering, Technip USA

Course Topics:
• Different kinds of ice
• Ice failure modes
• Design philosophies in ice
• Overview of empirical approaches to determine ice loads
• Forces and consequences due to ice
• Ice model tests and examples
• Short introduction of theoretical ice models

Fundamentals of Model Testing
Date: Saturday, June 18
Instructors: Hans Cozijn, MARIN; Jaap de Wilde, MARIN; Janou Hennig, MARIN

Course Topics:
• Wave calibration and analysis
• Current modeling and calibration

Fundamentals of Deepwater Riser Engineering
Date: Sunday, June 19
Instructor: Kieran Kavanagh, Group Technology Director, MCS Kenny

Course Topics:
• Overview of riser types
• Codes of practice
• Construction and testing
• Fundamental concepts of riser engineering
• Riser design
• Riser selection
• Installation

Fundamentals of Deepwater Project Development
Date: Sunday, June 19
Instructor: Frank Lim, 2H Offshore; Phil Howe, Granherne

Course Topics:
• Field development planning process
• Deepwater project development
• Introduction to floating production systems
• Overview of subsea systems
• State of the art riser technology

Fundamentals of Dynamic Positioning
Date: Sunday, June 19
Instructors: Olaf Waals and Hans Cozijn, MARIN; Riaan van’t Veer and Michael Gachet, GustoMSC

Course Topics:
• DP system design
• Wind, wave and current loads
• Thruster allocation
• Thruster interaction
• Kalman filtering
• Control methodology
• Relative DP of offloading operations
• Tools and testing

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REALIZING THE INCONCEIVABLE
Conference Social Events

Welcome Reception
Date: Sunday, June 19
Time: 18:00 – 20:00
Location: Shipping Hall
Join your colleagues for a drink and a chance to see old and new friends at the Welcome Reception. The Welcome Reception is your first opportunity to network at OMAE 2011, as well as your first of many occasions to enjoy Dutch cuisine with a selection of delicious appetizers. Admission to the Welcome Reception is included for all attendees registered for the Full Conference and Accompanying Persons.

Luncheons
OMAE 2011 is pleased to provide lunch on all four conference days, and would like to thank our lunch sponsors for the financial support to make this possible. All four luncheons are open to all attendees where lunch is included in their fee.

Opening Luncheon
Sponsored by Transocean Offshore Deepwater Drilling Inc
Date: Monday, June 20
Time: 12:00 – 13:30
Location: Exchange Hall

Awards Luncheon
Sponsored by Shell International Exploration and Production B.V.
Date: Tuesday, June 21
Time: 12:00 – 13:30
Location: Exchange Hall

Networking Luncheon
Sponsored by Heerema Marine Contractors
Date: Wednesday, June 22
Time: 12:00 – 13:30
Location: Exchange Hall

Technical Session Organizers Luncheon
Sponsored by SBM Offshore / GustoMSC
Date: Thursday, June 23
Time: 12:00 – 13:30
Location: Exchange Hall
Open to all attendees!

Networking Drinks
Sponsored by IHC Merweede
Date: Monday, June 20
Time: 17:30 – 19:00
Location: Shipping Hall
The reception is in Old Dutch style.

Rotterdam Boat Tour
Sponsored by Huisman Equipment B.V.
Date: Tuesday, June 21
Time: 12:00 – 13:30
Location: Exchange Hall
Awards Luncheon
Sponsored by Shell International Exploration and Production B.V.
Date: Tuesday, June 21
Time: 12:00 – 13:30
Location: Exchange Hall
Opening Luncheon
Sponsored by Transocean Offshore Deepwater Drilling Inc
Date: Monday, June 20
Time: 12:00 – 13:30
Location: Exchange Hall

Maritime Banquet
Date: Wednesday, June 22
Time: 19:00 – 23:00
Location: Maritime Museum, Leuvehaven 1, Rotterdam
Admission to the Maritime Banquet is included, if selected in the registration form, for all paying attendees except for students and one-day registrants.

Brazilian Farewell Drinks
Date: Thursday, June 23
Time: 17:30 – 20:00
Location: Rotterdam Hall
On Thursday afternoon a Brazilian farewell reception will be held, as a bridge to OMAE 2012 in Rio (with a Brazilian act, so don’t leave early!)

Refreshment Breaks
Refreshment breaks will take place in the Shipping Hall amongst the exhibits. The breaks occur from 10:00 to 10:30 and from 15:00 to 15:30 each day.

Accompanying Persons Program
The Accompanying Persons Program includes admission to the Welcome Reception, the Rotterdam Boat Tour, and the Sightseeing Tours taking place daily. Please see pages 84-85 for details on the Sightseeing Tours. An additional fee is requested for participation in the Sightseeing Tours. For more information, visit the Registration Desk.
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With an expanding classed fleet in excess of 170m gt and the largest presence of any classification society within the offshore sector, ABS continues to meet the evolving needs of the marine and offshore industries. Drawing on the cumulative experience gained throughout its 150 year history, ABS offers a comprehensive, integrated suite of technical and safety related standards, products and services to its clients. The class society maintains nearly 200 offices in 70 countries. Its 3,000 strong workforce includes a global network of skilled surveyors and engineers who provide practical solutions to ship owners, shipyards and offshore rig builders.

SBM Offshore / GustoMSC

GustoMSC is a leading design and engineering company for mobile offshore units like jack-ups, semi-submersibles, ships and barges. We deliver turn-key special mechanical equipment associated with our designs, such as heavy lift offshore cranes, jacking systems and skidding systems. Our scope covers a wide range of activities ranging from feasibility studies, basic / detailed engineering, and project management services to procurement services. As a member of the SBM Offshore Group, GustoMSC is also responsible for the design and engineering of complete FPSOs and FLNG units.

Gold Sponsors

Heerema Marine Contractors Nederland B.V. (HMC)
www.hcm.heerema.com

HMC is a world leading marine contractor in the offshore oil and gas industry. HMC transports, installs and removes all types of offshore facilities. These include fixed and floating structures, subsea pipelines and infrastructures in shallow waters, deep and ultra deep waters. We manage the entire supply chain of offshore construction, from design through to completion.

Huisman

Huisman Equipment B.V.
www.huismanequipment.com

Huisman is a privately owned company operating globally with extensive experience in the design and manufacturing of heavy construction equipment for the world’s leading on and offshore companies. Our product range can be subdivided into five main categories: heavy lifting equipment, drilling equipment, pipelay equipment, winches and special products. The product range varies from stand-alone components to highly engineered integrated systems. Our operations are divided between our offices in the Netherlands, Brazil, China, Czech Republic and USA and our production facilities in the Netherlands, Czech Republic and China.

IHC Merwede

The Offshore Division of IHC Merwede is focussed on the continuous development, design and construction of reliable, custom-built assets for the specialist oil and gas market. It is a low-risk, one-stop shop for the best design consultancy, product offering and finance package supplied to customers in the offshore market. IHC Merwede has in-house expertise for engineering and manufacturing innovative vessels and advanced equipment, as well as providing life-cycle support. Its integrated systematic approach has helped to develop optimum product performance and long-term business partnerships. The company’s production facilities can accommodate the construction of large new-build vessels and it can also build vessels in other locations around the world.

Shell International Exploration and Production B.V. (Shell)
www.shell.com

Shell is a global group of energy and petrochemical companies, headquartered in the Netherlands. Our strategy seeks to reinforce our position as a leader in the oil and gas industry in order to provide a competitive shareholder return while helping to meet global energy demand in a responsible way. In Upstream, we focus on exploring for new oil and gas reserves and developing major projects where our technology and know-how adds value to the resource holders. In Downstream, our emphasis remains on sustained cash generation from our existing assets and selective investments in growth markets.
Keppel Verolme

Keppel Verolme, a member of Keppel Offshore & Marine Limited, operates a comprehensive yard in Rotterdam, the Netherlands. Keppel Verolme is growing its presence in research and development in the oil and gas and renewable energy sectors utilising the know-how of Keppel Offshore & Marine Technology Centre (KOMtech). With technology innovation and custom made solutions, the research engineers in Rotterdam and Singapore jointly develop the technologies for this field in offshore engineering.

Maritime Research Institute Netherlands (MARIN)

MARIN is a research institute in the field of hydrodynamical and nautical aspects of ships and offshore structures. The services incorporate a unique combination of simulation, model testing, full-scale measurements and bridge training programmes. MARIN has six main testing facilities (Offshore Basin, Seakeeping and Manoeuvring Basin, Shallow Water Basin, Deep Water Towing Tank, High Speed Basin, and Depressurised Towing Tank) and two main bridge simulators. As an independent institute, MARIN organizes a large number of Joint Industry Projects (JIPs).

Seaway Heavy Lifting

Seaway Heavy Lifting Engineering B.V.

SHL is a well-known offshore installation contractor that specializes in the installation and removal of offshore oil and gas platforms, subsea structures and windmill parks. Our crane vessel Stanislav Yudin, with a lift capacity of 2500mt, has worked in geographical areas of the world such as the North Sea, the Mediterranean, the Middle East, Asia and India. Our new crane vessel, Oleg Strashnov, with a 5000mt lift capacity, enables us to carry out even larger projects throughout the world.

Transocean Offshore Deepwater Drilling Inc. (Transocean)

Transocean is the world’s largest offshore drilling contractor and the leading provider of drilling management services. With a fleet of 139 mobile offshore drilling units plus three announced ultra-deepwater newbuild units, the company’s fleet is considered one of the most modern and versatile due to its emphasis on technically demanding segments of the offshore drilling business. The company owns or operates a contract drilling fleet of 47 High-Specification Floaters, 26 Midwater Floaters, 10 High-Specification Jackups, 54 Standard Jackups and other assets utilized in the support of offshore drilling activities worldwide. Transocean, which is incorporated in Switzerland, has more than 18,000 employees worldwide.

Vuyk Engineering Rotterdam B.V. (VER)

VER provides consultancy and design services in the areas of ship design, equipment design, marine operations and building supervision. VER is specialized in work vessels for the offshore, dredging and heavy lift market sectors. Moreover, VER has broad experience in operational engineering for installation, abandonment, transports, load-outs and salvage operations. Recently VER developed some promising innovative concepts for the offshore wind market, such as a floating WTG vessel, a blade installation tool and a jacking system.
Allseas Group S.A.
www.allseas.com
The Swiss-based Allseas Group is one of the major offshore pipelay and subsea construction companies in the world, operating six specialised vessels, which were designed in-house. We provide worldwide support to clients from the conceptual design stage to engineering, procurement, installation and commissioning. In June 2010, the contract for building Pieter Schelte, the biggest platform installation / decommissioning and pipelay vessel in the world, was awarded to the Korean shipyard Daewoo. Delivery of the completed vessel is expected in 2013.

Dockwise
www.dockwise.com
Dockwise is the leading marine contractor providing total transport services to the offshore, onshore and yachting industries as well as installation services of extremely heavy offshore platforms. Dockwise owns a fleet of 19 purpose built semi-submersible vessels and delivers six services: heavy marine transport, transport and installation, logistical management, engineering services, offshore installation equipment, and yacht transport.

FloaTEC LLC
www.floatec.com
FloaTEC, a joint venture of McDermott and KeppelFELS, boasts an unmatched portfolio of multiple FPS solutions providing unbiased and concept-neutral engineering to support the deepwater industry. FloaTEC delivers deepwater dry and wet tree FPS solutions. Through execution of technical feasibility studies, conceptual design and FEED, FloaTEC’s objective is to ultimately capture EPC contracts and create pull through opportunities for its parents through a structured approach of developing a winning execution and contracting strategy, aligned with our clients’ goals and values.

Bosch Rexroth B.V.
www.boschrexroth.com/offshore
Bosch Rexroth is one of the world’s leading specialists in the field of drive and control technologies. The company offers a large portfolio of specialized and integrated products to the offshore industry. It comprises systems for heave compensation, heavy lifting, jacking, skidding, decommissioning or deck mating. Typical products are riser tensioner cylinders but also specially designed hydraulics fit for deep sea exploration. Depending on customer needs, Bosch Rexroth can deliver ‘one-stop shop’ solutions, including project management, application engineering, on-site commissioning, training and lifecycle services in more than 80 countries all over the world.
take five
Exhibition

Visit the exhibits located in the Shipping Hall to discover new products and services from some of the industry’s leading organizations. Coffee and tea will be served amongst the exhibits during Refreshment Breaks.

Altair Engineering, Inc.
www.altairhyperworks.com

A Platform for Innovation™

Altair’s simulation platform, HyperWorks®, delivers advanced design analysis capabilities including AcuSolve™, a well-recognized brand in the offshore oil industry with highly validated CFD solutions for platform VIM, FPSO/semi-sub spar VIM and interactions, riser VIV, spooler VIV, pipeline VIV, flow assurance, drill string integrity, reservoir heat transfer, LNG piping, and LNG heat exchanger.

Association of Dutch Suppliers in the Oil & Gas Industry (IRO)
www.iro.nl & www.iro-noc.nl

Since its foundation in 1971, IRO has promoted the interests of the Dutch supply and service companies in the upstream oil and gas industry. Members cover all activities involved in the supply industry, such as engineering, field development, pipeline installation, maintenance, manufacturing and material and equipment supply, onshore as well as offshore. IRO represents the interests of 350 member companies.

ASME-International Petroleum Technology Institute (IPTI)
www.asme-ipti.org

IPTI was founded to provide mechanical engineers working in the areas of Petroleum, Natural Gas, Petrochemicals, Coal, Oil Shale, and others with the opportunity to participate in technical workshops and conferences while fostering the continued growth of engineering education and promotion of mechanical engineering as a career choice. IPTI is comprised of three ASME technical communities the Petroleum Division (PD), the Pipeline Systems Division (PSD) and Ocean, Offshore and Arctic Engineering (OOAE).

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Huisman Equipment B.V.
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Mammoet Europe B.V.
www.mammoet.com

Mammoet is the world’s leading tailor-made heavy lifting and multimodal transport solutions specialist. Our core business is the transport, shipping, installation (including horizontal and vertical positioning) and removal of heavy or large objects, to and from any location, onshore and offshore. Mammoet’s activities are focused on the petrochemical industry, civil engineering projects, the power generation sector, and offshore and marine projects. Our engineering skills, experience, thousands of highly skilled professionals and a vast fleet of state-of-the-art equipment, combined with high quality and safety standards, have made Mammoet a market leader, setting trends and records around the world.
Orcina Limited
www.orcina.com

Orcina is a professional engineering software house. Our main product is OrcaFlex, the market leading numerical simulation program for modelling a wide range of offshore dynamic systems, including flexible and rigid risers, moorings, cable and pipe lay, pipeline pull-in, towed arrays, installation analysis and many other systems. We also undertake feasibility and design studies, design audit, and engineering systems analysis.

Seaway Heavy Lifting Engineering B.V. (SHL)
www.shl.nl

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TNO
www.tno.nl/maritime

TNO is one of Europe’s largest independent providers of applied research and technical consultancy. In the area of maritime and offshore, TNO assists companies and government within six themes: reduction of energy consumption, environmental performance, safety and comfort, reliability and operation, structures and materials, and (offshore) liquefied natural gas. TNO maintains a leading position in these areas through the development of knowledge, testing facilities and cooperation with international partners.

Our equipment offers you enhanced solutions

Huisman is a privately owned, globally operating company with extensive experience in the design and manufacturing of state-of-the-art lifting, drilling and subsea solutions for world’s leading on- and offshore companies. The majority of our clients require tailor made solutions and we gladly accept the challenge to design, develop and deliver a unique product that fits their specific needs. Our in-house design and engineering expertise along with our production, testing, commissioning and installation facilities enable us to deliver custom-designed equipment on a turnkey basis. From concept to delivery: on time, within budget and ready for commercial operation.

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Important Conference Information

Registration
The OMAE 2011 Registration Desk will be located in the Mercurius Hall and is open during the following hours:

- Sunday, June 19: 13:00 - 20:00
- Monday, June 20: 07:00 - 16:00
- Tuesday, June 21: 07:00 - 16:00
- Wednesday, June 22: 08:00 - 16:00
- Thursday, June 23: 08:00 - 16:00

Name Badges
In addition to being a means of identification to colleagues, you are required to wear your name badge for admission to conference sessions and events. Room monitors will check name badges before allowing anyone into the session or event. Replacement badges are available at the Registration Desk at a cost of €25 per badge. On each name badge the type of registration is identified, and they are as follows:

- **Full Conference:** Attendees who have paid the author / member or non-member registration fee qualify for this badge. Attendees wearing this badge are entitled to admission to all conference sessions, daily refreshment breaks, the Welcome Reception, the Exhibition, four lunches, the Rotterdam Boat Tour and the Maritime Banquet. Full Conference attendees will also receive a conference bag, a final program and a CD of proceedings.
- **Daily Registration:** Attendees who have paid the one-day registration fee qualify for the badge representing the day they have selected to attend. Attendees wearing this badge are entitled to the following on the day they have selected to attend: admission to conference sessions, refreshment breaks, the Exhibition, food and beverage served on the specified day, and the Rotterdam Boat Tour, excluding the Maritime Banquet. Daily conference attendees will also receive a conference bag, a final program and a CD of proceedings.
- **Student Registration:** Attendees who have paid the student registration fee qualify for this badge. Attendees wearing this badge are entitled to admission to all conference sessions, daily refreshment breaks, the Welcome Reception, the Exhibition, four lunches, and the Rotterdam Boat Tour. Students were able to register separately for the Maritime Banquet. If you have not registered but wish to attend the Banquet, please enquire at the Registration Desk. The cost for the dinner €100. Student attendees will also receive a conference bag, a final program and a CD of proceedings.
- **Accompanying Person:** Guests who have registered as an accompanying person qualify for this badge and are entitled to admission to the Welcome Reception, the Sightseeing Tours and the Rotterdam Boat Tour. An additional fee is requested for participation in the Sightseeing Tours.
- **Exhibitors:** Exhibitors have access to the Exhibition and to daily refreshment breaks and lunches served by the conference. Access to conference sessions, the Maritime Banquet and the Rotterdam Boat Tour are not included in the exhibitor badge.

Creating innovative assets for challenging projects

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Certificate of Attendance
All conference attendees of OMAE 2011 will receive a certificate of attendance with their name badge upon registration at the conference.

Conference Evaluation
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Every effort will be made to ensure that all sessions start and end on time. Presenters and conference attendees are all asked to work together to achieve this. This may mean having to cut short a valuable discussion; however, conference organizers request your cooperation for the benefit of all attendees. Please turn your cell phone and other noise making devices off or set to vibrate.

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Detailed Program

Monday, 13:30–15:00

**Offshore Technology Symposia**

1-14 Offshore Technical Challenges – I  Monday June 20  Penn I  13:30–15:00

Session Chair: Alexandre N. Simos, Numerical Offshore Tank, University of São Paulo, Brazil
Session Co-Chair: Denby Morrison, Shell International E&P, USA

Past, Current and Future Offshore Challenges  OMAE2011-50352
Denby Morrison
Shell International Exploration and Petroleum, Houston, TX, USA

A New Interpolation Method for FPSO Motion and Wave Drift Load Transfer Functions  OMAE2011-49285
Stephanie Stafrach1 Mamoun Naciri1
1. Single Buoy Moorings, Monaco; 2. SBM Offshore, Monaco

Experimental Investigation of Flow Induced Rotation of Hinged Plates with Shapes to AvoidFluttering  OMAE2011-50181
Antonio C. Fernandes1 Sina M. Sefta1 Fabio M. Coelho1 Amanda A. Albuquerque1
1. Federal University of Rio de Janeiro, Rio de Janeiro, RJ, Brazil; 2. COPPE/UFRJ, Rio de Janeiro, RJ, Brazil; 3. PETROBRAS, Rio de Janeiro, RJ, Brazil

Numerical Wave Tank Analysis of Air Gap on a Truncated Vertical Cylinder  OMAE2011-50283
Jang Whan Kim1 Rajeev Jaiman2 Steve Cosgrove2 Jim O'Sullivan1
1. Technip, Houston, TX, USA; 2. ACUSIM Software, Inc., New York, NY, USA

**Structures, Safety and Reliability Symposia**

2-14 Reliability of Marine Structures – I  Monday June 20  Mees Auditorium  13:30–15:00

Session Chair: Sang-Rai Cho, University of Ulsan, Korea
Session Co-Chair: Alberto Morandi, American Global Maritime Inc., USA

Reliability-Based Analysis and Design of a Ship Hull Beam with the Simplified Load and Strength Models  OMAE2011-49735
Wenbo Huang
Harbin Engineering University, Harbin, Heilongjiang, China

Potential Impact of Climate Change on Tanker Design  OMAE2011-50162
Elzieta Maria Bitner-Gregersen, Torfinn Harte, Rolf Skjong
Det Norske Veritas, Havik, Norway

Assessing Structural Safety of Inner Hull Structure Under Cryogenic Temperature  OMAE2011-50311
Sangmin Han, Junhong Bar, Kihun Jho, Yong Suk Suh, Jae-Kwang Eom
Samsung Heavy Industries, Goeje-Si, Korea

Efficient System Reliability Analysis by Finite Element Structural Models  OMAE2011-49950
Arvid Naess1 Bernt Leia1 Carlos Guedes Soares1 Bruno Gaspar4
1. Technical University of Lisbon, Lisbon, Portugal; 2. Norwegian University of Science and Technology, Trondheim, Norway; 3. Centre for Ships and Ocean Structures in Norwegian University of Science and Technology, Trondheim, Norway; 4. IST, Lisbon, Portugal

**Materials Technology Symposia**

3-18 Fatigue Performance in Sour Service  Monday June 20  Town Hall  13:30–15:00

Session Chair: Myung Hyun Kim, Pusan National University, Korea
Session Co-Chair: Stephen Liu, Colorado School of Mines, USA

Corrosion Fatigue Performance of High-Strength Riser Steels in Seawater and Sour Brine Environments  OMAE2011-50177
Stephen J Hudak Jr1 Gradalupe B. Robledo1 Jeffrey Hawk1
1. Southwest Research Institute, San Antonio, TX, USA; 2. DOE National Energy Technology Laboratory, Albany, OR, USA

Consistent Endurance Fatigue Knockdown Factors for Sour Service from Industry-Wide Database  OMAE2011-50204
Weiwei Yu, Pedro Vargas, Jonathan Bowman
Chevron Energy Technology Co, Houston, TX, USA

Fatigue Performance of Sour Deepwater Riser Welds: Crack Growth vs. Endurance  OMAE2011-49581
Colum Holttam1 David Baxter2
1. Atkins Oil and Gas, Aberdeen, UK; 2. TWI North America, LLC, Houston, TX, USA

A Modelling Framework for Describing the Corrosion Fatigue Behaviour of Carbon Steel Pipelines and Risers  OMAE2011-49537
David Baxter
Atkins Oil and Gas, Aberdeen, UK
**Pipeline and Riser Technology Symposia**

4-1 Design and Analysis – I

**Monday June 20**  
**Antwerp | 13:30–15:00**

**Session Chair:** Vincent Olunloyo, University of Lagos, Akoka, Lagos, Nigeria  
**Session Co-Chair:** Olav Aamid, DNV, Norway

**Pipeline Risk Assessment Using Analytic Hierarchy Process (AHP)** OMAE2011-49033  
Siouf F. Yasseri1, R.B Mahani1  

**Differential Burst Pressure of Marine Pipelines as an Independent Layer of Protection** OMAE2011-49034  
Siouf F. Yasseri1, R.B Mahani1  

**Design Methodology for Axial Force Response of Pipe-in-Pipe – A Probabilistic Approach** OMAE2011-49184  
Olav Fynliev, Mark Marley, Sane Pettersen  
Det Norske Veritas, Hovik, Norway

**The Effect of the Seabed Proximity on the Hydrodynamic Forces of the Piggyback Pipeline under Wave Action** OMAE2011-49120  
Xiaofei Cheng, Yonggue Wang, Guoyu Wang  
Dalian University of Technology, Dalian, Liaoning, China

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**Pipeline and Riser Technology Symposia**

4-16 On-Bottom Behavior and Pipe-Soil Interaction – I

**Monday June 20**  
**New York | 13:30–15:00**

**Session Chair:** Daniel Carneiro, Bureau Veritas, Brazil  
**Session Co-Chair:** Ayman Eltaher, MCS Kenny, USA

**Pipeline On-Bottom Stability Analysis Based on FEM Model** OMAE2011-49384  
Bai Yong1, Yu Zhimeng2  
1. Zhejiang University, Zhejiang, China; 2. Harbin Engineering University, Harbin, Heilongjiang, China

**Inline and Vertical Wave Force Variation Due to Burial of Submarine Pipeline in Random Wave Fields** OMAE2011-49431  
Neelamani Subramaniam, Khaled Al-Banaa  
Kuwait Institute for Scientific Research, Kuwait, Kuwait

**Advanced FEA for Span Mitigation Analysis** OMAE2011-50239  
James Wang, Ranil Banneyake, Paul Jukes, Ayman Eltaher, Shawn Huang  
MCS Kenny, Houston, TX, USA

**Effect of Vertical Loading on Unburied Offshore Pipeline Stability on Carbonate Seabed** OMAE2011-49530  
Tomiya Takatani  
Maizuru National College of Technology, Maizuru, Japan

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**Ocean Space Utilization Symposia**

5-7 Aquaculture and Related Technology – I

**Monday June 20**  
**Goudriaan II | 13:30–15:00**

**Session Chair:** Arne Fredheim, SINTEF Fisheries and Aquaculture, Norway

**Simulation of a High-Energy Finish Aquaculture Site Using a Finite-Element Net Model** OMAE2011-49410  
Ryan Nicoll1, Dean Steinkes1, Brad Backham1, Joseph Atta1, Andre Ray1  
1. Dynamic Systems Analysis Ltd., Halifax, NS, Canada; 2. Dynamic Systems Analysis Ltd., Halifax, NS, Canada

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**Ocean Engineering Symposia**

6-1 Wave Mechanics and Wave Effects – I

**Monday June 20**  
**Leeuwen I | 13:30–15:00**

**Session Chair:** Christian Schmittner, MARIN, Netherlands  
**Session Co-Chair:** Thomas Schellin, Germanischer Lloyd, Germany

**Velocity, Pressure, and Dam-Break Similarity of Green Water Flow on a 3D Structure** OMAE2011-49053  
Kuang-An Chang, Kusalika A. Ariyaratne, Richard Mercier  
Texas A&M University, College Station, TX, USA

**A Design Procedure for Evaluating the Air-Gap on Semi-Submersible Platforms** OMAE2011-49256  
Fábio T. Matsumoto1, Joao V. Sperano2, Rafael A. Watali1  
Alexandre N. Simos1, Marcos D.A.S. Ferreira1  
1. Numerical Offshore Tank, University of São Paulo, São Paulo, SP, Brazil; 2. Petrobras Research Center (CENPES), Rio de Janeiro, RJ, Brazil

**Internal-Wave Sloshing in Triangular-Shaped Containers: A Numerical Study** OMAE2011-49439  
Daniel T. Valentine  
Clarkson University, Potsdam, NY, USA

**Infrafragravity Waves Induced by Short-Wave Groups in Coastal Regions Characterized by General Bottom Topography** OMAE2011-49280  
Kostas Belibassakis  
School of Naval Architecture & Marine Eng, Athens, Greece

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**Ocean Engineering Symposia**

6-3 Advanced Ship-Hydromechanics/Marine Technology – I

**Monday June 20**  
**Leeuwen II | 13:30–15:00**

**Session Chair:** Ronald W. Yeung, University of California at Berkeley, USA  
**Session Co-Chair:** Solomon Yim, Oregon State University, USA

**Comparative Study of Hydroelastic Impact for One Free-Drop Wedge with Stiffened Panels by Experimental and Explicit Finite Element Methods** OMAE2011-49209  
Hanbing Luo1, Hui Wang1, Carlos Guedes Soares1  
1. Technical University of Lisbon, Lisboa, Portugal; 2. China Ship Scientific Research Center, Wuxi, China

**Time Domain Analysis of Sprunging and Whipping Responses Acting on a Large Container Ship** OMAE2011-49218  
Yongwon Lee, Zhenhong Wang, Nigel White, Spyros E. Hirdaris  
Lloyd's Register, London, UK

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Systems Analysis Ltd., Victoria, BC, Canada; 3. University of Victoria, Department of Mechanical Engineering, Victoria, BC, Canada

**Experimental Studies and Numerical Modeling of Copper Nets in Marine Environment** OMAE2011-49761  
Igor Tsukrov, Andrew Drach, Judson DeCew, M. Robinson Swift, Barbaros Celikok, Kenneth C. Baldwin  
University of New Hampshire, Durham, NH, USA

Sho Ito, Takeshi Kinoshita, Daisuke Kitazawa, Weiguang Bao, Hiroshi Itakura  
University of Tokyo, Tokyo, Japan
An Improved Anti-Diffusive VOF Method to Predict Two-Fluid Free Surface Flows
Yigen Chen, W.G. Price, Pandeli Temarel
University of Southampton, Southampton, UK

Ocean Renewable Energy Symposia

9-1  Ocean Renewable Energy – (Opening Session)

Monday June 20  |  Van Oldenbarnevelt  |  13:30–15:00

Session Chair: Charles Smith, Petroleum Research Atlantic Canada, Canada
Session Co-Chair: Teresa Pontes, IDMEC / IST, Portugal

Accelerating the Deployment of Offshore Renewable Energy Technologies (ADORET) – Presentation, Findings and Recommendations
Gregory Dudziak1 Christos Koliatsas1 Julia Schaefer1 Noah Myers2
1. Mott MacDonald, Glasgow, Scotland, UK; 2. Mott MacDonald, Brighton, UK

Technological Alternatives to Extract Marine Energy in Colombia
OMAE2011-49275
Julio Correa, Diego Florez, Raul Valencia, Norha Posada, Carlos Zuluaga
Universidad Pontificia Bolivariana, Medellin, Colombia

Modeling Wave Energy Resources in the Irish West Coast
OMAE2011-50346
A Rute Bento1 Carlos Guedes Soares1 Paulo Martins1 Ricardo Campos2
1. Technical University of Lisbon, Lisbon, Portugal; 2. Technical University of Lisbon, Instituto Superior Técnico, Lisbon, Portugal

Marine Scour and Offshore Wind – Lessons Learned and Future Challenges
OMAE2011-50117
John M. Harris, Richard J.S. Whitehouse, James Sutherland
HR Wallingford, Wallingford, UK

Offshore Geotechnics Symposia

10-1  General Offshore Geotechnics

Monday June 20  |  Blue  |  13:30–15:00

Session Chair: Mehmet Ulker, North Carolina State University, USA

A Review of Foundation Concepts for In-Stream Tidal Turbine Systems
OMAE2011-49497
Timothy Newton1 Peter Larkin2 Robert Maynard3
1. University of Western Ontario, London, ON, Canada; 2. Senergy, Bath, UK; 3. RM Associates, Falmouth, UK

The Effect of Drainage Condition on Measurements by a Piezoball Penetrometer
OMAE2011-50245
Hamed Mahmoodzadeh, Noel Boylan, Mark F. Randolph, Mark J. Cassidy
Centre for Offshore Foundation Systems–The University of Western Australia, Crawley, WA, Australia

Vertical and Horizontal Migration of Gas through the Marine Sediments of the Gulf of Mexico
OMAE2011-49073
Raul Nava1 Wilbert E. Koh Cambranis2 Paul Baerenwald3
1. Technical University of Lisbon, Lisboa, Portugal; 2. Senergy, Bath, UK; 3. RM Associates, Falmouth, UK

In-situ Sea Floor Site Characterization in the Gulf of California
OMAE2011-49788
Carlos I. Huerta-Lopez1 Rosalba S. Contreras-Porras2 Raul R. Castro-Escamilla3
1. CICESE/UPRM, San Ysidro, CA, USA; 2. CICESE, San Ysidro, CA, USA; 3. Autonomous University of Sinaloa, Culiacan, SI, Mexico

Engineering Properties of Carbonate Marine Sediments
OMAE2011-49422
Horst Brandes
University of Hawaii, Honolulu, HI, USA
Offshore Technology Symposia

1-15 Offshore Technical Challenges – II

Monday June 20

Session Chair: Antonio C. Fernandes, Federal University of Rio de Janeiro, Brazil
Session Co-Chair: Mamoun Naciri, Single Buoy Moorings, Monaco

A Multi-Domain Approach in 3-D Diffraction Calculations
Johannes Pinkster
PMH bv, Rotterdam, Netherlands

Assessing Hydrodynamic Behavior during Offshore Loading and Discharge in the Heave Marine Transport
Onno A.J. Peters1 René Huijsmans1
1. Delft University of Technology, Delft, Netherlands; 2. Dockwise, Delft University of Technology, Breda, Netherlands

An Efficient Time-Frequency Domain Solution Procedure for the Analysis of Offshore System
Fabrizio N. Corrêa, Breno Jacob
COPPE/UFRJ, Rio de Janeiro, RJ, Brazil

Comparative Study of Seakeeping Analysis Results from Various Methods
Sharad Dhavalikar
Indian Register of Shipping, Mumbai, MH, India

Monday, 15:30–17:30

Structures, Safety and Reliability Symposia

2-12 Probabilistic Response Modelling – II

Monday June 20

Session Chair: Ying Min Low, Nanyang Technological University, Singapore
Session Co-Chair: Arvid Naess, CeSOS/NTNU, Norway

Response of a Spar Platform under the Occurrence of Extreme Waves
Sharad Dhavalikar
Indian Register of Shipping, Mumbai, MH, India

Efficient Derivation of the Probability Distribution of the Extreme Values of Offshore Structural Response Taking Advantage of its Correlation with Extreme Values of Linear Response
Mehdi Khairi Abu Husain, Gholamhossein Najafian
University of Liverpool, Liverpool, UK

Long-term Distribution of the Extreme Values of Offshore Structural Response by Finite-memory Nonlinear System Modelling
Noor Irza Mohd Zakri, Gholamhossein Najafian
University of Liverpool, Liverpool, UK

Extremes of Nonlinear Vibration: Models Based on Moments, L-Moments, and Maximum Entropy
Steve Winterstein1 Cameron Mackenzie1
1. Stanford Continuing Studies, Stanford, CA, USA; 2. Oklahoma University, Norman, OK, USA

Some Bivariate Extreme Value Distributions for Marine Reliability Assessment
Bent Leira, Dag Myrhaug, Haavard Holm
Norwegian University of Science and Technology, Trondheim, Norway

Monday, 13:30–15:00 | 15:30–17:30
Ocean Engineering Symposia

6-19 Advanced Ship-Hyrdomechanics/Marine Technology – II

Monday June 20

Session Chair: Jeffrey Falzarano, Texas A&M University, USA
Session Co-Chair: Sander Calisal, University of British Columbia, Canada

Time Domain Simulation of Two Interacting Ships
Advancing Parallel in Waves OMAE2011-49484
Xu Xiang, Odd Magnus Faltinsen
Norwegian University of Science and Technology, Trondheim, Norway

Three-Dimensional Effects for a Ship Experiencing Large Amplitude Roll Motion OMAE2011-49493
Christopher Bassler1 Ronald Miller1
1. David Taylor Model Basin, NSWCDD, West Bethesda, MD, USA;
2. Naval Surface Warfare Center, Carderock Division, West Bethesda, MD, USA

Simulation of Ship Maneuvering in the Proximity of a Pier by Using Support Vector Machines OMAE2011-49444
Weilin Luo1 Zaqian Zou1 Hongliang Xiang2
1. Shanghai Jiao Tong University Dept. of Naval Architecture and Ocean Engineering, Shanghai, China; 2. Fuzhou University, Fuzhou, China

A Piecewise Model for Prediction of Large Amplitude Ship Roll Damping OMAE2011-49494
Christopher Bassler1 Arthur Reed1 Alan Brown2
1. David Taylor Model Basin, NSWCDD, West Bethesda, MD, USA;
2. Virginia Tech, Blacksburg, VA, USA

A Bem-Isogeometric Method with Application to the Wavemaking Resistance Problem of Ships at Constant Speed OMAE2011-49159
Kostas Belibassakis1 Theodoros Gerostathi2 K.V. Kostas1
Costas Politis1 P. Kaklis1 A. Ginnis1 C. Feurer1
1. School of Naval Architecture & Marine Eng, Athens, Greece; 2. Technological Educational Institute of Athens, Department of Naval Architecture, Athens, Greece;
3. Technological Educational Institute of Athens, Athens, Greece;
4. School of Naval Architecture and Marine Engineering, Athens, Greece

Ocean Engineering Symposia

6-3 Wave Mechanics and Wave Effects – II

Monday June 20 | Leeuwen I

Session Chair: Jang Whan Kim, Technip, USA
Session Co-Chair: Thomas Schellin, Germanischer Lloyd, Germany

Forces on Pairs of Closely Spaced Unequal Circular Cylinders in an External Flow OMAE2011-49194
Rodney Eatock Taylor
University of Oxford, Oxford, UK

Wave Patterns, Wave Induced Forces and Moments for a Gravity Based Structure Predicted Using CFD OMAE2011-49593
Worakanok Thanyamanta, Paul Herrington, David Molyneux
Oceanic Consulting Corporation, St. John's, NL, Canada

Laboratory Observation on the Evolution of Deep-Water Wave Packets OMAE2011-49290
Yuxiang Ma, Guohai Dong, Xiaohou Ma
Dalian University of Technology, Dalian, Liaoning, China

Higher Order Wave-Current Elevations in Deep Water OMAE2011-49675
Anne Katrine Bratland, Ragnvald Berresen, Per Ivar Barth Berntsen
Aker Solutions, Snaranya, Norway

Ocean Engineering Symposia

8-2 Cylinder VIV – II

Monday June 20 | Goudriaan I

Session Chair: Michael Bernitsas, University of Michigan, USA
Session Co-Chair: Vikas Jhingran, Shell Exploration and Production International, USA

Numerical Investigation of Vortex-Induced (VIV) Vibration of a Circular Cylinder in Oscillatory Flow OMAE2011-50074
Ming Zhao1 Liang Cheng1 Tongming Zhou2
1. School of Engineering, University of Western Sydney, Penrith, NSW, Australia; 2. University of Western Australia, Perth, WA, Australia

Further Investigations on Vortex Self Induced Vibration (VSV) OMAE2011-50187
Antonio C. Fernandes1 Sina M. Sefat1 Pedro Villarobias1 Luis Cascao2 Ricardo Francisco1
1. PETROBRAS, Rio de Janeiro, RJ, Brazil; 2. Federal University of Rio de Janeiro, Rio de Janeiro, RJ, Brazil; 3. COPPE/UFF, Rio de Janeiro, RJ, Brazil

Ocean Engineering Symposia

5-11 Aquaculture and Related Technology – II

Monday June 20 | Goudriaan II

Session Chair: Arne Fredheim, SINTEF Fisheries and Aquaculture, Norway

Tank Model Testing of a Fish-Cage Flotation/Submersion System Using Flexible Hoses OMAE2011-50240
Daisuke Kitazawa1 Yoichi Mizukami1 Masaaki Isobe1 Hiromi Kinoshita1
Mamoru Hirayama1 Satoshi Ikeda2 Yoto Takeuchi1
1. University of Tokyo, Tokyo, Japan; 2. TEC YM, Kanagawa, Japan; 3. SEA NET MI, Hitatsuka-shi, Japan;
4. Nichimo Corporation, Tokyo, Japan; 5. Nichimo Corporation, Yamaguchi, Japan

Response Characteristics of the Floating Water Purifier OMAE2011-49963
Kunihiro Ikekami1 Martin Baba1 Tomyhiro Yamasaki1

Reverse Simulation for Specifying the Source of Pollutants in Waters OMAE2011-50144
Daisuke Kitazawa, Satoshi Abe, Fujihiro Hamba, Shinsuke Kato
University of Tokyo, Tokyo, Japan

Flow Fields Inside Stocked Fish Cages and the Near Environment OMAE2011-50205
Lars Gansel1 Siri Rackebrandt1 Frode Oppedal1 Thomas A. McClamans2
1. Norwegian University of Science and Technology, Trondheim, Norway;
2. SINTEF, Trondheim, Norway;
3. Institute of Marine Research, Mardal, Norway;
4. C.xG. University in Oldenburg, Oldenburg, Germany

Ocean Engineering Symposia

6-19 Advanced Ship-Hyrdomechanics/Marine Technology – II

Monday June 20 | Leeuwen II

Session Chair: Takashi Okamoto1 Conceição Juana Fortes2
1. Hiroshima University, Higashi-Hiroshima, Japan; 2. National Laboratory of Civil Engineering (LNCE), Lisbon, Portugal
Numerical Study of the Influence of Initial Condition in the Vortex Induced Vibration of a Circular Cylinder with Two Degree of Freedom OMAE2011-50196
Bruno C Ferreira3 Marcelo Vitola2 Juan Wanderley1 Sergio H. Sphaier1
1. COPPE/UFRJ, Rio de Janeiro, RJ, Brazil; 2. Laboratório de Tecnologia Oceânica, Rio de Janeiro, RJ, Brazil; 3. LabOceano, Rio de Janeiro, RJ, Brazil

Experimental and Numerical Analysis of Forced Motion of a Circular Cylinder OMAE2011-49438
Decao Yin, Carl M. Larsen
Centre for Ships and Ocean Structures in Norwegian University of Science and Technology, Trondheim, Norway

Two-Dimensional Numerical Simulation of Flow Around Rectangular Structures with Different Aspect Ratios OMAE2011-49525
Xinliang Tian1 Muk Chen Ong2 Jianmin Yang1 Dag Myrhaug2
1. Shanghai Jiao Tong University, Shanghai, China; 2. Norwegian University of Science and Technology, Trondheim, Norway

CFD and VIV Symposia

8-4 Free Surface Flows
Monday June 20 Diamond I | 15:30–17:30
Session Chair: Allan Magee, Technip Geoproduction Malaysia, Malaysia
Session Co-Chair: Fahd Fatibi, SBM GustoMSC, Netherlands

Extreme Wave Impact on Offshore Platforms and Coastal Constructions OMAE2011-49488
Arthur Veldman1 Roel Lugger2 Tim Bunnik2 René Huismans2 Bulent Duz1 Bogdan Iwanowski1 Rik Wemmenhove1 Mart Borsboom2 Peter R. Wells2 Henri van der Heiden1 Peter van der Plas1
1. Delft University of Technology, Delft, Netherlands; 2. MARIN, Wageningen, Netherlands; 3. University of Groningen, Groningen, Netherlands; 4. Deltares, Delft, Netherlands; 5. FORCE Technology Norway AS, Sandvika, Norway

Sub-Critical Flow Pattern Around a Pier in Rectangular Open Channel OMAE2011-49287
Ali Yalpanian, Molhsen Goodarzi Bu-Alli Sina University, Hamedan, Iran

Surface Piercing Drag In CFD OMAE2011-49651
William Bowen, Keith Alexander University of Canterbury, Christchurch, New Zealand

Comparative Study of Slamming Loads on Cylindrical Structures OMAE2011-49048
Sridhar Vepa, Diederik Van Nuffel, Wim Van Paepegem, Jan Vierendeels Ghent University, Ghent, Belgium

A Numerical Investigation on 2D and 3D Sloshing Effects OMAE2011-50123
Miguel Celis1 Juan Wanderley2 Marcelo de Almeida Santos Neves1
1. Federal University of Rio de Janeiro, RJ, Brazil; 2. COPPE/UFRJ, Rio de Janeiro, RJ, Brazil

Ocean Renewable Energy Symposia

9-2 Wave Energy – I
Monday June 20 Van Oldenbarnevelt | 15:30–17:30
Session Chair: AbuBakir S. Bahaj, University of Southampton, United Kingdom
Session Co-Chair: Antonio Falcão, Technical University of Lisbon – Instituto Superior Tecnico, Portugal

The Adequacy of Phase-Averaged Models for Modelling Wave Farms OMAE2011-49610
Matt Folley, Trevor J.T. Whittaker Queen’s University, Belfast, UK

Study on Wave Power Generator Using Flexible Piezoelectric Device OMAE2011-49871
Hidemi Mutsuda, Kenta Kikukawaki, Masato Hirata, Yasuaki Doi, Yoshikazu Tanaka Hiroshima University, Hiroshima-Hiroshima, Japan

Numerical Studies on Floating OWC Hydrodynamics OMAE2011-49883
Wanan Sheng1 A.W. Lewis2 R. Alcorn1
1. University College Cork, Cork, Ireland; 2. Hydraulics & Maritime Research Centre, University College Cork, Cork, Ireland

Site Selection in Portugal for Offshore Wave Farms OMAE2011-50359
Teresa Pontes IDMEC/IST, Lisbon, Portugal
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Tuesday, 8:30–10:00

Offshore Technology Symposia

1-1 Floating Platforms – I

Tuesday June 21

Session Chair: Steve Leverette, SBM Atlantia, USA
Session Co-Chair: Jonas Ringsberg, Chalmers University of Technology, Sweden

Optimization of Corrugated Shell Plating for Marine Structures OMAE2011-50216
Jonas Ringsberg, Hüseyin Saglam, Md. Asaduzzaman Sarder, Anders Ulfvarson
Chalmers University of Technology, Gothenburg, Sweden

Effects of the Coupled Hydrodynamic in the Performance of a DP Barge Operating Close to a FPSO OMAE2011-49411
Daniel P Vieira¹ Edgard B. Malta¹ Fabiano P. Rampazzo² João L.B. Silva¹ Eduardo Tannuri¹
1. University of São Paulo, São Paulo, SP, Brazil; 2. Numerical Offshore Tank, University of São Paulo, São Paulo, SP, Brazil; 3. Universidade de São Paulo, São Paulo, SP, Brazil; 4. Petróleo Brasileiro S.A. - PETROBRAS, Rio de Janeiro, RJ, Brazil

Investigation on the Effects of Current in the Dynamics of Floating Systems OMAE2011-49949
Felipe Rateiro¹ Edgard B. Malta¹ André L. C. Fijamara²
1. University of São Paulo, São Paulo, SP, Brazil; 2. Universidade de São Paulo, São Paulo, SP, Brazil; 3. TPN/USP Numerical Offshore Tank, São Paulo, SP, Brazil

A Study on Dynamic Behavior of Offshore Structures Under the Blast Load OMAE2011-49125
Kun-Hee Lee, Ki-Young Yoon
Hyundai Heavy Industry, Ulsan, Korea

Structures, Safety and Reliability Symposia

2-16 Reliability of Marine Structures – III

Tuesday June 21

Session Chair: Bernt Leira, NTNU, Norway
Session Co-Chair: Lance Manuel, University of Texas at Austin, USA

Analysis of Ice Loads on Offshore Structures for Okhotsk Sea Oil & Gas Fields OMAE2011-49596
Alexander T. Bekker, Olga A. Sabodash, Aleksei Yu. Koechev
Far Eastern National Technical University, Vladivostok, Russia

Integration Assessment, Repair and Verification of Fitness for Service of a Damaged Offshore Platform Radio Tower OMAE2011-50345
Abe Nezamian, Robert J. Nicolson
WorleyParsons, Melbourne, VIC, Australia

API 579 Level 3 Assessment of Dents Using High-Resolution Ill Data OMAE2011-50349
Mike Taylor¹ Suji Narkitoo¹ Chas Jandu¹
1. AFAA Limited, Ripley, UK; 2. TD Williamsson, Swindon, UK

Fatigue Reliability and Sensibility Analysis of Semi-Submersible Drilling Platform OMAE2011-50030
Yong He, Jianan Xu, Weiliang Jin, Lei Cui
Zhejiang University, Hangzhou, Zhejiang, China

Tuesday, 8:30–10:00

Offshore Technology Symposia

1-23 Metocean

Tuesday June 21

Session Chair: George Forristall, Forristall Ocean Engineering, Inc., USA
Session Co-Chair: Antoine Peiffer, Marine Innovation & Technology, USA

A Gust Factor Model for Storm Winds OMAE2011-49052
Nicolas Fournier
Shell International Exploration and Production, Rijswijk, Netherlands

How to Carry Out Metocean Studies OMAE2011-49066
Judith van Os, Sofia Caires
Deltares, Delft, Netherlands

Wind and Wave Study for Off-Shore Wind Farm Applications OMAE2011-49219
Elvira Armenio¹ Marco Milanese¹ Domenico Laforgia¹ Michele Mossa¹
1. Research Centre for Energy and Environment - University of Salento, Taranto, Italy; 2. Technical University of Bari, Bari, Italy; 3. University of Salento - Department Engineering for Innovation, Lecce, Italy

Equivalent Design Wave Approach for Calculating Site-Specific Environmental Loads on an FPSO OMAE2011-49580
Resmi Sarala, Mohammad Hajiaraib, Richard Bamford
Lloyd’s Register EMEA, Aberdeen, UK

Structures, Safety and Reliability Symposia

2-28 Collision and Crashworthiness

Tuesday June 21

Session Chair: Sang-Rai Cho, University of Ulsan, Korea
Session Co-Chair: George Wang, ABS, China

A Study on the Effect of Plating Stiffeners of Double Bottom During Ship Grounding with Large Contact Surface OMAE2011-49056
Z. Hu¹ Jorgen Amdahl²
1. State Key Lab of Ocean Engineering, Shanghai Jiao Tong University, Shanghai, China; 2. Department of Marine Technology, Norwegian University of Science and Technology, Trondheim, Norway

Assessment of Hydrocarbon Explosion and Fire Risks in Offshore Installations: Recent Advances and Future Trends OMAE2011-49445
Jeom Paik¹ Jerzy Czujko²
1. Pusan National University, Busan, Korea; 2. Nowatec, Asker, Norway

What Can We Learn from Uncertainty Analysis with Respect to Survivability or Time to Capsize of a Ship Struck in Collision? OMAE2011-49081
Per Hogström, Jonas Ringsberg
Chalmers University of Technology, Göteborg, Sweden

The Effect of Sloshing in Tanks on Motions and Hull Girder Responses of Damaged Vessels OMAE2011-49468
Huirong Jia¹ Torger Moan¹
1. Norwegian University of Science and Technology, Trondheim, Norway; 2. Centre for Ships and Ocean Structures, Norwegian University of Science and Technology, Trondheim, Norway
Materials Technology Symposia

### 3-8 Constraint and 3D Effects on Fracture and Fatigue Analysis

**Tuesday June 21**

**Town Hall | 8:30–10:00**

**Session Chair:** Francois Bardi, ExxonMobil Upstream Research, USA  
**Session Co-Chair:** Pedro Vargas, Chevron Energy Technology Company, USA

**Relative Notch Factor for Tubular Joint Stress Concentration Under High Load**  
Wangwen Zhao  
Mott MacDonald Limited, Croydon, UK

**Two-Parameter Elastic-Plastic Fracture Mechanics Analysis of Surface Cracked Plates under Uniaxial and Biaxial Loading**  
Xin Wang  
Carleton University, Ottawa, ON, Canada

- **OMAE2011-49914**
- **OMAE2011-50190**
- **OMAE2011-49311**
- **OMAE2011-49165**
- **OMAE2011-49165**

### 3-10 Fatigue & Fracture Assessment

**Tuesday June 21**

**Mees Auditorium | 8:30–10:00**

**Session Chair:** Koji Gotoh, Kyushu University, Japan  
**Session Co-Chair:** Stephen J Hudak Jr, Southwest Research Institute, USA

**Construction of Various Fatigue Design Master S-N Curves for Offshore/ Marine Structures Using Battelle Structural Stress Method**  
Jeong K. Hong  
Battelle, Columbus, OH, USA

**Fatigue Master Curve Approach for Arc-Welded Aluminium Joints – Mean Stress Effects**  
Henk den Besten, René Hijmans  
Delft University of Technology, Delft, Netherlands

**Fatigue Assessment of Subsea Tree Connectors and Wellheads**  
Jaime Buitrago1 Venkat Krishnan1 Paul M. Sommerfield1  
1. ExxonMobil Upstream Research Company, Houston, TX, USA;  
2. ExxonMobil Development Company, Houston, TX, USA

**Application of Actual In-Service Spectrum to SCR Girth Joints**  
Philippe Darcis, Israel Marines-Garcia, Eduardo Aguilar, Eduardo Ruiz, Hector Quintanilla  
TenarisTamsa - R&D Center, Veracruz, VE, Mexico

### Pipeline and Riser Technology Symposia

#### 4-17 On-Bottom Behavior and Pipe-Soil Interaction – II

**Tuesday June 21**

**New York | 8:30–10:00**

**Session Chair:** Ayman Eltaher, MCS Kenny, USA  
**Session Co-Chair:** Daniel Carneiro, Bureau Veritas, Brazil

**Probabilistic Model Application in the Integrated Stability Analysis of Offshore On-Bottom Pipeline**  
Bassem Youssaf, Mark J. Cassidy, Yinghui Tian  
Centre for Offshore Foundation System - University of Western Australia, Perth, WA, Australia

**Assessment of Lateral Buckles in a HP/HT Pipeline Using Sidescan Sonar Data**  
Alexandre Hansen1 Rafael Solano1 Bruno Reis Antunes1 Graeme Roberts1 Arek Bedrossian1  
1. PETROBRAS, Rio de Janeiro, RJ, Brazil; 2. Subsea7, Sutton, UK

**Evaluation of the Operational Behaviour of a Deepwater Oil Export Pipeline Designed on the Basis of Controlled Lateral Buckling**  
Sriskandarajah Thurairajah1 Arek Bedrossian1 Graeme Roberts1 Peter Ivanscheit1 Rafael Solano1 Alexandre Hansen1 Bruno Reis Antunes1  
1. PETROBRAS, Rio de Janeiro, RJ, Brazil; 2. Subsea7, Sutton, UK; 3. Subsea7, Niteroi, RJ, Brazil

**Advanced Analysis and Design Tools for Offshore Pipelines in Operation**  
Lorenzo Bartolini, Lorenzo Marchienni, Luigiino Vitali, Maurizio Spinazzè, Cristian Crea  
Saipem Energy Services, Fano (PU), Italy

### Pipeline and Riser Technology Symposia

#### 4-23 Inspection and Repair – II

**Tuesday June 21**

**Antwerp | 8:30–10:00**

**Session Chair:** Basim Mekha, CunifeFoerfirth Consulting, LLC, USA  
**Session Co-Chair:** Qishi Chen, C-FER Technologies, Canada

**Assessing the Use of Composite Materials in Reinforcing Offshore Risers and Pipelines**  
Chris Alexander  
Stress Engineering Services, Inc., Houston, TX, USA

**Top Tension Riser Fatigue Monitoring System**  
Daniel Reagan1 Wolfgang Ruf1 Jun Cheng3 Ross Frazer2  
1. Pulse Structural Monitoring, Houston, TX, USA; 2. ATP Oil and Gas, Houston, TX, USA; 3. Pegasus International, Inc., Houston, TX, USA

**Riser Integrity Monitoring for Drilling Operations at Ultra Deep Water**  
Gerhard Gundersen, Gullik A. Jensen  
Kongsberg Oil & Gas Technologies AS, Asker, Norway

**On-board Monitoring, Analysis and Decision Support during Offshore Pipe Lay Operations**  
Joakim Taby1 Ole David Økland1 Egil Gjertsen1 Naiquan Ye1 Mehvyn Morgan1 Ole Magnus Holden1  
1. Marintek, Trondheim, Norway; 2. Subsea 7, Aberdeen, UK; 3. Statoil, Stavanger, Norway

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Ocean Engineering Symposia

6-14 Wave Mechanics and Wave Effects – III

Tuesday June 21
Leeuwen I | 8:30–10:00

Session Chair: Kostas Belibassakis, School of Naval Architecture & Marine Eng, Greece
Session Co-Chair: Ismail H. Helvacigolu, Istanbul Technical University, Turkey

Internal Waves Impact on the Sea Surface OMAE2011-49870
Igor Shugan, Hwung-Hweng Hwung, Ray Yeng Yang
National Cheng Kung University, Tainan, Taiwan

Comparison of Numerical Methods for Wave Generation by VOF-Based Numerical Wave Tank OMAE2011-49777
Bingjie Guo, Svere Steen
Norwegian University of Science and Technology, Trondheim, Norway

Zhigang (Kevin) Tian1 Wooyoung Choi1 Marc Perlin2
1. Korea Advanced Institute of Science and Technology, Daejeon, Korea; 2. Institute for Systems and Robotics, Lisbon, Portugal

Sparse Spectrum Model of the Sea Surface OMAE2011-49958
Mikhail Charnotskii
Zel Technologies, LLC, Boulder, CO, USA

CFD and VIV Symposia

8-5 Free Surface Flows – Wave Generation & Impact

Tuesday June 21
Diamond I | 8:30–10:00

Session Chair: Arthur Veldman, University of Groningen, Netherlands
Session Co-Chair: Guangqiang Yang, ExxonMobil Upstream Research Company, USA

CFD Analysis of Deck Impact in Irregular Waves: Wave Representation Using Transient Wave Groups OMAE2011-49418
Øystein Lande, Thomas B. Johannessen
Aker Solutions, Lysaker, Norway

Irregular Wave Loads on a Gravity Based Foundation on Thornton Bank in Shallow Water OMAE2011-49572
Erik D. Christensen1 Iris P. Luhmann2 Piet Haerens1
1. Technical University of Denmark, Kgs. Lyngby, Denmark; 2. IMDC, Antwerp, Belgium; 4. C-POWER N.V., Zwijndrecht, Belgium; 5. IMDC nv, Berchem, Belgium

Research on the Time-Frequency Energy Structure of Freak Wave Generation and Evolution OMAE2011-49292
Cheng Cui, Ning Chuan Zhang
Dalian University of Technology, DaLian, Liaoning, China

CFD Modeling of a Submersible in a Realistic Surfacde Sea State Condition for Predictions of Hydrodynamic Wave Impact Loading OMAE2011-49047
Minyee Jiang1 Jack R. Lee2 David A. Draven2
1. United States Navy, West Bethesda, MD, USA; 2. United States Navy, Washington Navy Yard, DC, USA
Ocean Renewable Energy Symposia

9-3 Wind Energy – I

Tuesday June 21

Session Chair: Henrik Bredmose, DTU Mechanical Engineering, Denmark
Session Co-Chair: Charles Smith, Petroleum Research Atlantic Canada, Canada

On the Necessity of Technology Qualification in the Offshore Wind Energy Industry OMAE2011-49063
Samindi Samarakoon, Ove Gudmestad
University of Stavanger, Stavanger, Norway

The Dynamic Response of an Offshore Wind Turbine with Realistic Flexibility to Breaking Wave Impact OMAE2011-49563
Erik-Jan De Ridder1 Johan Peeringa2 Joris van den Berg1 Pieter Aalberts1 Bas Buchner1
1. MARIN, Wageningen, Netherlands; 2. ECN, Petten, Netherlands

A Conceptual Design Method for Parametric Study of Blades for Offshore Wind Turbines OMAE2011-49743
Lars Freyd, Ole G. Dahlhaug
Norwegian University of Science and Technology, Trondheim, Norway

Effect of Plunging Oscillation on an Offshore Wind Turbine Blade Section OMAE2011-49771
Faezeh Rasi Marzabadi1 Mohammad Reza Soltani2
1. Sharif University of Technology, Aerospace Research Institute, Tehran, Iran; 2. Sharif University of Technology, Tehran, Iran

Jan Vugts Symposium on ‘Design Methodology of Offshore Structures’

11-3 ISO Standards in Offshore Design

Tuesday June 21

Session Chair: Paul Frieze, PAFA Consulting Engineers, United Kingdom
Session Co-Chair: René Huijsmans, Delft University of Technology, Netherlands

ISO Standards for Structural Design OMAE2011-49160
Philip Smedley1 Patrick O’Connor2 Richard Snell1
1. BP EPT, Sunbury-on-Thames, UK; 2. BP retired, London, UK

ISO 19902 Modelling and Analysis Aspects Including Dynamics OMAE2011-49973
Paul Frieze
PAFA Consulting Engineers, Middlesex, UK

Offshore Geotechnics Symposia

10-2 Suction Caissons

Tuesday June 21

Session Chair: Sangchul Bang, South Dakota School of Mines & Technology, USA

Steve Kay1 Elisabeth Palix2
1. Fugro France, Nanterre, France; 2. Fugro Engineers B.V., Leidschendam, Netherlands

Pullout Capacity of Suction Piles in Clay under Eccentric Vertical Loads OMAE2011-49058
You S. Kim1 Youngki Cho2 Sangchul Bang1 Kasey Jones1
1. South Dakota School of Mines & Technology, Rapid City, SD, USA; 2. Daewoo Engineering & Construction, Seoul, Korea

Suction Pile Foundations: Experience in the Mediterranean Offshore and Installation Feedback OMAE2011-49871
Sabrina Bugh1 Eric J. Parker1
1. Saipem Energy Services, Fano (PU), Italy; 2. D’Appolonia S.p.A., Genova, Italy

Dry and Wet Tree Damper Chamber Column Semisubmersible Design in Harsh Environment OMAE2011-49729
Alaa Mansour1 Laurence Upston1 Yaming Wan2
1. INTECSEA WorleyParsons Group, Houston, TX, USA; 2. INTECSEA, West Perth, WA, Australia; 3. INTECSEA, Houston, TX, USA

Wave Run-up Simulations with a Moving Large Volume Semi-Submersible Platform OMAE2011-49271
Rafael A. Watai1 Fábio T. Matsumoto1 Joao V. Sparano1 Alexandre N. Simos1 Marcos D.A.S. Ferreira1
1. Numerical Offshore Tank, University of São Paulo, São Paulo, SP, Brazil; 2. Petrobras Research Center (CEHPIES), Rio de Janeiro, RJ, Brazil

Analysis of Free Vibration Characteristics and Mode Shapes of a Semisubmersible Platform OMAE2011-49088
Jonas Ringsberg, Per Ernholm, Love Hagström
Chalmers University of Technology, Gothenburg, Sweden

A New Semisubmersible Design for Improved Heave Motion and Vortex-induced Motion Performance OMAE2011-49118
Qi Xu
Techimp USA, Inc., Houston, TX, USA

Offshore Technology Symposia

1-2 Floating Platforms II: Semi-Submersibles

Tuesday June 21

Session Chair: John Murray, FloaTEC, USA
Session Co-Chair: Xiao-Bo Chen, Bureau Veritas, France

Dry and Wet Tree Damper Chamber Column Semisubmersible Design in Harsh Environment OMAE2011-49729
Alaa Mansour1 Laurence Upston1 Yaming Wan2
1. INTECSEA WorleyParsons Group, Houston, TX, USA; 2. INTECSEA, West Perth, WA, Australia; 3. INTECSEA, Houston, TX, USA

Wave Run-up Simulations with a Moving Large Volume Semi-Submersible Platform OMAE2011-49271
Rafael A. Watai1 Fábio T. Matsumoto1 Joao V. Sparano1 Alexandre N. Simos1 Marcos D.A.S. Ferreira1
1. Numerical Offshore Tank, University of São Paulo, São Paulo, SP, Brazil; 2. Petrobras Research Center (CEHPIES), Rio de Janeiro, RJ, Brazil

Analysis of Free Vibration Characteristics and Mode Shapes of a Semisubmersible Platform OMAE2011-49088
Jonas Ringsberg, Per Ernholm, Love Hagström
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A New Semisubmersible Design for Improved Heave Motion and Vortex-induced Motion Performance OMAE2011-49118
Qi Xu
Techimp USA, Inc., Houston, TX, USA
**Offshore Technology Symposia**

**1-19 Wave Dynamics and Wave Loading**

**Tuesday June 21**

**Penn I | 10:30–12:00**

**Session Chair:** Pierre Ferrant, Laboratoire de Mécanique des Fluides (CNRS UMR 6598), Ecole Centrale Nantes, France

**Session Co-Chair:** Bernt J. Leira, NTNU, Norway

**Tsunami Bore Forces on Walls**

Ian N. Robertson, Krystian Paczkowski, H.R. Riggs, Abdulla Mohamed

department of Civil Engineering, University of Hawaii, Honolulu, HI, USA

**Evaluation of an Extended Operational Boussinesq-Type Wave Model for Calculating Low-Frequency Waves in Intermediate Depths**

OMAE2011-49480

Martijn de Jong, Mart Borsboom, Jan de Bont, Bas van Vossen

deltares, Delft, Netherlands

**High Frequency Loading and Response of Offshore Structures in Steep Waves**

OMAE2011-50110

Thomas B. Johannessen

Aker Solutions, Lysaker, Norway

**CFD Calculations of Wave-In-Deck Load on a Jacket Platform, Impact Pressure Decrease due to Air Pocket Formation**

OMAE2011-49515

Bik Wemmenhove, Marc Lefranc

FORCE Technology Norway AS, Sandvika, Norway

**Structures, Safety and Reliability Symposia**

**2-29 Ultimate Strength – I**

**Tuesday June 21**

**Tokyo | 10:30–12:00**

**Session Chair:** Jeom Paik, Pusan National University, Korea

**Session Co-Chair:** Philippe Rigo, University of Liege, ANAST, Belgium

**Determination of Critical Factors for the Strength Assessment of Damaged Steel Ship Structures**

OMAE2011-49099

James Underwood1, Adam Sobey1, James I.R. Blake1, R. A. Shenoi1, Ben R. Cuckson1

1. University of Southampton, Southampton, UK; 2. Lloyd’s Register EMEA, Bristol, UK

**The Effects of Shape, Thickness and Boundary Imperfections on Plastic Buckling of Cones**

OMAE2011-49055

Jan Blachut, Olaowale Ifayemi

The University of Liverpool, Liverpool, UK

**Effect of Geometric Imperfection on Plastic Collapse of Offshore Pipeline**

OMAE2011-49214

Jong-hyun Baek, Young-woo Kim, Cheol-man Kim, Woo-sik Kim

Korea Gas Corporation, Ansan, Korea

**Ultimate Strength of Semi-Submersible Platform Using Nonlinear Finite Element Method**

OMAE2011-49415

Yong He1, Qian Ye1, Weiliang Jin1, Yan Qu2

1. Zhejiang University, Hangzhou, Zhejiang, China; 2. Research Institute of CNOOC, Beijing, China

**Structures, Safety and Reliability Symposia**

**2-17 Reliability of Marine Structures – IV**

**Tuesday June 21**

**Goudriaan I | 10:30–12:00**

**Session Chair:** Lance Manuel, University of Texas at Austin, USA

**Session Co-Chair:** Bernt Leira, NTNU, Norway

**Structural Reliability Applications in Design and Maintenance Planning of Ships Hull Structures Subjected to Fatigue and Corrosion**

OMAE2011-50133

Marcos C. Camara1, Júlio C. Ramalho Cyrino2

1. Brazilian Navy/UFRJ-COPPE, Rio de Janeiro, RJ, Brazil; 2. UFRJ/COPPE, Rio de Janeiro, RJ, Brazil

**Reliability Assessment of Spar Moorings Against Ultimate Load Failure**

OMAE2011-49666

Muhammed Umair, Arvind Jain

Indian Institute of Technology Delhi, New Delhi, India

**Collisions Between Platforms and Ships in Norway in the Period 2001-2010**

OMAE2011-49897

Arne Kvitrud

Petroleum Safety Authority Norway, Stavanger, Norway

**On the Derivation of Design S-N Curves Based on Limited Fatigue Test Data**

OMAE2011-49175

Inge Lotsberg, Knut O. Ronald

Det Norske Veritas, Havvik, Norway

**Factors Affecting the Fatigue Strength of Girth Welds: A Re-evaluation of TWI’s Resonance Fatigue Test Database**

OMAE2011-49192

Stephen Maddox, Carol Johnston

TWI Ltd, Cambridge, UK

**Structures, Safety and Reliability Symposia**

**3-19 Fatigue Crack Growth Analysis in Welded Structures**

**Tuesday June 21**

**Town Hall | 10:30–12:00**

**Session Chair:** Stephen J Hudak Jr, Southwest Research Institute, USA

**Session Co-Chair:** Pedro Vargas, Chevron Energy Technology Company, USA

**Estimation of the Shape Evolution and the Growth History of an Embedded Crack by Fatigue Loading**

OMAE2011-49457

Koji Gotoh1, Keisuke Harada1, Yosuke Anal1

1. Kyushu University, Fukuoka, Japan; 2. National Maritime Research Institute of Japan, Mitaka, Tokyo, Japan

**On the Derivation of Design S-N Curves Based on Limited Fatigue Test Data**

OMAE2011-49175

Inge Lotsberg, Knut O. Ronald

Det Norske Veritas, Havvik, Norway

**Factors Affecting the Fatigue Strength of Girth Welds: A Re-evaluation of TWI’s Resonance Fatigue Test Database**

OMAE2011-49192

Stephen Maddox, Carol Johnston

TWI Ltd, Cambridge, UK

**Fatigue Strength Characteristics of Cast Steel Weld Joints**

OMAE2011-50097

Myung Hyun Kim1, Ho Jung Kim2, Seong Min Kim2, Jae Myung Lee1

1. Pusan National University, Busan, Korea; 2. Department of Naval Architecture and Ocean Engineering, Pusan National University, Busan, Korea

**Materials Technology Symposia**

**3-19 Fatigue Crack Growth Analysis in Welded Structures**

**Tuesday June 21**

**Town Hall | 10:30–12:00**

**Session Chair:** Stephen J Hudak Jr, Southwest Research Institute, USA

**Session Co-Chair:** Pedro Vargas, Chevron Energy Technology Company, USA

**Factors Affecting the Fatigue Strength of Girth Welds: A Re-evaluation of TWI’s Resonance Fatigue Test Database**

OMAE2011-49192

Stephen Maddox, Carol Johnston

TWI Ltd, Cambridge, UK

**Fatigue Strength Characteristics of Cast Steel Weld Joints**

OMAE2011-50097

Myung Hyun Kim1, Ho Jung Kim2, Seong Min Kim1, Jae Myung Lee1

1. Pusan National University, Busan, Korea; 2. Department of Naval Architecture and Ocean Engineering, Pusan National University, Busan, Korea
Tuesday, 10:30–12:00

Pipeline and Riser Technology Symposia

4-3 Design and Analysis – III

Tuesday June 21

Session Chair: Vincent Olunloyo, University of Lagos, Akoka, Lagos, Nigeria
Session Co-Chair: Olav Aamld, DNV, Norway

Riser Analysis for a New Dry Completion Concept for a Monocolumn Platform

OMAE2011-49864
Fernando Jorge Mendes de Sousa, Marcos Siqueira, Claudio M. S. Dantas, Luis Sagristó, Isaías Q. Masetti
1. Universidade Federal do Rio de Janeiro, Rio de Janeiro, RJ, Brazil; 2. Federal University of Rio de Janeiro, Rio de Janeiro, RJ, Brazil; 3. UFRJ/COPPE/LACED, Rio de Janeiro, RJ, Brazil; 4. TRANSPETRO/CEDIV, Rio de Janeiro, RJ, Brazil; 5. COPPE/UFRJ, Rio de Janeiro, RJ, Brazil

Interrigation of Droplet Cloud in Annular Two-Phase Flow

OMAE2011-49741
Mhunir Alamu, Barry Azzopardi, University of Nottingham, Nottingham, UK

Parametric Study on the Axial Vibrations of Riser Suspended and Moored by Chains (RSAA) Configurations

OMAE2011-49932
Claudio M.S. Dantas, Marcos Siqueira, Isaías Q. Masetti, Víctor Milanez da Silva Pereira, Gilberto Ellwanger, Fernando Jorge Mendes de Sousa
1. Universidade Federal do Rio de Janeiro, Rio de Janeiro, RJ, Brazil; 2. COPPE/UFRJ – Department of Civil Engineering, Rio de Janeiro, RJ, Brazil; 3. Federal University of Rio de Janeiro, Rio de Janeiro, RJ, Brazil; 4. TRANSPETRO/CEDIV, Rio de Janeiro, RJ, Brazil; 5. COPPE/UFRJ, Rio de Janeiro, RJ, Brazil

Integrated Analysis of Mooring and Riser Systems for FPSO’s in Harsh Shallow Water Environments

OMAE2011-50007
Marius Martens, James Whelan, Yuriy Drobyshevski, INTECEA, Perth, WA, Australia

Ocean Engineering Symposia

5-8 Deepsea Mining Systems – II

Tuesday June 21

Session Chair: Jan Willem van Bloois
Session Co-Chair: Tetsuo Yamazaki, Osaka Prefecture Univ., Japan

Numerical Evaluation of Observation Algorithm for Sea Surface Remote Sensing by Doppler Radar

OMAE2011-49562
Takero Yoshida, Chang-Kyu Rheem, The University of Tokyo, Tokyo, Japan

Fluctuation of High-Turbidity Water Measured by Acoustic Doppler Current Profiler at the Izena Hole in the Okinawa Trough

OMAE2011-49968
Rei Arai, Tetsuhiko Toyohara, Yusuke Onebaysahi, Hiroshi Ishida, Nobuhiro Maeda, Tomoya Sugimoto, Yoshihisa Shirayama, Nobuhiro Goto
1. Japan Oil, Gas and Metals National Corporation, Kanagawa, Japan; 2. The General Environmental Technos Co., Ltd., Tokyo, Japan; 3. Osaka Prefecture University, Osaka, Japan; 4. Kyotos University, Yokayama, Japan; 5. Deep Ocean Resources Development Co., Ltd., Tokyo, Japan

Approaches for Environmental Impact Assessment of Seafloor Massive Sulfide Mining

OMAE2011-49453
Tetsuo Yamazaki, Osaka Prefectural Univ., Sakai, Japan

Ocean Engineering Symposia

6-9 Ocean Measurement and Data Interpretation – I

Tuesday June 21

Session Chair: Guus Jeans, Fugro GEOS, United Kingdom
Session Co-Chair: Igor Shugan, National Cheng Kung University, Taiwan

A Variational Wave Acquisition Stereo System for the 3-D Reconstruction of Oceanic Sea States

OMAE2011-49601
Guillermo Gallego, Antonio Yezzi, Francesco Fedele, Alvise Benetazzo
1. Georgia Institute of Technology, Savannah Campus, Savannah, GA, USA; 2. Georgia Tech, Atlanta, GA, USA; 3. CNR-Ismar, Venice, Italy

A Study on Akaive’s Bayesian Information Criterion in Wave Estimation

OMAE2011-49170
Toshio Iseki, Tokyo University of Marine Science and Technology, Tokyo, Japan

Comparison of Methods for Short Crested Wave Analysis

OMAE2011-49443
Joris van den Berg, MARIN, Wageningen, Netherlands

Operational Margin From Weather and Motion Database for Heavy Transport Vessels

OMAE2011-49811
J.B. de Jonge, Onno A.J. Peters, Dockwise, Breda, Netherlands; 2. Dockwise, Delft University of Technology, Breda, Netherlands
Ocean Engineering Symposia

6-15 Wave Mechanics and Wave Effects – IV

Tuesday June 21 | Leuven I | 10:30–12:00

Session Chair: Daniel T. Valentine, Clarkson University, USA
Session Co-Chair: Tai-Wen Hsu, Department of Hydraulic and Ocean Engineering, National Cheng Kung University, Taiwan

Characteristics of Steep Second-Order Random Waves in Finite and Shallow Water OMAE2011-50219

Carl Trygve Stansberg
Marintek, Trondheim, Norway

Gap-filling and Predicting Wave Parameters Using Support Vector Regression Method OMAE2011-49814

Maziar Golestanib, Mostafa Zennodini
1. Khaje Nasir Tousi University of Technology, Tehran, Iran; 2. Khaje Nasir Tousi University of Technology / Far Darya Ashke Consultants, Tehran, Iran

Wave Height Measurements Behind Submerged Lens-Shaped Structures OMAE2011-49102

Andrew L. Bloxom, Karl D. von Ellenrieder, William S. Weidle
Ryan S. Mieras
1. Virginia Tech, Blacksburg, VA, USA; 2. Florida Atlantic University, Dania Beach, FL, USA; 3. Texas A&M University, San Antonio, TX, USA; 4. University of Rhode Island, Narroumpart, MA, USA

Statistical Analysis on the Extreme Events of Big Waves under Wave Climate Change around Taiwan Waters OMAE2011-49896

Ching-her Hwang, Ching-Piao Tsa, Hwa Chien, Wen-Ching Lee, Wen-Fang Hsieh
1. Chienkuo Technology University, Keelung, Taiwan; 2. Taiken University, Pingtung, Taiwan; 3. Institute of Hydrological and Oceanic Sciences, National Central University, Taoyuan County, Taiwan

CFD and VIV Symposia

8-6 Cylinder VIV – Suppression & Stability

Tuesday June 21 | Diamond I | 10:30–12:00

Session Chair: Hayden Marcollo, AMOG Consulting, Australia
Session Co-Chair: Carl Martin Larsen, CeSOS, Dept. of Marine Technology, Norway

Analysis of Phenomenological Models of Vortex Induced Vibrations OMAE2011-49403

Eugenio Fortaleza
Universidade de Brasilia, Brasilia, DF, Brazil

Defining a Parameter of Effectiveness for the Suppression of Vortex-Induced Vibrations OMAE2011-49274

Cesar M. Freire, Ivan Korkischko, Julio R. Meneghini
University of Sao Paulo, Sao Paulo, SP, Brazil

Suppressing Vortex Induced Vibration of an Elastic Mounted Circular Cylinder by Wavy Wall OMAE2011-49665

Yongyan Ni, Youlin Zhang, Renqing Zhu
Jiangsu University of Science and Technology, Zhenjiang, Jiangsu, China

Direct Numerical Simulation of Effects of Small Angle of Incidence on Honji Instability OMAE2011-50309

Kun Yang, Liang Cheng, Hongwei An, Ming Zhao
1. School of Engineering, University of Western Sydney, Penrith, NSW, Australia; 2. University of Western Australia, Perth, WA, Australia; 3. University of Western Australia, Crawley, WA, Australia

Ocean Renewable Energy Symposia

9-4 Current Energy – I

Tuesday June 21 | Van Oldenbarnevelt | 10:30–12:00

Session Chair: Ye Li, National Renewable Energy Laboratory - Wind Technology Center, USA
Session Co-Chair: Jennifer Matthews, Offshore Energy Research Associations, Canada

Feasibility Analysis for the Application of Tidal Current Power Farm OMAE2011-49722

Chul Hee Jo, Kang Hee Lee
1. INHA University, Incheon, Korea; 2. Pasco E&C, Incheon, Korea

Power Quality Performance of the Tidal Energy Converter, Seagen OMAE2011-49549

Joseph MacEnri, Matthew Rees, Torbjorn Thiringer
3. Chalmers University of Technology, Göteborg, Sweden

Modelling Techniques for Underwater Noise Generated by Tidal Turbines in Shallow Waters OMAE2011-49994

Thomas P. Lloyd, Stephen R. Turnock, Victor F. Humphrey
University of Southampton, Southampton, UK

Hydrokinetic Energy Harnessing Using the Vivace Converter with Passive Turbulence Control OMAE2011-50290

Jim Chang, Michael Bemntas
University of Michigan, Ann Arbor, MI, USA

Offshore Geotechnics Symposia

10-3 Fluid-Soil-Structure Interaction

Tuesday June 21 | Blue | 10:30–12:00

Session Chair: Dong-Sheng Jeng, Shanghai Jiao Tong University, China

Constructing the Shields Curve OMAE2011-49232

Sape Miedema
Delft University of Technology, Delft, Netherlands

HHT Analysis on Pore Pressure Dissipation of Wave-Induced Fluidization in a Sandy Bed OMAE2011-49555

S.Y. Tzang, Y.L. Chen, S.H. Ou
1. National Taiwan Ocean University, Keelung, Taiwan; 2. Tajaen University, Pingtung, Taiwan

Measured and Analytical Studies of Dynamic Ocean Water Pressure against a Vertical Caisson during a Real Earthquake OMAE2011-49523

Isao Ishibashi, Amir Arablouei
North Carolina State University, Raleigh, NC, USA

Dynamic Pore Pressure Response of Two Layer Seabed Under Progressive Waves OMAE2011-49856

Mehmet Ulker
North Carolina State University, Raleigh, NC, USA

Spudcan Penetration in Clay-Sand-Clay Soils OMAE2011-49316

Long Yu, Hui Zhou, Wen Gao, Jun Liu, Yuxia Hu
1. Dalian University of Technology, Dalian, Liaoning, China; 2. The University of Western Australia, Perth, WA, Australia

Large Displacement Finite Element Analysis of Submarine Slide Due to Gas Hydrate Dissociation OMAE2011-49328

Jun Liu, Long Yu, Xianjing Kong, Yuxia Hu
1. Dalian University of Technology, Dalian, Liaoning, China; 2. The University of Western Australia, Perth, WA, Australia
Jo Pinkster Symposium on ‘Second Order Wave Drift Forces on Floating Structures’

**12-1 Hydrodynamics in Dynamic Positioning**

**Tuesday June 21**  
Diamond II | 10:30–12:00

**Session Chair:** Hans Cozijn, MARIN, Netherlands  
**Session Co-Chair:** Jaap-Harm Westhuis, SBM Offshore / GustoMSC, Netherlands

**Keynote Address**

**The Role of Jo Pinkster in Offshore Hydrodynamics** OMAE2011-50354

René Huijsmans  
Delft University of Technology, Delft, Netherlands

**Improved Dynamic Positioning using Wave Feed Forward** OMAE2011-49388

Frans Quadvlieg1 Rink Hallmann1 Greg Hughes1 Rick Harris1  
1. MARIN, Wageningen, Netherlands; 2. Oranjeware, Hanover, MD, USA; 3. MAPC, Baltimore, MD, USA

**Dynamic Positioning – Early Design, Capability and Offsets, A Novel Approach** OMAE2011-49354

Riaan van’t Veer, Michael Gachet  
SBM GustoMSC, Schiedam, Netherlands

**Time-Domain Simulation of Multi-Body Floating Systems Based on State-Space Modeling Technology** OMAE2011-50343

Jeffrey Falzaron, Xiaochuan Yu  
Texas A&M University, College Station, TX, USA

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**Tuesday, 13:30–15:00**

**Offshore Technology Symposia**

**2-18 Fracture & Fatigue Reliability – I**

**Tuesday June 21**

**Goudriaan I | 13:30–15:00**

**Session Chair:** Ying Min Low, Nanyang Technological University, Singapore  
**Session Co-Chair:** Jonas Ringsberg, Chalmers University of Technology, Sweden

**Fatigue Life Estimation of Welded Joints Including the Effects of Crack Closure Phenomena** OMAE2011-49123

Diego Sarzosa Burgos1 Claudia Ruggieri1 Leonardo G. Barbosa2 Gustavo H.B. Donato2  
1. University of São Paulo, São Paulo, SP, Brazil; 2. Federal University of Ouro Preto, Ouro Preto, MG, Brazil; 3. Ignatian Educational Foundation (FEI), São Bernardo do Campo, SP, Brazil

**A Study on Construction of Evaluation Method for Defect Sizing Utilizing Numerical Simulation** OMAE2011-49349

Takao Yoshikawa1 Masahiro Maeda1 Hideyuki Hirasawa2  
1. Ayushu University, Fukuoka, Japan; 2. Kawasaki Heavy Industries, Kobe, Japan

**Study on the Hot Spot Stress Distribution at Multi-Planar Tubular KK Joints Under Axial Loads** OMAE2011-49737

Jingxia Yue1 Jin Gan1 Weiguo Wu1 Shihong Zhao1 Yanhua Yang2  
1. Wuhan University of Technology, Wuhan, Hubei, China; 2. CCC Second Harbour Engineering Company LTD., Wuhan, Hubei, China

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Suhail Ahmad1 Jameel Mohammed2  
1. University of Malaya, Kuala Lumpur, Malaysia; 2. Indian Institute of Technology, Delhi, New Delhi, India

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**1-5 Mooring and Anchoring – I**

**Tuesday June 21**  
Penn I | 13:30–15:00

**Session Chair:** Flavia Rezende, Bureau Veritas, France  
**Session Co-Chair:** Antonio C. Fernandes, Federal University of Rio de Janeiro, Brazil

**Squall Response Based Design of Floating Units in West Africa** OMAE2011-49237

Juan Alvarez1 Pierre Orsiero1 Valérie Quintiou-Ramos1 Didier L’Hostis1  
Michel François1 Anne-Gaëlle Moyssan1 Alain Ledoux1  
1. Bureau Veritas, Neuliy sur seine, France; 2. UTC - Université de Technologie de Compiegne, Compiegne, France; 3. TOTAL S.A. - DGEP/DEV/TEC, Paris, France

**A Nonlinear Viscoelastic Model for Polyester Mooring Line Analysis** OMAE2011-50280

Jang Whan Kim, Anil Sablok, Kostas Lambrokos, Johyun Kyoung  
Technip, Houston, TX, USA

**Aided Inertial Measurement System Applied To Torpedo Pile ´s Trajectory Reconstruction** OMAE2011-49080

Rodrigo S. Laviere1 Eduardo Tamami1 André L. C. Fujara1 Diego C. Corrêa1  
1. University of São Paulo, São Paulo, SP, Brazil; 2. Escola Politécnica - University of São Paulo, São Paulo, SP, Brazil; 3. PETROBRAS, Rio de Janeiro, RJ, Brazil

**Effects of Twist on Chain Strength and Fatigue Performance: Small Scale Test Results** OMAE2011-49206

Isabel Ridge1 Philip Smedley2 Roger Hobbs2  
1. BP EPT, Sunbury-on-Thames, UK; 2. Tension Technology International, Orsett, UK; 3. Tension Technology International, Didcot, UK

**Structures, Safety and Reliability Symposia**

**1-3 Floating Platform III: Vertical Cylindrical Structures (Spars)**

**Tuesday June 21**  
Penn II | 13:30–15:00

**Session Chair:** Anil Sablok, Technip, USA  
**Session Co-Chair:** Alexia Aubault, Marine Innovation & Technology, USA

**A Comparison of Radial Wellbay and Traditional Truss Spar Designs** OMAE2011-49272

John Murray, Edmund Muehleher, Guibog Choi  
FloatEC, Houston, TX, USA

**Experimental Study on Wet Tow and Upending of a Truss Spar** OMAE2011-49310

Lin Liu1 Longfei Xiao1 Z. Hu1 Lijun Yang2  
1. State Key Lab of Ocean Engineering, Shanghai Jiao Tong University, Shanghai, China; 2. Shanghai Jiao Tong University, Shanghai, China

**Motion Reduction for Spar Platform with Hydro-Pneumatic Tensioners** OMAE2011-50223

Sean Bian, Michael Spillane, Oriol Rijken  
SBM Atlantic, Houston, TX, USA

**Dynamic Response of Spar in Internal Solitary Waves** OMAE2011-49413

Qu Yan1 Song Zhijun1 Teng Bin1 You Yuxiang1  
1. Research Institute of CNOOC, Beijing, China; 2. China National Offshore Oil Corp., Beijing, China; 3. Dalian University of Technology, Dalian, Liaoning, China; 4. Shanghai Jiao Tong University, Shanghai, China
Ocean Space Utilization Symposia

5-9 Deepsea Mining Systems – III

Tuesday June 21

Session Chair: Laurens de Jonge
Session Co-Chair: Tetsuo Yamazaki, Osaka Prefecture Univ., Japan

Environmental Research for Assessing the Impacts of Mining Seafloor Massive Sulfides in Japan OMAE2011-49906
Tetsuhioko Toyohara, Nobuyuki Okamoto, Takahiro Kawai, Takayoshi Kodama, Hiroshi Shibanaki Japan Oil, Gas and Metals National Corporation, Kanagawa, Japan

Characteristics of the Environment Around a Massive Sea-Floor Sulfide Area in the Okinawa Trough OMAE2011-49987
Hiroshi Ishida¹ Nobuhiro Maeda¹ Tetsuya Miwa¹ Tetsuo Yamazaki¹ Yoshitsuna Shirayama¹ Tetsuhioko Toyohara¹ Nobuyuki Okamoto¹ Takayoshi Kodama¹

Analysis Tool for Environmental Impact of Seafloor Resources Development OMAE2011-30065
Joji Yamamoto, Hideyuki Oka, Yasuharu Nakajima, Shotaro Uto, Shunji Inoue, Shigesuke Ishida National Maritime Research Institute, Tokyo, Japan

Ocean Engineering Symposia

6-2 Marine Vehicles and Structures – I

Tuesday June 21

Session Chair: Janou Hennig, MARIN, Netherlands
Session Co-Chair: Jeffrey Falzarano, Texas A&M University, USA

Hydrodynamic Performance of a Deep-Vee Hull Form Catamaran in Regular Waves OMAE2011-49069
M.B. Bashir, Longbin Tao, M. Atlar, R.S. Dow Newcastle University, Newcastle Upon Tyne, UK

Application of Reduced Order Modeling for Design of Interacting Maritime Structures OMAE2011-49260
Jan Holterman¹ Jan Peters² Erik-Jan De Ridder³
1. MARIN, Wageningen, Netherlands; 2. Imotec BV, Hengelo, Netherlands

An Experimental Investigation Assessing the Validity of Quasi-Static Calculations for an Oscillating Hydrofoil OMAE2011-49440
Rajan Fernandez, Keith Alexander University of Canterbury, Christchurch, New Zealand

A Low-Cost, High Rate Motion Software Sensor System Based on Novel Data Fusion for Unmanned Surface Vehicle Navigation and Oceanographic Instrumentation Motion Correction OMAE2011-49529
Chrystel R. Gelín¹ Nikolaos Xiro²
1. Florida Atlantic University, Dania Beach, FL, USA; 2. Virginia Polytechnic Institute and State University, Blacksburg, VA, USA

Ocean Engineering Symposia

6-34 Ocean Measurement and Data Interpretation – II

Tuesday June 21

Session Chair: Gus Jeans, Fugro GEOS, United Kingdom
Session Co-Chair: Michele Drago, Saipem Energy Services, Italy

Radar Measurement of Ocean Waves OMAE2011-49895
William R. Story¹ Thomas C. Fu¹ Erin E. Hackett¹
1. Naval Surface Warfare Center, Carderock Division, West Bethesda, MD, USA; 2. Fulcrum Corp, Arlington, VA, USA

Measurements of Surface Waves using Low-Grazing Angle High-Resolution Pulse-Doppler Radar OMAE2011-49900
Erin E. Hackett, Anne Fullerton, Craig Merrill, Thomas C. Fu Naval Surface Warfare Center Carderock Division, West Bethesda, MD, USA

Statistics for Greater Sea States OMAE2011-49934
Anne Fullerton, Thomas C. Fu Naval Surface Warfare Center, Carderock Division, West Bethesda, MD, USA

Estimation of Tropical Cyclone Heat Potential from Oceanic Measurements OMAE2011-50086
Chung-Ru Ho, Yen-Hsuan Tsao, Nan-Jung Kuo, Shih-Jen Huang National Taiwan Ocean University, Keelung, Taiwan

CFD and VIV Symposia

8-7 Cylinders: Wakes & Interference – I

Tuesday June 21

Session Chair: Juan Pontaza, Shell Projects & Technology, USA
Session Co-Chair: Raghu Menon, Shell Projects & Technology, Malaysia

Vortex-Induced Vibration of Two Mechanically Coupled Circular Cylinders of Different Diameters in Steady Flow OMAE2011-49478
Mehran Rahmanian¹ Ming Zhao¹ Liang Cheng¹ Tongming Zhou¹
1. University of Western Australia, Perth, WA, Australia; 2. School of Engineering, University of Western Sydney, Penrith, NSW, Australia

Numerical Study of an Oscillating Smaller Cylinder in the Wake of an Upstream Larger Cylinder OMAE2011-49126
Yangyang Gao¹ Dingyong Yu¹ Xikun Wang² Soonkeat Tan³
1. Ocean University of China, Qingdao, Shandong, China; 2. College of Engineering, Ocean University of China, Qingdao, Shandong, China; 3. Nanyang Technological University, Singapore, Singapore

Multi-Cylinder Flow-Induced Motions: Enhancement by Passive Turbulence Control at 28,000<Re<120,000 OMAE2011-49405
Eun Soo Kim, Michael Bermitsas, Ajith Kumar Raghavan University of Michigan, Ann Arbor, MI, USA

Three-Dimensional Analysis for Vortex-Induced Vibrations of an Upstream Circular Cylinder in Two Tandem Circular Cylinders OMAE2011-49655
Norio Kondo Nihon University, Funabashi, Japan
**Offshore Technology Symposia**

**1-6 Mooring and Anchoring – II**

**Tuesday June 21**

**Penn I | 15:30–17:30**

**Session Chair:** Vikas Jhingran, Shell Exploration and Production International, USA
**Session Co-Chair:** Erik Falkenberg, DNV, Norway

**An Experimental Investigation Into the Pull-Out Capacity of Suction Caissons in Sand**

OMAE2011-49038

Siamak Kakasoltani1 Mostafa Zeinoddini1 Mahmoud Reza Abdi1 Hamid Arabzadeh2 1. K.N.Toosi University of Technology, Tehran, Iran; 2. PMU University, Tehran, Iran

**Positioning of the Offshore Platform**

OMAE2011-49436

Mahmut Olcay Korkmaz1 Caner Guney1 Rahmi Nurhan Celik1 1. Istanbul Technical University, Istanbul, Turkey; 2. Istanbul Technical University, Ankara, Turkey

**Modeling of the Dual Crane Lift of Maersk BD Module**

OMAE2011-49633

Mohamed Abou-Malhwa, Chellakat Joe-Joe, Sahjith Hair

**Global Performance of Synthetic Rope Mooring Systems – Frequency Domain Analysis**

OMAE2011-49723

Erik Falkenberg1 Vidar Åhjem1 Halvor Lie1 Karl E. Kaasen2 Kjell Larsen1 1. Det Norske Veritas, Høvik, Norway; 2. Marintek, Trondheim, Norway; 3. Statoil, Trondheim, Norway

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**Structures, Safety and Reliability Symposia**

**2-19 Fracture & Fatigue Reliability – II**

**Tuesday June 21**

**Goudriaan I | 15:30–17:30**

**Session Chair:** Jonas Ringsberg, Chalmers University of Technology, Sweden
**Session Co-Chair:** Ying Min Low, Nanyang Technological University, Singapore

**Fatigue Behavior of CHS Joints Fabricated Using Enhanced Partial Joint Penetration Welds**

OMAE2011-49201

Xudong Qian, Peter Marshall, Yudhianadi Petchdameeangam, Chien Thang Nguyen

**A Damage Mechanics Finite Element Simulation of a Fracture Mechanics Experiment for S690 Steel**

OMAE2011-49314

Yu Tian, Zhubo-shang Ji

**Effect of Low Cycle Fatigue Damage on Ultimate Strength of Aged Ship Structures**

OMAE2011-49314

Yu Tian, Zhuoshang Ji

**Full Scale Measurements of Fatigue and Extreme Loading Including Whipping on an 8600TEU Post Panamax Container Vessel in the Asia to Europe Trade**

OMAE2011-49378

Svein Erling Heggeland1 Gaute Storhaug1 Byung-Ki Choi2 1. Det Norske Veritas, Oslo, Norway; 2. HHI, Ulstein, Korea

**Experimental Study on Fatigue Strength of Welded Joints under Storm Loading**

OMAE2011-49658

Chang-Hyun Moon1 Kyosei Hashimoto1 Yooseok Song1 Kyung-Su Kim2 Sunghoon Kim1 Bong Jae Kim1 Yong Suk Ju2 Hong Lee3 1. AB, Houston, TX, USA; 2. Dept. of Naval Architecture and Ocean Engineering, Inha University, Incheon, Korea; 3. Samsung Heavy Industries, Geoje, Korea; 4. INHA University, Geoje, Korea

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**Structures, Safety and Reliability Symposia**

**2-31 Ultimate Strength – III**

**Tuesday June 21**

**Tokyo | 15:30–17:30**

**Session Chair:** Jeom Paik, Pusan National University, Korea
**Session Co-Chair:** Philippe Rigo, University of Liege, ANAST, Belgium

**Tripping Analysis and Design Consideration of Permanent Means of Access Structure**

OMAE2011-49104

Ming Ma1 Jeom-Soon Jang1 Owen F. Hughes2 1. BRS Defense Solutions, LLC, Stevensville, MD, USA; 2. Offshore Basic Engineering Team, Seoul, Korea; 3. Aerospace and Ocean Engineering, Virginia Tech, Blacksburg, VA, USA

**Comparison of Numerical Result with Experiment on Ultimate Strength of Long Stiffened Panel**

OMAE2011-50294

Mingcai Xu1 Carlos Guedes Soares1 1. Technical University of Lisbon, Lisbon, Portugal; 2. Centre for Marine Technology and Engineering, Lisbon, Portugal

**Effect of Initial Imperfections on the Strength of Restrained Plates**

OMAE2011-49161

Jose Manuel Gordo

**A Benchmark Study of ISO TS 18072-2 on the Stiffened Panel Ultimate Strength**

OMAE2011-50152

Paul Frieze1 Jeom Paik1 Martino Abbattista1 Mirella Vallascas1 1. PFA Consulting Engineers, Middlesex, UK; 2. Pusan National University, Busan, Korea

**Investigation into Post-Ultimate Strength Behavior of Ship’s Hull Girder in Analytical Solution**

OMAE2011-49617

Weijun Xu1 Iijima Kazuhiro1 Masahiko Fujikubo2 1. Osaka University, Osaka, Japan; 2. Osaka University, Suita, Japan

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**Materials Technology Symposia**

**3-17 Strain Based Design of Pipelines**

**Tuesday June 21**

**Town Hall | 15:30–17:30**

**Session Chair:** Jaime Buitrago, ExxonMobil Upstream Research, USA
**Session Co-Chair:** Xin Wang, Carleton University, Canada

**Strain Aging of C-Mn Line Pipe Steels: An Analytical Approach to Compare Strain Aging Heat Treatments**

OMAE2011-49917

Rick Noecker1 Nathan Nissley1 Ning Ma2 Neeraj Thirumalai3 Curt Nelson4 1. ExxonMobil Development Company, Houston, TX, USA; 2. ExxonMobil Upstream Research Company, Houston, TX, USA; 3. ExxonMobil Research & Engineering Company, Annandale, NJ, USA; 4. Trendsetter Engineering, Inc, Houston, TX, USA

**Effect of Strain Ageing on Mechanical Properties of Pipeline Girth Welds**

OMAE2011-49818

Badri Narayanan, Jon Ogborn

The Lincoln Electric Company, Cleveland, OH, USA

**Fracture Toughness Testing and Validation of Pipeline Girth Weld Flaw Acceptance Criteria for Sour Service Under Large Strain**

OMAE2011-49683

YouYou Wu, WenGuo Yuan, Tse Ven Steven Chong, Jens P. Tronskar

**Fully-Plastic J and CTOD Solutions for Pipes with Circumferential Surface Cracks Subjected to Combined Bending and Tension**

OMAE2011-49312

Luís F.S. Parise, Claudio Ruggieri

University of São Paulo, São Paulo, SP, Brazil
ECA for Operation – Is Today’s Practice of Relying on SENB instead of SENT Testing While Not Taking Internal Pressure into Account Conservative? OMAE2011-50208
Erlei Otse1, Tesfay Heier1, Bård Nyhus1, Erling Byhr1
1. SINTEF, Trondheim, Norway; 2. Technip Norge AS, Oslo, Norway

Multi-Tier Engineering Critical Assessment of Pipelines for Strain Based Design OMAE2011-50237
Francois Bardi, Sandeep Kibey, Shawn Wang, Venkat Krishnan, Doug Fairchild
ExxonMobil Upstream Research, Houston, TX, USA

Pipeline and Riser Technology Symposia
4-5 Mechanical Behavior – II
Tuesday June 21

Session Chair: Pedro Vargas, Chevron Energy Technology Company, USA
Session Co-Chair: Theodoro Netto, Federal University of Rio de Janeiro/Ocean Engineering Department, Brazil

Ratcheting, Wrinkling and Collapse of Tubes Induced by Axial Cycling under Internal Pressure OMAE2011-49706
Rong Jiao, Stelios Kyrilakis
University of Texas at Austin, Austin, TX, USA

Ultra Heavy Wall Linerpipe X65: Double Joint Girth Weld Performances for Severe Applications OMAE2011-49715
Luigi F. Di Vito1, Gianluca Mannucci1, Roberto Morana1, Antonio Lucci1, Federico Tintori1, Stefano Cippriani1, Mariano Armengol2, Noe Mota3, Mauricio Pelcastre3, Eduardo Ruiz1, Hector Quintanilla1, Philippe Darcis1
1. SINTEF, Trondheim, Norway; 2. Delft University of Technology, Delft, Netherlands; 3. PETROBRAS, Rio de Janeiro, RJ, Brazil; 3. PETROBRAS, Macaé, RJ, Brazil

L. Loureiro Silva, Theodoro Netto
Federal University of Rio de Janeiro, Ocean Engineering Department, Rio de Janeiro, RJ, Brazil

Liner Wrinkling of Lined Pipe During Bending, Numerical and Experimental Results Compared OMAE2011-49434
Annemiek Hilberink1, Bert Sluys1, Hol Gresnigt1, 2. Delft University of Technology, Delft, Netherlands

Potential Cost Savings in Wall Thickness Design of Ultra Deepwater Rigid Pipelines OMAE2011-49276
Eduardo Oazen2, Carlos Escudero2, Fabio Azevedo1, Leandro Basilio2
1. PETROBRAS, Rio de Janeiro, RJ, Brazil; 2. Delft University of Technology, Delft, Netherlands

Pipeline and Riser Technology Symposia
4-20 On-Bottom Behavior and Pipe-Soil Interaction – V
Tuesday June 21

Session Chair: Mohd Ashri, Petronas Calligali Sdn Bhd (PCSB), Ashri, Malaysia
Session Co-Chair: Yong Bai, Zhejiang University, P.R.China, China

Synthesis and Optimization of Submarine Pipeline Routes Considering On-Bottom Stability Criteria OMAE2011-49373
Mauro H.A. de Lima Jr., Juliana S. Baio, Carl H. Albrecht1, Beatriz S.L.P. de Lima, Breno Jacob1, Djalene M. Rocha2, Carlos O. Cardoso3
1. COPPE/UFRJ, Rio de Janeiro, RJ, Brazil; 2. LAIMCO/COPPE/UFRJ, Rio de Janeiro, RJ, Brazil; 3. PETROBRAS, Rio de Janeiro, RJ, Brazil; 3. PETROBRAS, Rio de Janeiro, RJ, Brazil

Novel Design of Small Diameter Pipelines on Uneven Seabed OMAE2011-49734
Eduard Hove, Tor Sævene, Sigurd Trier, Anne Cecille Nordove
Reinertsen AS, Trondheim, Norway

Mechanical Behavior of Buried Steel Pipelines Crossing Strike-Slip Seismic Faults OMAE2011-49455
Polyvakis Vazouras, Spyros Karamanos, Panos Dakoukas
University of Thessaly, Volos, Greece

Pipeline Embedment Prediction Using As-Laid Data OMAE2011-50095
John Oliphant, Gi Jae Yun
Techimp, Aberdeenshire, UK

Offshore Pipeline Shore Approach Design – Case Study OMAE2011-49937
Dean R. Campbell, Scott McMaster, Eric Jas
Atteris Pty Ltd, Perth, WA, Australia

Ocean Space Utilization Symposia
5-4 Underwater Exploration and Utilization
Tuesday June 21

Session Chair: Tomoya Inoue, JAMSTEC, Japan
Session Co-Chair: Hiroyoshi Suzuki, Osaka University, Dept of Naval Architecture and Ocean Eng., Japan

A Study on Improvement of Propulsive Performance of an Underwater Vehicle “PICASSO” OMAE2011-49643
Hiroyoshi Suzuki1, Yoshitaka Watanabe2, Tomoya Inoue1, Atsushi Yamamichi1, Risa Kitamoto1, Hiroshi Yoshida2
1. Osaka University, Dept. of Naval Architecture and Ocean Eng., Suita, Japan; 2. Japan Agency for Marine-Earth Science and Technology, Yokosuka, Japan

The Motion Characteristics of Crawler Driven ROV Moving over Bumps OMAE2011-49801
Tokihiro Katui1, Masanari Akashi1, Satoshi Kaijuwawa1, Tomoya Inoue1, Risa Kitamoto1, Hiroshi Yoshida2
1. Japan Agency for Marine-Earth Science and Technology, Yokosuka, Japan; 2. Kobe University, Kobe, Japan

Conceptual Design of Navigation of an AUV for Monitoring CCS Site at Deep Sea Bottom OMAE2011-49812
Yoshitaka Watanabe, Hiroshi Yoshida, Hiroshi Ochi, Tadahiro Hyakudome, Shojiro Ishibashi, Yoshiyuki Nakano, Shinobu Omika, Masami Matsuura
Japan Agency for Marine-Earth Science and Technology, Yokosuka, Japan

Scientific Drilling Program of Drilling Vessel CHIKYU and Drilling Data Acquisition for Future Technical Development OMAE2011-50090
Tomoya Inoue, Kazuyasu Wada, Eigo Miyazaki, Toshihiko Miyazaki
Japan Agency for Marine-Earth Science and Technology, Yokosuka, Japan

The Development of the Compact Size INS for Underwater Vehicles OMAE2011-50279
Shojiro Ishibashi, Yoshitaka Watanabe
Japan Agency for Marine-Earth Science and Technology, Yokosuka, Japan
Ocean Engineering Symposia

6-16 Marine Vehicles and Structures – II
Tuesday June 21
Leeuwen I | 15:30–17:30

Session Chair: Jim O’Sullivan, Technip, USA
Session Co-Chair: Jule Schanko, MARIN, Netherlands

Accidents in Situations with Large Stability Values OMAE2011-49541
Christoph Steinhäuser1 Nicolas Rau1 Jörg Kaufmann1 Ferenc John1 Stefan Krüger1
1. Hamburg University of Technology, Hamburg, Germany; 2. Federal Bureau of Maritime Casualty Investigation, Hamburg, Germany

An Innovative Concept for a New Generation of Ore Carriers OMAE2011-49589
Ricardo Portella1 Tomazo Garzia Neto1 Luiza Andrade1 Nelson Coelho2
1. PROJEMAR, Rio de Janeiro, RJ, Brazil; 2. VALE, Rio de Janeiro, RJ, Brazil

Hydrodynamic Analysis of Semisubmersibles for a Large Scale Desalination Plant OMAE2011-49400
R Saravanan1 Subrata Kumar Bhattacharyya2 Pannesevath Rajamanickam1 Sinivasan Chandrasekaran1
1. Indian Institute of Technology Madras, Chennai, TN, India; 2. National Institute of Ocean Technology, Chennai, TN, India

The Empirical Mode Decomposition Applied to Dynamic Positioning Systems OMAE2011-50025
University of São Paulo, São Paulo, SP, Brazil

Advanced Ship Maneuvering and Mooring Support System at Ship-to-Ship Transfer Operations by Fender Monitoring System of Pneumatic Fenders OMAE2011-50081
Shigeki Sakakibara, Shuu Yamada
The Yokohama Rubber Co., Ltd., Hiratsuka, Japan

Ocean Engineering Symposia

6-35 Ocean Measurement and Data Interpretation – III
Tuesday June 21
Leeuwen II | 15:30–17:30

Session Chair: René Huijsmans, Delft University of Technology, Netherlands
Session Co-Chair: Keith MacHutchon, Coastal Marine Technology, South Africa

Detecting the Phytoplankton Bloom from Satellite Images OMAE2011-50109
Nan-Jung Kuo, Chung-Ru Ho, Yao-Tsai Lo, Shih-Jen Huang
National Taiwan Ocean University, Keelung, Taiwan

Shipboard Measurement of Ocean Waves OMAE2011-49894
Thomas C. Fu, Anne Fullerton, Erin E. Hackett, Craig Merrill
Naval Surface Warfare Center Carderock Division, West Bethesda, MD, USA

Estimators of Wave Peak Period for Large Return Period Seastates OMAE2011-50275
Michele Drago, Tiziana Ciaffardi, Giancarlo Giovanetti
Sapem Energy Services, Fano, Italy

The WAG Platform Structural Effects Study OMAE2011-50138
Gus Jeans1 Robert Johnson2
1. Fugro GEO, Wallingford, UK; 2. BMT Fluid Mechanics Limited, Teddington, UK

CFD and VIV Symposia

8-8 Cylinders: Wakes & Interference – II
Tuesday June 21
Diamond I | 15:30–17:30

Session Chair: Raghu Menon, Shell Projects & Technology, Malaysia
Session Co-Chair: Juan Pontza, Shell Projects & Technology, USA

Rene Gabbai, Jonathan Hiebert
The Catholic University of America, Washington, DC, USA

Numerical Study of Oscillatory Flow Past Four Cylinders in Square Arrangement for Pitch Ratio Equal to OMAE2011-49578
Petros Anagnostopoulos, Chrysanthi Dikarou, Stelios Seitannis
University of Thessaloniki, Thessaloniki, Greece

An Experimental Study of the Cross-Flow on a Pair of Staggered Cylinders Subject to Forced Oscillations OMAE2011-49776
Waldir T. Pinto1 Jairo F.L. Coelho2 Carlos Levi1
1. Laboratório de Tecnologia Oceânica, Rio de Janeiro, RJ, Brazil; 2. Federal University of Rio Grande, Rio Grande, RS, Brazil

CFD Based Hydrodynamic Databases for Wake Interference Assessment OMAE2011-49407
David Corson1 Harish Mukundan1 Paul Hays4 Yannnis Constantinides4 Ming Leung5 Owen Oakley, Jr.6 Steve Cosgrove6
1. Chevron Energy Technology Co, San Ramon, CA, USA; 2. ACUSIM Software, Inc., Clifton Park, NY, USA; 3. Shell International Exploration and Production, Houston, TX, USA; 4. Chevron, Houston, TX, USA; 5. ACUSIM Software, Inc., Clifton Park, NY, USA; 6. FloaTEC, LLC., Houston, TX, USA

Ocean Renewable Energy Symposia

9-7 Wind Energy – II
Tuesday June 21
Van Oldenbarnevelt | 15:30–17:30

Session Chair: Gunjit Bir, Clipper Windpower (United Technologies), USA
Session Co-Chair: M. Philippe, Laboratoire de Mécanique des Fluides (CNRS UMR 6598), Ecole Centrale Nantes, France

Comparison of Time and Frequency Domain Simulations of an Offshore Floating Wind Turbine OMAE2011-49722
M. Philippe, A. Babarit, Pierre Ferrant
Laboratoire de Mécanique des Fluides (CNRS UMR6598), Ecole Centrale de Nantes, Nantes, France

Installation of Monopiles for Offshore Wind Turbines – By Using End-Caps and a Subsea Holding Structure OMAE2011-49129
Arunjyoti Sarkar, Ove Gudmestad
University of Stavanger, Stavanger, Norway

Qian Chen1 Fu Shixiao2 Zaojian Zou1
1. Shanghai Jiao Tong University Dept. of Naval Architecture and Ocean Engineering, Shanghai, China; 2. Shanghai Jiao Tong University, Shanghai, China

Short and Long Terms Extreme Reliability Analysis Applied to Floating Wind Turbine Design OMAE2011-50264
Timothée Perdrizet, Daniel Averbuch
IFP Energies Nouvelles, Solaise, France (Metro)

Wind Turbine Installation Vessel of a New Generation OMAE2011-49138
Alexei Bereznitski
Huisman Equipment BV, Schiedam, Netherlands
Ocean Renewable Energy Symposia
9-8  Current Energy – II
Tuesday June 21  Mees Auditorium  15:30–17:30
Session Chair: Jennifer Matthews, Offshore Energy Research Associations, Canada
Session Co-Chair: Bruce Cameron, Nova Scotia Department of Energy, Canada

Bruce Cameron
Nova Scotia Department of Energy, Halifax, NS, Canada

Tidal Energy in Nova Scotia, Canada – The Fundy Ocean Research Centre for Energy (Force) Perspective
Douglas Keefe, Joseph Kozak
The Fundy Ocean Research Centre for Energy (FORCE), Halifax, NS, Canada

Tidal Energy in Nova Scotia, Canada – Assessment of the Potential of Tidal Power from Minas Passage and Minas Basin
Richard Karsten
Acadia University, Wolfville, NS, Canada

Tidal Energy in Nova Scotia, Canada – Defining Ocean Energy Research Opportunities and Challenges
Jennifer Matthews, Laura A. Smith
Offshore Energy Research Associations, Halifax, NS, Canada

Jo Pinkster Symposium on ‘Second Order Wave Drift Forces on Floating Structures’
12-3  Non Linear Wave Forces and Ship Motions
Tuesday June 21  Diamond II  15:30–17:30
Session Chair: Jeffrey Falzarano, Texas A&M University, USA
Session Co-Chair: René Huijsmans, Delft University of Technology, Netherlands

A Practical Method to Determine the Effect of Current on Wave Loads and Motions of Offshore Structures
Tim Bunnik
MARIN, Wageningen, Netherlands

Effects of Shaping on Viscous Damping and Motion of Heaving Cylinders
Ronald W. Yeung, Yichen Jiang
University of California at Berkeley, Berkeley, CA, USA

Towards the Navigational Safety Standard in Close Proximity Underway Lightering Maneuvers of a Two Ships
Renato Skejic1 Kensuke Kirimoto2 Tor E. Berg1 Egil Pedersen2
1. Marintek, Trondheim, Norway; 2. Department of Marine Technology, Norwegian University of Science and Technology, Trondheim, Norway

Viscous Flow Effects of Passing Ships in Ports
Tim Bunnik, Serge Toxopeus
MARIN, Wageningen, Netherlands

The Investigation of Non-linear Effect for a Circular Cylinder Shaped FPSO
Sam Kyon Hong1 Rae Hyyoung Yuck1 Boem Seon Jang2 Hi Seok Kang2 Se Eun Kim2 Jong Soo Seo2
1. Samsung Heavy Industries Co., Ltd., Daejeon, Korea; 2. Samsung Heavy Industries Co., Ltd., Seoul, Korea

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Offshore Technology Symposia

Wednesday, 8:30–10:00

1-7 Subsea Systems – I

Wednesday June 22

Session Chair: Howard Wang, ExxonMobil Development Company, USA
Session Co-Chair: Shan Shi, Houston Offshore Engineering, USA

Subsea Hydrocarbon Processing and Treatment – Twister Subsea

OMAE2011-49199

Wouter Balk1 Kees Tjeenk-Willink2
1. Delft University of Technology, Delft, Netherlands; 2. TwisterBV, Rijswijk, Netherlands

A Methodology for Assessment of Internal Flow-Induced Vibration (FIV) in Subsea Piping Systems OMAE2011-49795

Yetziah Urrhalte1 Kylie Breaux2 Scott I McNeilly2 Eric Luther4 Julian Austin4 Michael Tognarelli4
1. Stress Engineering Services, Inc., Houston, TX, USA; 2. BP America Production Co., Houston, TX, USA; 3. BP Exploration Operation Co., Sunbury-on-Thames, UK; 4. Stress Engineering Services, Inc., Cincinnati, OH, USA

Numerical Analysis of a Novel Method for Subsea Equipment Installation OMAE2011-49948

Felipe Rateiro1 Carlos Fucatu1 Luciano Piana2
1. University of São Paulo, São Paulo, SP, Brazil; 2. PETROBRAS / CENPES, Rio de Janeiro, RJ, Brazil

Wellhead Fatigue Analysis Method OMAE2011-50026

Lorents Reind1 Torfinn Hørte1 Morten Sæther3 Guttorm Grytøyr4
1. Det Norske Veritas, Hakkøya, Norway; 2. University of Stavanger, Stavanger, Norway; 3. Statoil, Oslo, Norway; 4. Det Norske Veritas, Houston, TX, USA

Offshore Technology Symposia

1-20 Impact Loadings

Wednesday June 22

Session Chair: Zhenjia (Jerry) Huang, ExxonMobil Upstream Research Company, USA
Session Co-Chair: Fabrizio Pistani, University of Western Australia, Australia

Full and Large Scale Wave Impact Tests for a Better Understanding of Sloshing – Results of the Sloshel Project OMAE2011-49922

Mirosław Lech (Mirek) Kaminski1 Hans Boe2 Laurent Brosset3
1. Delft University of Technology, Delft, Netherlands; 2. MARIN, Hydro Structural Services, Wageningen, Netherlands; 3. GTT, Saint-Rémy-lès-Chevreuse, France

Comparison of Sloshing Impacts for Rectangular and Chamfered LNG Tanks OMAE2011-49452

Fabrizio Pistani1 Krish Thiagarajan2 Timothy Finnigan3 Dominique Roddier3
1. Marine Innovation & Technology, Berkeley, CA, USA; 2. The University of Western Australia, Crawley, WA, Australia; 3. University of Western Australia, Perth, WA, Australia; 4. Metocean & Offshore Special Projects Team, Chevron ETC, San Ramon, CA, USA

Breaking Wave Impact on a Platform Column: An Introductory CFD Study OMAE2011-49976

Csaba Pakozdi1 Timothy E. Kendrick1 Carl T. Stansberg2
1. Marine Innovation & Technology, Berkeley, CA, USA; 2. The University of Western Australia, Perth, WA, Australia

Structures, Safety and Reliability Symposia

2-13 Probabilistic Response Modelling – III

Wednesday June 22

Session Chair: Luis Sagrilo, COPPE/UFRJ, Brazil
Session Co-Chair: Arvid Naess, CeSOS/NTNU, Norway

Assessment of Full-Scale Measurements with Respect to Extreme Hogging and Sagging Condition of Container Ships OMAE2011-49456

Wengang Mao, Zhiyuan Li, Jonas Ringsberg, Igor Ryhlik
Chalmers University of Technology, Gothenburg, Sweden

Dynamics and Hydrodynamics of a Moored Floating Rectangular Structure Under the Action of Random Sea Waves OMAE2011-49486

Giovanni Malara1 Felice Arena1 Pol D. Spanos2
1. Mediterranean University of Reggio Calabria, Reggio Calabria, Italy; 2. Rice University, Houston, TX, USA

Metocean Design Criteria for Pipeline On-Bottom Stability OMAE2011-49770

Richard Gibb
BP, Sunbury on Thames, UK

 Turkstra Profiles of North Sea Currents: Wider Than You'd Think OMAE2011-49866

Steve Winterstein1 Sverre Haver2 Alok Jha2 Jorge Kringedal2 Einar Nygaard4
1. Stanford Continuation Studies, Stanford, CA, USA; 2. Statoil, Stavanger, Norway; 3. MMi Engineering, Oakland, CA, USA; 4. Statoil, Stavanger, Norway

Structures, Safety and Reliability Symposia

2-20 Fracture & Fatigue Reliability – III

Wednesday June 22

Session Chair: Jonas Ringsberg, Chalmers University of Technology, Sweden
Session Co-Chair: Ying Min Low, Nanyang Technological University, Singapore

A Fatigue Design for Large Container Ship Taking Long-Term Environmental Condition Into Account OMAE2011-49343

Masayoshi Oka1 Yoshitaka Ogawa1 Ken Takagi2
1. National Maritime Research Institute of Japan, Mitaka, Japan; 2. Graduate School of Frontier Sciences, The University of Tokyo, Kashiwa, Japan

Direct Calculation of Fatigue Damage of Ship Structure Details OMAE2011-49758

Zhiyuan Li, Jonas Ringsberg
Chalmers University of Technology, Gothenburg, Sweden

Evaluation of Premature Failure of Links in the Docking System of a FPSO OMAE2011-49350

Luiz Largura, Pedro Craidy, Luciano Piana
PETROBRAS / CENPES, Rio de Janeiro, RJ, Brazil

Fatigue Analysis of a Steel Catenary Riser with Uncertain Seabed Parameters OMAE2011-49880

Feng Zi Li, Ying Min Low
Nanyang Technological University, Singapore, Singapore
Materials Technology Symposia

3-2 LNG/FLNG Tank and Pipe Design and Materials Workshop – I

Wednesday June 22

Session Chair: Xiaoxi Wang, ABS, USA

Session Co-Chair: Jaime Buitrago, ExxonMobil Upstream Research Company, USA

A Study on the Application of Cryogenic Design Criteria to a Self-supporting Prismatic IMO Type B LNG Tank Made of SUS304 (Mod) OMAE2011-49639
Bong Jae Kim1 Sung Wook Chung1 Yong Suk Suh1 Yong Lee Shin1 Ho Seong Lee1
1. ABS, Houston, TX, USA; 2. Samsung Heavy Industries, Geoje, Korea

Development of New IMO Type B Tank Based on the Results of Cryogenic Material Properties OMAE2011-49330
Kwang Seok Kim, Chang Youl Park, Joong Kyoo Kang
Daewoo Shipbuilding & Marine Engineering Co., Ltd, Geoje-Si, Korea

Pipeline and Riser Technology Symposia

4-29 Flexible Pipes – I

Wednesday June 22

Session Chair: Svein Savik, Norwegian University of Science and Technology, Norway
Session Co-Chair: Antoine Félix-Henry, Technip Flexi-France, France

An Investigation of Fatigue Damage Due to VIV in Flexible Riser with Three Different Methodologies OMAE2011-49036
Yamqiu Zhang, Zhimin Tan
Wellstream International Limited, Houston, TX, USA

An Experimental Study on Behaviors of IMO Type B CCS Materials at Room and Cryogenic Temperatures OMAE2011-49345
Chang-Hyuk Yoo, Kyung-Su Kim, Joonmo Choun, Sung-Hoon Kim, Won-Hyo You
Dept. of Naval Architecture and Ocean Engineering, Inha University, Incheon, Korea

Fatigue Assessment of Aluminum Ship Details by Hot-Spot Stress Approach OMAE2011-50201
Bård Wathne Iveti1 Xiaozi (Christina) Wang2 Stig Berge2
1. SINTEF Materials and Chemistry, Trondheim, Norway; 2. American Bureau of Shipping, Det Norske Veritas, Hovik, Norway

Ocean Engineering Symposia

6-4 Model Tests – I

Wednesday June 22

Session Chair: Antonio C. Fernandes, Federal University of Rio de Janeiro, Brazil
Session Co-Chair: Jon Mikkelsen, University of British Columbia, Canada

A Novel Method for Generating Continuously Surfable Waves – Comparison of Predictions with Experimental Results OMAE2011-49145
Steven Schmied1 Martin R. Renilson3 Giles A. Thomas3

Free Roll Decay of a Damaged Ship for CFD Validation OMAE2011-49315
Sung-Kyun Lee1 Ji-Myoung You1 Hyun-Ho Lee2 Shin Hyung Rheee1 Key-Pyo Rheee1
1. Seoul National University, Seoul, Korea; 2. Hyundai Heavy Ind., Ulsan, Korea

Experimental Investigations into the Influences of SCRs and Appurtenances on Deepdraft Semisubmersible Vortex Induced Motion Response OMAE2011-49365
Oriol Rijken, Steve Leverette, Sipke Schuurmans
SBM Atlantis, Houston, TX, USA

First Ocean Going Ships with Spraying and Whipping Included in the Ship Design OMAE2011-49366
Gaute Storhaug1 Erlend Moe2 Ricardo Portella1 Tomasz Zarzeczny3
1. Det Norske Veritas, Oslo, Norway; 2. PROENMAR, Rio de Janeiro, RJ, Brazil; 3. Vale, Rio de Janeiro, RJ, Brazil

Pipeline and Riser Technology Symposia

4-6 Mechanical Behavior – III

Wednesday June 22

Session Chair: Stelios Kyriakides, University of Texas at Austin, USA
Session Co-Chair: Jaime Buitrago, ExxonMobil Upstream Research Company, USA

Qualification of Enhanced Collapse Capacity UOE Deepwater Linepipe OMAE2011-49571
Simon Slater1 Olav Aamu1 Robin Devine1 David Hernandez1 Doug Swanek4

Global Buckling of Pipe-In-Pipe – Structural Response and Design Criteria OMAE2011-49960
Stig Goplen, Olav Fyrileiv, Jon Petter Grandal, Lars Borsheim
Det Norske Veritas, Hovik, Norway

Zap-Lok Connection Testing and Axial Strength Design OMAE2011-50209
Pedro Vargas1 Ben Crowder2 David Roberts2
1. Chevron Energy Technology Co, Houston, TX, USA; 2. Zap-Lok Pipeline Technologies, Cambridge, MD, USA

Engineering Design and Analysis of Free Standing Hybrid Riser Top Buoyancy Can OMAE2011-49660
Kang Zhuang, Jia Lusheng, Liang Wenzhou
Harbin Engineering University, Harbin, Heilongjiang, China

New York | 8:30–10:00

A Theoretical-Experimental Assessment OMAE2011-49524
Guilherme R. Franzin1 Celso Pesce1 Fernanda C.M. Takafuji2 Rodolfo T. Gonçalves1 Rafael Tanaka1 Marcelo Silva1 Teófilo Barbosa1 Carlos A. Godinho1
1. University of São Paulo, São Paulo, SP, Brazil; 2. Prysmian Cables and Systems, Porto de Santana, ES, Brazil; 3. NDF-POLI-University of São Paulo, São Paulo, SP, Brazil

Quick Connection Couplings in the Permeated Gas Relief Systems of Flexible Riser End-Fittings OMAE2011-49745
João Paulo Costa e Silva Nunes1 Marcelo Brack1 Jose Padilha1 Antonio Pinheiro G. Romero1 Antonio Marcos Rego Motta1 Alexandre Rabelo1
1. PETROBRAS, Rio de Janeiro, RJ, Brazil; 2. PETROBRAS/CENPES/PDP/ Tecnologia Submarina, Ilha do Fundão, Rio de Janeiro, RJ, Brazil

Multiple Axial Fatigue of Pressure Armors in Flexible Risers OMAE2011-50210
Naiquan Ye1 Svein Savik2
1. Marintek, Trondheim, Norway; 2. Norwegian University of Science and Technology, Trondheim, Norway
Ocean Engineering Symposia

6-17 Marine Vehicles and Structures – III

Wednesday June 22  
Leeuwen I | 8:30–10:00

Session Chair: Nuno Fonseca, Centre for Marine Technology and Engineering (CENTEC), Portugal
Session Co-Chair: Andre Kauffeldt, Technical University of Berlin, Germany

Station Keeping Adaptive Control of a Boat with Twin Gasoline Outboard Motors: Synthesis, Simulation and Sea-Trials  
OMAE2011-49827

Aaron Fisher1 James Van Zwiert2 Nikolaos Xinos2
1. Southeastern National Marine Renewable Energy Center at Florida Atlantic University, Dania Beach, FL, USA; 2. Virginia Polytechnic Institute and State University, Blacksburg, VA, USA; 3. Florida Atlantic University, Dania Beach, FL, USA

Calculation of Floating Crane Natural Frequencies Based on Linearized Multibody Dynamics  
OMAE2011-49303

Ivan Catipovic, Veceslav Coric, Duje Velc
Faculty of Mechanical Engineering and Naval Architecture, University of Zagreb, Zagreb, Croatia

Collaborated and Constrained Neural-EKF Algorithm for the Vessel Traffic Monitoring and Information System  
OMAE2011-50248

Lokukaluge P. Perera1 Paulo Oliveira2 Carlos Guedes Soares3
1. Technical University of Lisbon, Lisbon, Portugal; 2. Institute for Systems and Robotics, Lisbon, Portugal

A Ship Flotation Control System Based on Pump-Driven Tank  
OMAE2011-49500

Juan Guo1 Meng Tang2 Zaojian Zou1
1. Shanghai Jiao Tong University Dept. of Naval Architecture and Ocean Engineering, Shanghai, China; 2. Southwest Jiaotong University Dept. of Mechanical Engineering, Chengdu, Chengdu, China

CFD and VIV Symposia

8-13 Risers – I

Wednesday June 22  
Goudriaan I | 8:30–10:00

Session Chair: Rene Gabbai, The Catholic University of America, USA
Session Co-Chair: Halvor Lie, Marintek, Norway

Experimental Investigation on Vortex-Induced Vibration of Risers with Staggered Buoyancy  
OMAE2011-49046

Lin Li, Fu Shixiao, Jianmin Yang, Tie Ren, Xuefeng Wang
Shanghai Jiao Tong University, Shanghai, China

A Numerical Model of Vortex-Induced Vibration on Marine Risers  
OMAE2011-49610

Hamed Ashouri, Keyvan Sadeghi, Saeid Niazi
University of Hormozgan, Bandar Abbas, Iran

VIV Prediction of a Truss Spar Pull-Tube Array Using CFD  
OMAE2011-50145

Yiannis Constantinides1 Weiwei Yu2 Samuel Holmes3
1. Chevron, Houston, TX, USA; 2. Red Wing Engineering, Inc., CA, USA; 3. Chevron Energy Technology Co, Houston, TX, USA

Flow Induced Forces on Multi-Planar Rigid Jumper Systems  
OMAE2011-50225

Arawind Nair1 Christian Chaulet1 Alan Whooley2 Ayman Eltaher2 Paul Jukes3
1. MCS Kenny, Houston, TX, USA; 2. MSCI Kenny, Aberdeen, Scotland, UK

Ocean Renewable Energy Symposia

9-9 Wave Energy – III

Wednesday June 22  
Van Oldenbarnevelt | 8:30–10:00

Session Chair: Teresa Pontes, IMDEA / IST, Portugal
Session Co-Chair: Solomon Yin, Oregon State University, USA

Development of a Novel 1:7 Scale Wave Energy Converter  
OMAE2011-50336

Ken Rhinefrank1 Al Schacher2 Joe Prudell2 Erik Hammagren2 Zhe Zhang1
1. Oregon State University, Corvallis, OR, USA; 2. Columbia Power Technologies, LLC, Corvallis, OR, USA; 3. School of Electrical Engineering and Computer Science, Corvallis, OR, USA

Modelling of the IPS Buoy Wave Energy Converter Including the Effect of Non-uniform Tube Cross-section  
OMAE2011-49117

Antonio Falcao1 Jose J. Candido2 Paulo Justino3 Joao Henriques1
1. Instituto Superior Tecnica, Lisbon, Portugal; 2. IDMEC/Instituto Superior Tecnica, Lisbon, Portugal; 3. Laboratorio Nacional de Energia e Geologia, Lisbon, Portugal

Preliminary Results of a Rans Simulation for a Point Absorber Wave Energy System  
OMAE2011-50001

Yi-Hsiang Yu1 Ye Li2
1. National Renewable Energy Laboratory - Wind Technology Center, Golden, CO, USA; 2. National Renewable Energy Laboratory, Golden, CO, USA

Near-Field Flow Downstream of a Barrage: Experiments, 3-D CFD and Depth-Averaged Modelling  
OMAE2011-50291

Penelope Jeffcoate, Peter K. Stansby, David D. Apsley
University of Manchester, Manchester, UK
Ocean Renewable Energy Symposia

9-10 Wind Energy – III

Wednesday June 22  Mees Auditorium | 8:30–10:00

Session Chair: Lance Manuel, University of Texas at Austin, USA
Session Co-Chair: Henrik Bredmose, DTU Mechanical Engineering, Denmark

Nonlinear Two Stage Control Strategy of a Wind Turbine for Mechanical Load and Extreme Moment Reduction OMAE2011-49225

Jonathan Chauvin, Yann Creff
IFP Energies Nouvelles, Rueil Malmaison, France

Statistical Uncertainty Analysis of the Long-Term Distribution of Wind- and Wave- Induced Hot-Spot Stress for Fatigue Design of Jacket Wind Turbine Based on Time Domain Simulations OMAE2011-49307

Wenbin Dong1 Torger Moan1 Zhen Gao2
1. Norwegian University of Science and Technology, Trondheim, Norway; 2. Centre for Ships and Ocean Structures in Norwegian University of Science and Technology, Trondheim, Norway

Decentralised Control Design for Load Mitigation in Horizontal Axis Wind Turbines (HAWTs) OMAE2011-50147

Fredrik Sandquist1 Ger Moe2 Olimpo Anaya-Lara3
1. University of Strathclyde, Glasgow, UK; 2. Norwegian University of Science and Technology, Trondheim, Norway

Offshore Wind Farm Construction: Easier, Safer and More Cost Effective OMAE2011-49847

Marc Eijssen
DSM Dyneema, Urmond, Netherlands

Johan Wichers Symposium on ‘Mooring of Floating Structures in Waves’

13-1 Mooring Systems

Wednesday June 22  Diamond II | 8:30–10:00

Session Chair: Joel Witz, Hess, United Kingdom
Session Co-Chair: Wim de Boom, GustoMSC, Netherlands

Keynote Address
The Role of Johan Wichers in Research of Offshore Floating Systems OMAE2011-50356

Job Baar
Shell International Exploration and Petroleum, Houston, TX, USA

Dynamic Analysis of Mooring Lines for Deep Water Floating Systems OMAE2011-50140

Kagita Gurumurthy1 Suhaill Ahmad1 AS Murthy Chitrapur2
1. Indian Institute of Technology, Delhi, Delhi, India; 2. Engineers India Limited, New Delhi, India. 3. CSC/Advanced Marine Center, Washington, DC, USA

On the Probability Distribution of Mooring Line Tensions in a Directional Environment OMAE2011-50104

Jan Mathisen1 Siril Okkenhaug1 Kjell Larsen2
1. Det Norske Veritas, Hovik, Norway; 2. Statoil, Trondheim, Norway

Time Domain Analysis of a Multi-component Mooring and Steel Catenary Risers System in Ultra Deepwater OMAE2011-49020

Umaru M. Ba, Hoi-sang Chan
Newcastle University, Newcastle upon Tyne, UK

Offshore Geotechnics Symposia

10-4 Seabed Processes and Mechanics

Wednesday June 22  Blue | 8:30–10:00

Session Chair: Ayman Eltaheer, MCS Kenny, USA

Simulation of Passive Soil Failure & Cutting Processes in Sand OMAE2011-49226

Mahbubur Rahman1 Sape Miedema2 Dingena Schott1 Morzea Abdeli1
1. Delft University of Technology, Delft, Netherlands; 2. Royal Boskalis Westminster, Papendrecht, Netherlands

Ultimate Capacity of Suction Caissons Under Axial Loads OMAE2011-49299

Mohamad M. Ahmadi, Maryam Hejazian
Sharif University of Technology, Tehran, Iran

Cyclic Response of Granular Subsoil Under a Gravity Base Foundations for Offshore Wind Turbines OMAE2011-49391

Stefanus Saffinus, German Sediacek, Udo Hartwig
Ed. Zueblin AG, Stuttgart, Germany

Shakedown Analysis of Offshore Platform Under Varied Combined Loading OMAE2011-49428

Qı-yı Zhang, Sheng Dong
Ocean University of China, Qingdao, Shandong, China

Offshore Technology Symposia

1-8 Subsea Systems – II

Wednesday June 22  Penn I | 10:30–12:00

Session Chair: Shan Shi, Houston Offshore Engineering, USA
Session Co-Chair: Howard Wang, ExxonMobil Development Company, USA

Fatigue and Environmental Loading of Large-Bore Manifold Piping OMAE2011-49381

Knut Vedel1 Havva Solliand2 Olav FYTTE1
1. Det Norske Veritas, Hovik, Norway; 2. T. Statool, Trondheim, Norway

New Approach of Deep Sea Dredging OMAE2011-49351

Mark Winkelman, Evout van Duursen
Damen Dredging Equipment, Nijkerk, Netherlands

Damen Dredging Equipment, Nijkerk, Netherlands

Natural Convection – Subsea Cooling: Theory, Simulations, Experiments and Design OMAE2011-49630

Brian Gyles1 Stig Grafsrønnen1 ‘Tine Bauck Dahl1 Bjarte Hægland1
Reidar B. Schüller1 Åle Jensen1 Amaud Sanchis1
1. University of Oslo, Oslo, Norway; 2. FMC Kongsberg Subsea AS, Asker, Norway; 3. Norwegian University of Life Sciences, Ås, Norway
Offshore Technology Symposia

1-24 LNG Challenges

Wednesday June 22
Session Chair: Krish Thigaranjan, The University of Western Australia, Australia
Session Co-Chair: Hames Bogaert, MARIN, Hydro Structural Services, Netherlands

Qualification of Multi-Composite Hoses for STS LNG Transfer OMAE2011-49222
Gerard van der Weijde, Niels Mallan
TNO Centre for Mechanical and Maritime Constructions, Delft, Netherlands

Numerical and Experimental Investigation on Hydrodynamic Characteristics of FLNG with Account of the Inner-Tank Sloshing OMAE2011-49244
Wenhua Zhao1 Jianmin Yang1 Z. Hu2 Tao Peng1
1. Shanghai Jiao Tong University, Shanghai, China; 2. State Key Lab of Ocean Engineering, Shanghai Jiao Tong University, Shanghai, China

Numerical Sloshing Analysis of FLNG and LNGC Considering a Two-body Motion Effect OMAE2011-49534
Jongjin Park1 Hiroshi Kawabe2 Munsung Kim3 ByungWoo Kim1 Jae-Kwang Eom1
1. Samsung Heavy Industries, Gyeonggido, Korea; 2. Samsung Heavy Industries, Gyeonggi, Korea

Hydrodynamic Considerations for FLNG Concepts OMAE2011-50132
Gunther F. Claus1 Spyros Mavroke1 Florian Sprenger1 Matthias Dudek1
1. Technical University of Berlin, Berlin, Germany; 2. National Technical University of Athens, Athens, Greece; 3. Naval Architecture & Ocean Engineering, Berlin, Germany

Materials Technology Symposia

3-6 Fatigue of Girth Welds

Wednesday June 22
Session Chair: Yuri Tkach, Lloyd's Register, United Kingdom
Session Co-Chair: Rick Noecker, ExxonMobil Development Company, USA

Fatigue of High Quality Girth Welds – Review OMAE2011-50036
Oddvin Øysæter1 Sigmund Kyre Aa1 Bård Wahtne Tveiten1 Per Jahn Haugen2
1. SINTEF Materials and Chemistry, Trondheim, Norway; 2. Norwegian University of Science and Technology, Trondheim, Norway; 3. SINTEF, Trondheim, Norway

Fatigue Performance Full-Scale Girth Welded Pipes Under Variable Amplitude Loading OMAE2011-49942
Yanhui Zhang, Stephen Maddox
TWI Ltd, Cambridge, UK

Effects of Microstructure and Hydrogen Charging on Fatigue Performance of Duplex and Superduplex Stainless Steels OMAE2011-49130
Amir Bahrami, Peter Tubby, Yanihui Zhang
TWI Ltd, Cambridge, UK

A Level 3 BS7910 ECA for a Titanium Stress Joint for Use on a High Motion Floater in the Gulf of Mexico OMAE2011-58222
Pedro Vargas1 Carl Baxter2 Ronald Schutz2
1. Chevron Energy Technology Co, Houston, TX, USA; 2. RTI International Metals, Inc., Niles, ON, USA

Materials Technology Symposia

3-14 LNG/FLNG Tank and Pipe Design and Materials Workshop – II

Wednesday June 22
Session Chair: Xiaozhi Wang, ABS, USA
Session Co-Chair: Inge Lortsberg, DNV, Norway

Development of 6%Ni Steel for LNG Storage Tanks OMAE2011-49594
Hitoshi Furuya1 Naoko Saitoh2 Yasunori Takahashi3 Katsumi Kurebayashi3
1. Nippon Steel Corporation, Ichikawa-shi, Chiba, Japan; 2. Mitsubishi Heavy Industries, Ichikawa-shi, Chiba, Japan; 3. Nippon Steel Corporation, Tokyo, Japan

Stress Analysis of a Cryogenic Corrugated Pipe OMAE2011-49852
Vikas Srivastava, Jaime Buitrago, Scott Sloruch
ExxonMobil Upstream Research Company, Houston, TX, USA

Pipeline Integrity and Rehabilitation OMAE2011-50238
Francois Bardi, Mohan Kulkarni, Huang Tang, Xiaolei Yin
ExxonMobil Upstream Research, Houston, TX, USA

Development of 7% Ni-TMCP Steel Plate for LNG Storage Tanks OMAE2011-49149
Takahiro Kamo1 Kazushige Arimoto1 Tomoya Kawai1 Kazushi Onishi2 Ryuichi Andou3

Structures, Safety and Reliability Symposia

2-21 Fracture & Fatigue Reliability – IV

Wednesday June 22
Session Chair: Bernt Leira, NTNU, Norway
Session Co-Chair: Oistein Hagen, Det Norske Veritas, Norway

Study on the Equivalent Wave Approach for the Fatigue Assessment of Ship Structures OMAE2011-49079
Guoqing Feng, Hao Sun, Huilong Ren, Hui Li
Harbin Engineering University, Harbin, Heilongjiang, China

Short-term Fatigue Analysis of Semi-submersible Wind Turbine Tower OMAE2011-50092
Marit Irene Kvittem1 Torgerl Moan1 Zhen Gao2 Chenyu Luan1
1. Norwegian University of Science and Technology, Trondheim, Norway; 2. Centre for Ships and Ocean Structures in Norwegian University of Science and Technology, Trondheim, Norway

Fatigue Reliability Assessment of Coupled Spar-Mooring System OMAE2011-49687
Jameel Mohammed1 Suhail Ahmed1
1. Indian Institute of Technology Delhi, New Delhi, India; 2. University of Malaya, Kuala Lumpur, Malaysia

Fracture Reliability of Jack-up Platforms under Extreme Environmental Loads OMAE2011-49143
Naser Shabakhty
University of Sistan and Baluchestan, Zahedan, Iran

Materials Technology Symposia

3-14 LNG/FLNG Tank and Pipe Design and Materials Workshop – II

Wednesday June 22
Session Chair: Xiaozhi Wang, ABS, USA
Session Co-Chair: Inge Lortsberg, DNV, Norway

Development of 6%Ni Steel for LNG Storage Tanks OMAE2011-49594
Hitoshi Furuya1 Naoko Saitoh2 Yasunori Takahashi3 Katsumi Kurebayashi3
1. Nippon Steel Corporation, Ichikawa-shi, Chiba, Japan; 2. Mitsubishi Heavy Industries, Ichikawa-shi, Chiba, Japan; 3. Nippon Steel Corporation, Tokyo, Japan

Stress Analysis of a Cryogenic Corrugated Pipe OMAE2011-49852
Vikas Srivastava, Jaime Buitrago, Scott Sloruch
ExxonMobil Upstream Research Company, Houston, TX, USA

Pipeline Integrity and Rehabilitation OMAE2011-50238
Francois Bardi, Mohan Kulkarni, Huang Tang, Xiaolei Yin
ExxonMobil Upstream Research, Houston, TX, USA

Development of 7% Ni-TMCP Steel Plate for LNG Storage Tanks OMAE2011-49149
Takahiro Kamo1 Kazushige Arimoto1 Tomoya Kawai1 Kazushi Onishi2 Ryuichi Andou3
### Pipeline and Riser Technology Symposia

#### Wednesday June 22

**Session Chair:** Chris Timms, C-FER Technologies, Canada  
**Session Co-Chair:** Stelios Kyrkiadis, University of Texas at Austin, USA

**Buckling of Clad Pipes Under Bending and External Pressure**  
OMAE2011-49470  
Sergio Ribeiro e Silva1 E. Uzunoglu2 Carlos Guedes Soares2 Adolfo Maren1 Cesar Gutierrez3  
1. Technical University of Lisbon, Lisboa, Portugal; 2. Centro de Investigación e Innovación Tecnológica, Barcelona, Spain; 3. National University of Singapore, Singapore, Singapore

**Comparative Strength Analysis of Aluminum Drill Pipes with Steel Connectors Assembled by Different Methods**  
OMAE2011-49112  
Vadim Tikhonov1 Daniela P. Davydova1 Rudolf S. Alikin1 Mikhail Ya Gelfgat1  
1. Aquatic Co (A Weatherford Co), Moscow, Russia; 2. Samara State Aerospace Institute, Samara, Russia

**Structural Integrity Assessment of a Pipeline Subjected to an Underwater Explosion**  
OMAE2011-49178  
Paolo Monti1 Caterina Molinari1 Massimiliano Bocciarelli2 Alberto Corigliano2 Stefano Marian2  
1. Saipem Energy Services, San Donato Milanese, Italy; 2. Politecnico di Milano - Department of Structural Engineering, Milan, Italy

**Limit State Design Based on Experimental Methods for High Pressure High Temperature Riser and Pipeline Design**  
OMAE2011-49424  
Chris Alexander1 Roy Shilling2 Ron Livesay3  
1. Stress Engineering Services, Inc., Houston, TX, USA; 2. BP America Inc., Houston, TX, USA; 3. Hecate Software, Inc., Ft. Worth, TX, USA

#### Wednesday June 22

**Session Chair:** Antoine Felix-Henry, Technip Flexi-France, France  
**Session Co-Chair:** Stelios Kyriakides, University of Texas at Austin, USA

**Flexibility of a Container Made of Functionally Graded Materials**  
OMAE2011-50055  
Ali Akbar Shafiee1 Farhang Daneshmand1 Ehsan Askari2  
1. Samin Sanat Shaigan Company, Isfahan, Iran; 2. Shiraz University, Shiraz, Iran

**Hydroelastic Vibration of Fluid-Coupled Container Made of Functionally Graded Materials**  
OMAE2011-50055  
Abdul M. Makinwa1 Kari K. Varde2  
1. University of Iowa, Iowa City, IA, USA; 2. University of Western Ontario, London, Canada

**Investigation of the Hydrodynamic Characteristics of Asymmetric Cross-Sections Advancing in Regular Waves**  
OMAE2011-50122  
Sergio Ribeiro e Silva1 E. Uzunoglu1 Carlos Guedes Soares2 Adolfo Maren1 Cesar Gutierrez3  

**The Stabilizing Effect of U-Tanks as Passive Anti-Rolling Devices**  
OMAE2011-50123  
Sergio Ribeiro e Silva1 G. Vasquez Chillce2 Carlos Guedes Soares2 Adolfo Maren1  

### Ocean Engineering Symposia

#### Wednesday June 22

**Session Chair:** Janou Hennig, MARIN, Netherlands  
**Session Co-Chair:** Kostas Belibassakis, School of Naval Architecture & Marine Eng, Greece

**Hydroelastic Vibration of Fluid-Coupled Container Made of Functionally Graded Materials**  
OMAE2011-50055  
Ali Akbar Shafiee1 Farhang Daneshmand1 Ehsan Askari2  
1. Samin Sanat Shaigan Company, Isfahan, Iran; 2. Shiraz University, Shiraz, Iran

**Systematic Study of the Hydrodynamic Forces on a Sailing Yacht Hull Using Parametric Design and CFD**  
OMAE2011-50263  
Lionel Hutch, Bertrand Alessandini  
Ecole Centrale Nantes, Nantes, France

**Investigation of the Hydrodynamic Characteristics of Asymmetric Cross-Sections Advancing in Regular Waves**  
OMAE2011-50122  
Sergio Ribeiro e Silva1 E. Uzunoglu1 Carlos Guedes Soares2 Adolfo Maren1 Cesar Gutierrez3  

**The Stabilizing Effect of U-Tanks as Passive Anti-Rolling Devices**  
OMAE2011-50123  
Sergio Ribeiro e Silva1 G. Vasquez Chillce2 Carlos Guedes Soares2 Adolfo Maren1  
Ocean Engineering Symposia

6-23 Model Tests – II

Wednesday June 22

Leeuwen II | 10:30–12:00

Session Chair: Christian Schmittner, MARIN, Netherlands
Session Co-Chair: Pedro Cardozo de Mello, University of Sao Paulo, Brazil

Effect of Whipping and Springing on Fatigue and Extreme Loading of a 13000TEU Container Vessel in Bow Quartering Seas Compared to Head Seas Based on Model Tests OMAE2011-49370

Gaute Storhaug1 Quentin Derbanne1 Byung-Ki Choi1 Torger Moe1 Ole Andreas Hermundstad1 1. Norwegian University of Science and Technology, Trondheim, Norway; 2. Det Norske Veritas, Oslo, Norway; 3. Bureau Veritas, Nuyu- Sur Seine Cdx, France; 4. HHI, Ulstein, Korea; 5. Marintek, Trondheim, Norway

Kinematics of Experimentally Generated Severe Wave Conditions and Implications for Numerical Models OMAE2011-49579

Lisa Minnick1 Christopher Kent1 Christopher Bassler1 Scott Percival1 Laurent Hanyok1 1. David Taylor Model Basin, NSWCDC, West Bethesda, MD, USA; 2. Naval Surface Warfare Center Carderock, West Bethesda, MD, USA; 3. CSE, Washington, DC, USA; 4. Naval Surface Warfare Center Carderock Division, West Bethesda, MD, USA

Pressure Measurement on the Surface of a Rigid Cylindrical Body during Slaming Wave Impact OMAE2011-49390

Diederik Van Nuffel1 Srihdhar Vepa1 Ives De Baere1 Wim Van Paepegem1 Joris Degrieck1 Julien De Rouck1 Ghent University, Ghent, Belgium

Testing of Inflatable Structures of Rapidly Deployable Port Infrastructures OMAE2011-49101

Andrew L Bloxom1 Solomon Yirm1 Christopher S Vince1 Abel J Medellin1 1. Virginia Tech, Blacksburg, VA, USA; 2. Oregon State University, Corvallis, OR, USA; 3. University of Missouri, St. Louis, MO, USA; 4. Texas A&M University, Bryan, TX, USA

CFD and VIV Symposia

8-10 Pipeline & Multi-Phase Flow

Wednesday June 22

Goudriaan I | 10:30–12:00

Session Chair: Steve Cosgrove, ACUSIM Software, Inc., USA
Session Co-Chair: Yahya Modarres-Sadeghi, University of Massachusetts, USA

CFD for Multiphase Flow Transport in Pipelines OMAE2011-49514

Mahinder Ramdin1 Ruud Henkes1 Delft University of Technology, Faculty of Applied Sciences, Delft, Netherlands

SPH Simulation of Hydrodynamic Forces on Subsea Pipelines OMAE2011-50029

Kourosh Abdolmaleki1 J P Kenny Pty Ltd, Perth, WA, Australia

Flow-Induced Vibrations of Subsea Jumpers Due to Internal Multi-Phase Flow OMAE2011-50062

Juan Pontaza1 Raghu Menon1 1. Shell Projects & Technology, Houston, TX, USA; 2. Shell Projects & Technology, Kuala Lumpur, Malaysia

Numerical Computation of Suspended Sediments Around a Marine Pipeline Close to the Flat Seabed OMAE2011-49111

Muk Chen Ong1 Lars Erik Holmedal1 Dag Myrhaug1 Norwegian University of Science and Technology, Trondheim, Norway

Ocean Renewable Energy Symposia

9-11 Current Energy – III

Wednesday June 22

Van Oldenbarnevelt | 10:30–12:00

Session Chair: Ye Li, National Renewable Energy Laboratory – Wind Technology Center, USA
Session Co-Chair: Jon Mikkelsen, University of British Columbia, Canada

Design and Analysis of a Rotor Blade Optimized for Extracting Power From the Florida Current OMAE2011-49140

James Van Zwieten1 Carey M. Oster1 Alana E.S. Duerr3 1. Southeast National Marine Renewable Energy Center at Florida Atlantic University, Dania Beach, FL, USA; 2. Embry-Riddle Aeronautical University, Daytona Beach, FL, USA; 3. Florida Atlantic University, Dania Beach, FL, USA

Hydrodynamic Design and Analysis of Horizontal Axis Marine Current Turbines With Lifting Line and Panel Methods OMAE2011-49377

Joao Baltazar1 Joao Machado1 Jose A.F. Campos1 Instituto Superior Tecnico, Lisbon, Portugal

Development of a Vertical Axis Type Marine Turbine Model with Variable-Pitch Blades and Its Basic Performance OMAE2011-49681

Tomoki Ikoma1 Koichi Masuda1 Chang-Kyu Rheem1 Yusuke Yoshimura1 Hisaaki Maeda1 1. Nihon University, Funabashi, Japan; 2. The University of Tokyo, Tokyo, Japan

Tidal Turbine Blades: Design and Dynamic Loads Estimation Using CFD and Blade Element Momentum Theory OMAE2011-49740

Celine Faudot1 Ole G. Dahlhaug1 Norwegian University of Science and Technology, Trondheim, Norway

CFD and VIV Symposia

8-14 Risers – Fatigue & Suppression

Wednesday June 22

Diamond I | 10:30–12:00

Session Chair: Halvor Lie, Marintek, Norway
Session Co-Chair: Rene Gabbai, The Catholic University of America, USA

Modeling VIV Suppression Using Negative Lift Coefficients OMAE2011-50178

Vikas Jhingran1 Johnny Vogiatzis1 Shell Exploration and Production International, Houston, TX, USA

A Data-Driven Mode Identification Algorithm for Fatigue Damage Assessment in Instrumented Marine Risers OMAE2011-50231

Chen Shi1 Jinkyoo Park1 Lance Manuel1 Michael Tognarelli1 1. BP America Production Co., Houston, TX, USA; 2. University of Texas at Austin, Austin, TX, USA

Empirical Procedures for Long-Term Prediction of Fatigue Damage for an Instrumented Marine Riser OMAE2011-30235

Chen Shi1 Lance Manuel1 Michael Tognarelli1 1. BP America Production Co., Houston, TX, USA; 2. University of Texas at Austin, Austin, TX, USA

Reliability Based Factors of Safety for Riser VIV Fatigue Using High Mode VIV Tests OMAE2011-49820

Emmanuel Fontaine1 Hayden Marcollo1 Michael Triantafyllou2 C.M. Larsen1 Michael Tognarelli1 Yiannis Constantinides1 Owen Oakley, Jr.1 1. Chevron Energy Technology Co, San Ramon, CA, USA; 2. Massachusetts Institute of Technology, Cambridge, MA, USA; 3. BP America Production Co., Houston, TX, USA; 4. AMOG Consulting, Netting Hill, VIC, Australia; 5. Chevron, Houston, TX, USA; 6. Norwegian University of Science and Technology, Trondheim, Norway
### Offshore Geotechnics Symposia

#### Wednesday June 22

**10-5 Anchors**

**Session Chair:** Conleth O’Loughlin

**Estimation of Suction Caisson Lateral Capacity in Cohesive Soils**

Mohamad M. Ahmadi, Maryam Hejazian

Sharif University of Technology, Tehran, Iran

**Numerical Simulation of Installed Torpedo Anchors Embedded in Cohesive Soil**

Cristiano Aguiar¹ José Renato Sousa¹ Gilberto Ellwanger¹ Elisabeth de Campos Porto¹

Jane V.V. Fernandes¹ Paulo Roberto Dionysio Henriques Jr.¹ Rachel Guerreiro Basilio Costa²

1. COPPE/UFRJ - Department of Civil Engineering, Rio de Janeiro, RJ, Brazil; 2. PETROBRAS, Rio de Janeiro, RJ, Brazil

**Lateral Response of Offshore Anchor Piles Subjected to Mooring Forces Using Centrifuge Tests**

Mohamed Ramadan¹ Stephen Butt¹ Radu Popescu¹ Hesham Dief³

1. Memorial University, St. John’s, NL, Canada; 2. URS Corporation, Princeton, NJ, USA; 3. MEG Consulting Limited., Richmond, BC, Canada

**Study of Failure Modes of Suction Anchors**

Qi-yi Zhang, Sheng Dong

Ocean University of China, Qingdao, Shandong, China

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### Wednesday, 13:30–15:00

**Offshore Technology Symposia**

#### 1-16 Hydrodynamics – I

**Wednesday June 22**

**Session Chair:** Mamoun Naciri, Single Buoy Moorings, Monaco

**Session Co-Chair:** Jan Van Kessel

**Unstable Motion of a Floating Structure in Surface Waves**

Hongmei Yan¹ Yuming Liu¹ Yile Li²

1. Massachusetts Institute of Technology, Cambridge, MA, USA; 2. Shell International Exploration and Production Inc., Houston, TX, USA

**Wave Interaction with an Infinite Long Horizontal Elliptical Cylinder**

Hao Song, Longbin Tao

Newcastle University, Newcastle Upon Tyne, UK

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### Tuesday June 22

**2-22 Probabilistic and Spectral Wave Models**

**Wednesday June 22**

**Session Chair:** Alexander Babanin, Swinburne University of Technology, Australia

**Session Co-Chair:** Kevin Ewans, Metocean Engineer, Malaysia

**Space-Time Waves and Spectra in the Northern Adriatic Sea via a Wave Acquisition Stereo System**

Francesco Fedele¹ Alvise Benetazzo² George Forristall³

1. Georgia Institute of Technology, Savannah Campus, Savannah, GA, USA; 2. CNR-Ismar, Venice, Italy; 3. Forristall Ocean Engineering, Inc., Camden, ME, USA

**An Experimental Study of Shallow Water Wave Statistics on Mild Bed Slopes**

Vasiliki (Vanessa) Katsardi, Chris Swan

Imperial College, London, UK

**A Bayesian-Hierarchical Space-Time Model for Significant Wave Height Data**

Erik Vanem, Arne Bang Huseby, Bent Natvig

University of Oslo, Oslo, Norway

**Correction for Bias in Return Values of Wave Heights Caused by Hindcast Uncertainty**

Ed Mackay

GL Garrad Hassan, Bristol, UK

**Interval Estimation of Return Wave Height for Marine Structural Design**

Shan-shan Tao¹ Sheng Dong¹ Shu-he Lei² Carlos Guedes Soares³

1. Technical University of Lisbon, Lisbon, Portugal; 2. College of Engineering, Ocean University of China, Qingdao, Shandong, China; 3. College of Mathematics, Ocean University of China, Qingdao, Shandong, China

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### Johan Wicher Symposium on ‘Mooring of Floating Structures in Waves’

**Wednesday June 22**

**Session Chair:** Richard Leeuwenburgh, Bluewater Energy Services BV, Netherlands

**Wave Drift Forces Affecting on Maneuverability Derivatives**

Weiguang Bao, Yongze Xu, Takeshi Kinoshita, Hiroshi Itakura

University of Tokyo, Tokyo, Japan

**A Direct Time Domain Simulation of Floating Structures with Mooring Lines**

Jingpu Chen¹ Desiang Zhai¹

1. China Ship Scientific Research Center, Shanghai, China; 2. Shanghai Institute of Laser Technology, Shanghai, China

**Decay of Vibrations along Deepwater Mooring Lines**

Alex Argyros¹ Robin S. Langley¹ R.V. Ahilan¹


**Reliability Analysis of FPSO Broken Cable in Tandem Based on Weakest Failure Modes Theory**

Sun Hai, Li Shang-Zhang, Liping Sun

Harbin Engineering University, Harbin, Heilongjiang, China

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### Structures, Safety and Reliability Symposia

**Wednesday, 10:30–12:00 | 13:30–15:00**

**Offshore Technology Symposia**

#### 1-16 Hydrodynamics – I

**Wednesday June 22**

**Session Chair:** Mamoun Naciri, Single Buoy Moorings, Monaco

**Session Co-Chair:** Jan Van Kessel

**Unstable Motion of a Floating Structure in Surface Waves**

Hongmei Yan¹ Yuming Liu¹ Yile Li²

1. Massachusetts Institute of Technology, Cambridge, MA, USA; 2. Shell International Exploration and Production Inc., Houston, TX, USA

**Wave Interaction with an Infinite Long Horizontal Elliptical Cylinder**

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Newcastle University, Newcastle Upon Tyne, UK

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### Tuesday June 22

**2-22 Probabilistic and Spectral Wave Models**

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**Interval Estimation of Return Wave Height for Marine Structural Design**

Shan-shan Tao¹ Sheng Dong¹ Shu-he Lei² Carlos Guedes Soares³

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Structures, Safety and Reliability Symposia

2-33 Structural Analysis and Optimisation – I

Wednesday June 22

Session Chair: Paulo Mauricio Videiro, PETROBRAS, Brazil
Session Co-Chair: Jonas Ringsberg, Chalmers University of Technology, Sweden

Improvements of Beam Structural Modelling in Hydroelasticity of Ultra Large Container Ships OMAE2011-49337
Ivo Senjanovic1 Nikola Vladimirt 1. University of Zagreb, Zagreb, Croatia; 2. Bureau Veritas, Paris, France

A Whole Ship Finite Element Analysis with the Input of Nonlinear Wave Loads in the Irregular and Multi-Directional Waves OMAE2011-49346
Yoshitaka Ogawa, Masayoshi Oka
National Maritime Research Institute of Japan, Mitaka, Japan

On the Axial-Flexural-Torsional Coupling of Underwater Slender Cylinders OMAE2011-49762
Waldir T. Pinto1 Carlos Levi1 1. Laboratório de Tecnologia Oceânica, Rio de Janeiro, RJ, Brazil; 2. Federal University of Rio Grande, Rio Grande, RS, Brazil

Structural Condition Identification with Vibration Measurements for Free Spanning Subsea Pipelines: Experimental Verification OMAE2011-50071
Xin Feng, Jing Zhou
Dalian University of Technology, Dalian, Liaoning, China

Materials Technology Symposia

3-16 Fatigue Improvement & Welding Repair

Wednesday June 22

Session Chair: Rick Noecker, ExxonMobil Development Company, USA
Session Co-Chair: Koji Gotoh, Kyushu University, Japan

Comparison of Solidification Behavior between Underwater Wet Welding and Dry Welding OMAE2011-49485

Mooring Line Components with Semi-Brittle Behavior – Verification of Fitness for Purpose OMAE2011-49231
Tom Lassen
University of Agder, Grimstad, Norway

Mechanism of Ultrasonic Peening and Demonstration on Sleeved Pipe OMAE2011-49913
William Mohr, Paul Zelenak, Fabian Orth, Karl Graff, Matt Boring
EWI, Columbus, OH, USA

Characterizing Metal Arc Welding Under Oil (MAW-UO) OMAE2011-50286
Stephen Liu, Hamad Almoatainnee, David L. Olson
Colorado School of Mines, Golden, CO, USA

Pipeline and Riser Technology Symposia

4-8 Mechanical Behavior – V

Wednesday June 22

Session Chair: Francois Bardi, ExxonMobil Upstream Research, USA
Session Co-Chair: Spyros Karamanos, University of Thessaly, Greece

Collapse Capacity UOE Deepwater Linepipe OMAE2011-49570
Olav Aamld1 Leif Collberg1 Simon Slater1 1. Tata Steel Tubes Europe, Hartlepool, UK; 2. Det Norske Veritas, Hank, Norway

First-Principles Finite Element Modeling of Coiled Tubing in Directional Wellbores OMAE2011-50299
Lance Hill, Deepak Datye
SIMULIA, Providence, RI, USA

On Dynamic Compression of Risers: An Analytical Expression for the Speed of Compression Waves OMAE2011-49251
Rodrigo M. Amarante, André L. C. Fujjara, Marcos M.O. Pinto
University of São Paulo, São Paulo, SC Brazil

The Influence of the UOE-SAWL Forming Process on the Collapse Resistance of Deepwater Linepipe OMAE2011-49254
Mohamed Chebar1 Luciano O. Mantovan2 Hugo A. Ernst2 Marcos P. de Souza1 Chris Timmu3 Luiz C. Chad3 1. C-FER Technologies, Edmonton, AB, Canada; 2. Tenaris Siderca, Buenos Aires, Argentina; 3. Tenaris Confab, Piondamonhangbang, SP, Brazil

Pipeline and Riser Technology Symposia

4-31 Flexible Pipes – III

Wednesday June 22

Session Chair: Zhimin Tan, Wellstream International Ltd., USA
Session Co-Chair: Murilo Vaz, UFRJ, Brazil

Influence of Hysteresis on the Dynamics of Cryogenic LNG Composite Hoses OMAE2011-49188
Niels Mallon, Gerard van der Weijde
TNO Centre for Mechanical and Maritime Constructions, Delft, Netherlands

On Lateral Buckling Failure of Armour Wires in Flexible Pipes OMAE2011-49358
Niels Højén Østergaard1 Anders Lykkegaard1 Jens Andreasen1 1. NTX-Flexibles, Aalborg, Denmark; 2. Aalborg University, Aalborg, Denmark

On the Structural Response of a Flexible Pipe with Broken Tensile Armor Wires OMAE2011-50113
José Renato Sousa1 George Carneiro Campello2 Antonio Fernando Burkert Bueno2 Eduardo Vardaro3 Gilberto Ellwanger4 Telmo Roberto Stothaecker5 1. COPPE/UFRJ – Department of Civil Engineering, Rio de Janeiro, RJ, Brazil; 2. PETROBRAS, Rio de Janeiro, RJ, Brazil; 3. Universidade Federal do Rio Grande do Sul, Porto Alegre, RS, Brazil

Burst Capacity of Reinforced Thermoplastic Pipe (RTP) Under Internal Pressure OMAE2011-49325
Yong Bai1 Xu Fan1 Cheng Peng1 Mohd Faizi Badaruddin2 Mohd Ashiri2 1. Zhejiang University, Hangzhou, Zhejiang, China; 2. Petronas Caligali Sdn Bhd (PCSB), Kuala Lumpur, Malaysia
Ocean Space Utilization Symposia

5-5  VLFS and New Type of Floating Facilities – II
Wednesday June 22  Goudriaan II  |  13:30–15:00
Session Chair: Koichi Masuda, Nihon University, Japan
Session Co-Chair: Hideyuki Suzuki, University of Tokyo, Japan
Progressive Drift of Moored Floating Wind Turbines in a Wind Farm – Improved Mooring Capacity Model OMAE2011-49730
Hideyuki Suzuki¹  Yu Kihara¹  Yukinari Fukumoto¹
1. University of Tokyo, Tokyo, Japan; 2. Nippon Life Insurance Co., Tokyo, Japan; 3. Tokyo Electric Power Co., Inc., Yokohama, Japan
An Approach for the Optimum Design of TLP Type Offshore Wind Turbine OMAE2011-50258
Yasunori Niheı¹  Midori Matsuba¹  Hiroiuki Fujioka¹  Hideyuki Suzuki¹
1. Osaka Prefecture University, Sakai, Japan; 2. University of Tokyo, Tokyo, Japan
Concurrent Design Introduction Activity at IHC Merwede OMAE2011-49641
Martin Fijneman¹  Robert Plat²  Arme Matthyssen³
1. J-CDS B.V., Rotterdam, Netherlands; 2. IHC Merwede, Kinderdijk, Netherlands

Ocean Engineering Symposia

6-7  Coastal Engineering – I
Wednesday June 22  Leeuwen I  |  13:30–15:00
Session Chair: Igor Shugan, National Cheng Kung University, Taiwan
Session Co-Chair: Ismail H. Helvacioğlu, Istanbul Technical University, Turkey
Wave Effect on Slotted Breakwaters Considering Evanescent Modes OMAE2011-49029
Omid Nejadkazem, Ahmadreza Mostafa Gharabaghi
Sahand University of Technology, Tabriz, Iran
Scour Around Vertical Pile Foundations for Offshore Wind Turbines due to Long-Crested and Short-Crested Nonlinear Random Waves OMAE2011-49064
Dag Myrhaug, Muk Chien Ong
Norwegian University of Science and Technology, Trondheim, Norway
Experimental Study of a Negatively Buoyant Horizontal Jet in Wave Environment OMAE2011-49279
Jian-Feng Lin¹  Shih-Chun Hsiao¹  Tai-Wen Hsu²  Kuang-An Chang³
1. Department of Hydraulic and Ocean Engineering, National Cheng Kung University, Tainan, Taiwan; 2. Texas A&M University, College Station, TX, USA
Experimental Investigation of Local Scour around Conical Piers OMAE2011-49474
Masoumeh Pourahmadi¹  Habib Hakimzadeh¹
1. Faculty of Civil Engineering, Sahand University of Technology, Tabriz, Iran; 2. Sahand University of Technology, Tabriz, Iran

USP Active Absorption Basin: Absorption of Irregular Waves OMAE2011-49750
Mario Luís Carneiro, Pedro Cardozo de Mello, Eduardo Tannuri
University of São Paulo, São Paulo, SP, Brazil
Experimental Set-Up for Analysis of Subsea Equipment Installation OMAE2011-49946
Pedro Cardozo de Mello¹  Felipe Rateiro¹  André L. C. Fujiará¹  Anderson T. Oshiro¹  Cassiano Neves¹  Melquisedec Santos¹  Eduardo Tannuri¹
1. University of São Paulo, São Paulo, SP, Brazil; 2. TPN/USP Numerical Offshore Tank, São Paulo, SP, Brazil; 3. Subsisin, Rio de Janeiro, RJ, Brazil

CFD and VIV Symposia

8-11  CFD Applications
Wednesday June 22  Goudriaan I  |  13:30–15:00
Session Chair: Yiannis Constantinides, Chevron, USA
Session Co-Chair: Samuel Holmes, Red Wing Engineering, Inc., USA
Numerical Investigation of the Effect of a Pier’s Shape on the Mitigation of Scouring OMAE2011-49448
Mohammad Hamed Besharati Givi¹  Mohammad Saeid Maddahi¹  Habib Hakimzadeh¹
1. SAWAFA Inc., Tehran, Iran; 2. Faculty of Civil Engineering, Sahand University of Technology, Tabriz, Iran; 3. SARGO Consultant Engineers, Tehran, Iran
CFD Analysis of Uncontrolled Flow in Alanya Dim Dam Derivation Tunnel OMAE2011-50040
Sedat Kabasali¹  Golkan Yazici¹  Murat Aksel¹
1. Istanbul Katek University, Istanbul, Turkey; 2. Istanbul Technical University, Istanbul, Turkey
Numerical Simulation of the Backfilling Process of a Trench Using a Trailing Suction Hopper Dredge OMAE2011-49528
Cees van Ree
Delft University of Technology, Delft, Netherlands
Numerical Simulation of Fire Suppression in a Ship Accommodation Deck Using CFD OMAE2011-49869
Shivaji Ganesan T, Anant Lal, Apurba Kar
Indian Register of Shipping, Mumbai, MH, India

CFD and VIV Symposia

8-15  Risers – II
Wednesday June 22  Diamond I  |  13:30–15:00
Session Chair: J. Kim Vandiver, Massachusetts Institute of Technology, USA
Session Co-Chair: Yuming Liu, Massachusetts Institute of Technology, USA
Experimental Investigation on VIV of the Flexible Model Under Full Scale Re Number OMAE2011-49042
Fu Shixiao, Tie Ren, Runpei Li, Xuefeng Wang
Shanghai Jiao Tong University, Shanghai, China
Efficient Modal Decomposition and Reconstruction of Riser Response due to VIV OMAE2011-49469
Scot I McNeill, Puneet Agarwal
Stress Engineering Services, Inc., Houston, TX, USA
Towards a Time-Domain Finite Element Analysis of Vortex Induced Vibrations OMAE2011-49539
Philippe Mainçon, Carl M. Larsen
Centre for Ships and Ocean Structures, Department of Marine Technology/NTNU, Trondheim, Norway

Ocean Engineering Symposia

6-24  Model Tests – III
Wednesday June 22  Leeuwen II  |  13:30–15:00
Session Chair: Sergio H. Sphaier, COPPE/UFRJ, Brazil
Session Co-Chair: Hans Cozijn, MARIN, Netherlands
Impact Tests in Pure and Aerated Water OMAE2011-49725
Niels A. Lange, Thomas Rung
Hamburg University of Technology, Hamburg, Germany

CFD and VIV Symposia

8-15  Risers – II
Wednesday June 22  Diamond I  |  13:30–15:00
Session Chair: J. Kim Vandiver, Massachusetts Institute of Technology, USA
Session Co-Chair: Yuming Liu, Massachusetts Institute of Technology, USA
Experimental Investigation on VIV of the Flexible Model Under Full Scale Re Number OMAE2011-49042
Fu Shixiao, Tie Ren, Runpei Li, Xuefeng Wang
Shanghai Jiao Tong University, Shanghai, China
Efficient Modal Decomposition and Reconstruction of Riser Response due to VIV OMAE2011-49469
Scot I McNeill, Puneet Agarwal
Stress Engineering Services, Inc., Houston, TX, USA
Towards a Time-Domain Finite Element Analysis of Vortex Induced Vibrations OMAE2011-49539
Philippe Mainçon, Carl M. Larsen
Centre for Ships and Ocean Structures, Department of Marine Technology/NTNU, Trondheim, Norway
Vortex-Induced Vibration Analysis (VIVA) Based on Hydrodynamic Databases OMAE2011-50192
Michael Triantafyllou1 Haining Zheng1 Yahya Modarres-Sadeghi1 Rachel Price1 George Triantafyllou1
1. Massachusetts Institute of Technology, Cambridge, MA, USA; 2. University of Massachusetts, Amherst, MA, USA; 3. National Technical University of Athens, Athens, Greece

Ocean Renewable Energy Symposia

9-13 Wind Energy – IV

Wednesday June 22 Van Oldenbarnewelt | 13:30–15:00
Session Chair: Gunjit Bis, Clipper Windpower (United Technologies), USA
Session Co-Chair: Jifeng Wang, University of Illinois at Urbana-Champaign, USA

Design Drivers for Offshore Wind Turbine Jacket Support Structures OMAE2011-49492
Andrew Cordle1 Graeme McCann1 Wybren De Vries2
1. GL Garrad Hassan, Bristol, UK; 2. Delft University of Technology, Delft, Netherlands

Eric Van Buren
Norwegian University of Science and Technology, Trondheim, Norway

Vertical Wave Impacts on Offshore Wind Turbine Inspection Platforms OMAE2011-49785
Henrik Bredmos, Niels G. Jacobsen
Technical University of Denmark, Mechanical Engineering, Kgs. Lyngby, Denmark

Model Experiments on the Motion of a SPAR Type Floating Wind Turbine in Wind and Waves OMAE2011-49793
Toshiki Chujo, Shigesuke Ishida, Yoshimasa Minami, Tadashi Nimura, Shunji Inoue
National Maritime Research Institute, Tokyo, Japan

Ocean Renewable Energy Symposia

9-14 Current Energy – IV

Wednesday June 22 Mees Auditorium | 13:30–15:00
Session Chair: Madasamy Arockiasamy, Florida Atlantic University, USA
Session Co-Chair: Jon Mikkelsen, University of British Columbia, Canada

Development and Verification of a Computational Fluid Dynamics Model of a Horizontal-Axis Tidal Current Turbine OMAE2011-49863
Michael Lawson1 Ye Li1 Danny Sale2
1. National Renewable Energy Laboratory - Wind Technology Center, Golden, CO, USA; 2. University of Washington Mechanical Engineering Department, Seattle, WA, USA

Amit Singh, Madasamy Arockiasamy
Florida Atlantic University, Boca Raton, FL, USA

Passive Energy Extraction through Oscillation of a Yawing Flat Plate Operating in a Uniform Current OMAE2011-50175
Antonio C. Fernandes1 Mohammadmehdi Armandei2
1. Federal University of Rio de Janeiro, Rio de Janeiro, RJ, Brazil; 2. COPPE/UFRJ, Rio de Janeiro, RJ, Brazil

Flow Energy Harvesting by Fluttering Slender Bodies in Axial Currents OMAE2011-49922
Sebastien Michelin, Kiran Singh, Emmanuel De Langre
LodHyP/Ecole Polytechnique, Palaiseau, France

Offshore Geotechnics Symposia

10-8 Scour and Submarine Landslides

Wednesday June 22 Blue | 13:30–15:00
Session Chair: Horst Brandes, University of Hawaii, USA
Stability of Temporary Submarine Slopes OMAE2011-50157
Julian Bubel, Christina Rudolph, Jürgen Grabe
Hamburg University of Technology, Hamburg, Germany

Numerical Investigation of Scale Effects in Modelling Scour below Offshore Pipelines under Steady Currents OMAE2011-49635
Xia Zhao1 Ming Zhao1 Liang Cheng2
1. School of Engineering, University of Western Sydney, Penrith, NSW, Australia; 2. University of Western Australia, Perth, WA, Australia

Design and Testing of Scour Protection for Adriatic LNG GBS OMAE2011-49385
Zhihui Chen1 Nick Kram1 David Hurdle1 Pedro Lumínacico1 Andrew Cornett1

Experimental Study of Erosion Threshold of Reconstituted Sediments OMAE2011-50067
Zhihui Ye1 Liang Cheng1 Zhipeng Zang2
1. University of Western Australia, Perth, WA, Australia; 2. Institute of Mechanics, Chinese Academy of Science, Beijing, China

Johan Wichers Symposium on ‘Mooring of Floating Structures in Waves’

13-3 FPSO Responses

Wednesday June 22 Diamond II | 13:30–15:00
Session Chair: Takeshi Kinoshita, University of Tokyo, Japan

Response of FPSO Systems to Squalls OMAE2011-49855
Arun Duggal1 Caspar Heyl1 Amir Izadparast1 Joerik Minnebo1
1. SOFEC, Inc., Houston, TX, USA; 2. Delft University of Technology, Delft, Netherlands

FPSO Operations on Dynamic Positioning OMAE2011-50108
Arjen Tjallema, Hielke Brugs
Bluewater Energy Services BV, Hoofddorp, Netherlands

Determination of Viscous Damping for Low Frequency Motion of Floating Structures OMAE2011-50351
Zhenjia (Jerry) Huang, B.J. O’Donnell, T. W. Yung, Scott Slocum
ExxonMobil Upstream Research Company, Houston, TX, USA
Wednesday, 15:30–17:30

Offshore Technology Symposia

1-17 Hydrodynamics – II

Wednesday June 22

Session Chair: Bernt J. Leira, NTNU, Norway
Session Co-Chair: John W. Kim, Technip, USA

Study of Nonlinear Internal Waves and Impact on Offshore Drilling Units OMAE2011-50304
Nishe Vu, Kurup1, Shan Shi2, Zhongmin Shi3, Wenju Miao3, Lei Jiang4
1. Houston Offshore Engineering, Houston, TX, USA; 2. CNOOD Research, Beijing, China; 3. Harbin Engineering University, Harbin, Heilongjiang, China; 4. Offshore Dynamics Inc., Beijing, China

Investigation of the Flow Induced Small Amplitude Rotation of a Flat Plate Submitted Uniform Current Based on the Streamline Theory OMAE2011-50182
Sina M. Sefat1, Antonio C. Fernandes2
1. Federal University of Rio de Janeiro, Rio de Janeiro, RJ, Brazil; 2. COPPE/UFRJ, Rio de Janeiro, RJ, Brazil

Hydrodynamic Loading on Mid Water Arch Structures OMAE2011-49751
Colin Russell1, Bertrand Vignaud2
1. MCS Kney, Aberdeen, UK; 2. ITP School, Paris, France

The Research of Moondpool Size Effect on the Hydrodynamic Performance of FDPDSO OMAE2011-49586
Yuefeng Wei1, Jianmin Yang2, Gang Chen3, Z. Hu4
1. Shanghai Jiao Tong University, Shanghai, China; 2. State Key Lab of Ocean Engineering, Shanghai Jiao Tong University, Shanghai, China

Structures, Safety and Reliability Symposia

2-23 Extreme and Freak Waves

Wednesday June 22

Session Chair: Ning Ma, Shanghai Jiao Tong University, China
Session Co-Chair: Felice Arena, Mediterranea University of Reggio Calabria, Italy

Functional Data Analysis and Wave Profiles During a Storm OMAE2011-50320
Joaoquin Ortega1, Cristina Gorostiza1, George Smith1
1. University of Exeter, Penryn, UK; 2. CIMAT, A.C., Guanajuato, Mexico; 3. Brown University, Providence, RI, USA

Space-Time Extremes of Storm Seas OMAE2011-49048
Francesca Fedele1, Felice Arena1, M. Aziz Tayfun2
1. Georgia Institute of Technology, Savannah Campus, Savannah, GA, USA; 2. Mediterranea University of Reggio Calabria, Reggio Calabria, Italy; 3. Kuwait University, Safat, Kuwait

Modulational Instability in Directional Wave Fields, and Extreme Wave Events OMAE2011-49540
Alexander Babanin1, Takaji Waseda2, Igor Shugan3, Hwung-Hweng Hwung4
1. Swinburne University of Technology, Melbourne, VIC, Australia; 2. University of Tokyo, Tokyo, Japan; 3. National Cheng Kung University, Tainan, Taiwan

Numerical Simulation on Nonlinear Evolution of Rogue Waves on Currents Based on the NLS Equation OMAE2011-50079
HanHong Hu, Ning Ma
Shanghai Jiao Tong University, Shanghai, China

2-34 Structural Analysis and Optimisation – II

Wednesday June 22

Session Chair: Jonas Ringsberg, Chalmers University of Technology, Sweden
Session Co-Chair: Paulo Mauricio Videiro, PETROBRAS, Brazil

On the Simplified Analysis of Square Plates with Holes OMAE2011-49334
Graham Schleyer1, N.I. Underwood2, Joakim Park3, B.J. Kim4, Hyung Min Do5
1. University of Liverpool, Liverpool, UK; 2. Pusan National University, Busan, Korea; 3. Korean Register of Shipping, Daejeon, Korea

Ductile Failure Limit State Design of High Strength Steel Tension Members with Large Stress Concentrations OMAE2011-49228
Michiel Verdult1, Raymond Marcheur2, Guus Hommel2
1. Vuyk Engineering Rotterdam, Capelle aan den IJssel, Netherlands; 2. Former Vuyk Engineering Rotterdam, Rotterdam, Netherlands; 3. Formerly TUDelft, Delft, Netherlands

Experimental Study on Stress Concentration Factor for Tubular KK-Joints OMAE2011-49028
Jim Gan1, Jingxia Yue1, Weiguo Wu1, Huaxiang Sun1, Hong Zhang1, Shihong Zhai1
1. Wuhan University of Technology, Wuhan, Hubei, China; 2. Technology Center, CCCC Second Harbour Engineering Company LTD, Wuhan, Hubei, China

Chang-New Chen
National Cheng Kung University, Tainan, Taiwan

Materials Technology Symposia

3-9 Hydrogen Embrittlement Under Static and Dynamic Loading

Wednesday June 22

Session Chair: Fraser McMaster, Chevron, USA
Session Co-Chair: Amir Bahrami, TWI Ltd, United Kingdom

Hydrogen Effect on Fracture Toughness of API 5L X70, X65, X52 Pipeline Steel Welds – An Overview OMAE2011-49348
Elías V. Chatzidouros1, Vassilios J. Papazoglou2, Dimitrios I. Pantelis3
1. National Technical University of Athens, Athens, Greece

Hydrogen Induced Mechanical Property Behavior of Dissimilar Weld Metal Interfaces OMAE2011-30009
Jamey Fenkse1, Martin Hulke2, Brian Newbury3, Robin Gordon4, Rick Neecker1, Ian M. Robertson1
1. ExxonMobil Development Company, Houston, TX, USA; 2. Trendsetter Engineering, Inc, Houston, TX, USA; 3. University of Illinois – Urbana/Champaign, Urbana, IL, USA; 4. Microalloying International, Inc, Houston, TX, USA

Effects of Strain Rate and Microstructure on Fracture Toughness of Duplex and Superduplex Stainless Steels Under Hydrogen Charging Conditions OMAE2011-49131
Amir Bahrami, Mohamad Cheaitani, Anais Bourgeon
TWI Ltd, Cambridge, UK

Evaluation of the Performance of Inconel 718 Fasteners Subjected to Cathodic Protection Systems in Offshore and Subsea Applications OMAE2011-49242
Fabio Parese1, Richard Clements2, Fabio Santos2, Judimar Clevelario2, Terry Sheldrake2
1. Wellstream International Ltd., Rio de Janeiro, RJ, Brazil; 2. Wellstream International Ltd., Newcastle upon Tyne, UK
Fe Simulation of Cold Cracking Susceptibility in X70 Structural Steel Welded Joints OMAE2011-49911
Yngvi Olden1 Odd Magne Akselseth2 1. SINTEF Institute of Materials and Chemistry, Trondheim, Norway; 2. SINTEF Materials and Chemistry, NTNU/UPM, Trondheim, Norway

Toward an H2S Free Environment in Flexible Pipe Annulus Thanks to a New New Anti H2S Polymer Layer OMAE2011-49664
Thomas Epstein1 Frederic Demonzay2 Xavier Lefebvre3 Jacques Jarrin2 1. Technip, Le Traut, France; 2. IFP Energies Nouvelles, Rueil Malmaison, France

Ocean Space Utilization Symposia

5-3 Water Front and Coastal Design and Planning
Wednesday June 22   Goudriaan II | 15:30–17:30
Session Chair: Takeo Kondo, Nihon University, Japan
Session Co-Chair: Kazuaki Yamamoto, Nihon University, Japan
New Concept of Port Planning for Small Ferries from Viewpoint of Berthing Ship Motions Under Strong Tidal Currents OMAE2011-49190
Kenji Sasa1 Kyungho Kim2 1. Hiroshima National College of Maritime Technology, Toyota-gun, Japan; 2. Hiroshima University, Higashihiroshima, Japan

A Conceptual Design on the BSL-4 Location and Management OMAE2011-49512
Takako Kubayashi, Wataru Miyazaki, Yuji Miura, Kazuaki Yamamoto, Takeo Kondo Nihon University, Chiba, Japan
An Experimental Study on the Waterway Rescue System for Natural Disasters in the Tokyo Metropolis OMAE2011-49858
Hsien-Yu Chiu1 Tomoe Okawa1 Wataru Miyazaki1 Kazuaki Yamamoto1 Takeo Kondo1 Kazuya Egami1 1. Nihon University, Chiba, Japan; 2. Ecot Corporation, Tokyo, Japan
An User Evaluation Study on the Universal Network of the Water Transportation in the Seto Inland Sea in Japan OMAE2011-50084
Masaharu Sugahara, Atsushi Idoji, Kenta Hanai, Keichi Noto, Kazuaki Yamamoto, Takeo Kondo Nihon University, Chiba, Japan
An Analytic Study on the Socio-Economic Value of a Fishing Port Using the Contingent Value Method (CVM)-Case Study of Comparison Between Fishing Port and Marina at Kanto Region in Japan OMAE2011-50085
Bungo Okazawa1 Shimpei Kato1 Wataru Miyazaki1 Yohei Yamaguchi1 Masaharu Kimoto1 Kazuaki Yamamoto1 Takao Ikuma1 Takeo Kondo1 1. Nihon University, Chiba, Japan; 2. Seiho Industry Co., Ltd, Chiba, Japan; 3. Japan Boating Industry Association, Chuo-ku, Japan

Ocean Engineering Symposia

6-25 Model Tests – IV
Wednesday June 22   Leeuwen II | 15:30–17:30
Session Chair: Hans Cozijn, MARIN, Netherlands
Session Co-Chair: Sergio H. Sphaier, COPPE/UFRJ, Brazil
Statistical Analysis of a Set of Basin Waves OMAE2011-49974
Jule Scharnke, Janou Hennig MARIN, Wageningen, Netherlands
Identification of Favourable Free Fall Parameters for the AGaPaS Rescue Catamaran OMAE2011-50156
Gunther F. Claus, Andre Kauffeldt, Nils Otten, Sven Stuppe Technical University of Berlin, Berlin, Germany
Time Domain Comparison with Experiments for Ship Motions and Structural Loads of a Container Ship in Extreme Seas OMAE2011-50316
Suresh Rajendran1 Nuno Fonseca2 Carlos Guedes Soares1 Gunther F. Claus2 Marco Klein2 1. Technical University of Lisbon, Lisbon, Portugal; 2. Technical University Berlin, Berlin, Germany; 3. Centre for Marine Technology and Engineering, Lisbon, Portugal

Pipeline and Riser Technology Symposia

4-9 Mechanical Behavior – VI
Wednesday June 22   Antwerp | 15:30–17:30
Session Chair: Spyros Karamanou, University of Thessaly, Greece
Session Co-Chair: Francois Bardi, ExxonMobil Upstream Research, USA
Susceptibility to Lateral Buckling: What Hobbs Equations for What Flowlines OMAE2011-49442
Yann Le Maoust, Philippe Brunet Technip, Courbevoie, France

Dynamics of the Vertical Hydraulic Transport System for Deep Sea Mining OMAE2011-49464
Stanislav Verichev1 Andrei Metrikine1 Robert Plat1 Hayo Hendriks1 1. IHC Merweve, Kinderdijk, Netherlands; 2. Delft University of Technology, Delft, Netherlands
Detailed Contact Analysis of the J-tube Riser Pull-in Method OMAE2011-49702
Farzad Faridafshin, Erlend Reidar Vistnes, Christian Reva Aker Solutions, Sandvika, Bergen, Norway

Integrity of Mechanically Lined Pipes Subjected to Multi-Cycle Plastic Bending OMAE2011-49270
Tomasz Tkaczyk, Aurelien Pepin, Sylvain Denniel Technip UK Ltd., Westhill, UK

Pipeline and Riser Technology Symposia

4-32 Flexible Pipes – IV
Wednesday June 22   New York | 15:30–17:30
Session Chair: Murilo Vaz, UFRJ, Brazil
Session Co-Chair: Zhimin Tan, Weststream International Ltd., USA
Numerical Analysis Assessment of the Contact Pressure Between the Flexible Pipe Outer Sheath and the I Tube Interface Equipment for Wearing Research Program OMAE2011-49267
Victor Nogueira1 Fabio Pires1 Judimar Clevelario1 Fabio Aquino1 Terry Sheldrake1 1. Weststream International, Rio de Janeiro, RJ, Brazil; 2. Weststream International Ltd., Newcasle upon Tyne, UK

Influence of Bore Pressure on the Creep Behaviour of the Polymer Barrier Layer inside an Unbonded Flexible Pipe OMAE2011-49392
Yijun Shen1 Jian Zhao1 Zhiping Tan1 Terry Sheldrake1 1. Weststream International Ltd., Newcastle upon Tyne, UK; 2. Weststream International Ltd., Houston, TX, USA

Lateral Buckling of Armor Wires in Flexible Pipes: Reaching 3000m Water Depth OMAE2011-49447
Philippe Secher, Fabrice Bectarte, Antoine Felix-Henry Technip Flexi France, Le Trut, France
An Experimental Analysis of a Flexible Riser in Jumper Configuration OMAE2011-49506
Motohiko Mura1 Marcio Yamamoto2 Shotaro Uto1 Tomo-Fujiwara1 1. National Maritime Research Institute, Tokyo, Japan; 2. Yokohama National University, Yokohama, Japan; 3. National Maritime Research Institute of Japan, Mitsaka, Tokyo, Japan
**Ocean Engineering Symposia**

**6-29 Coastal Engineering – II**

**Wednesday June 22**

**Leeuwen I | 15:30–17:30**

**Session Chair:** Tai-Wen Hsu, Department of Hydraulic and Ocean Engineering, National Cheng Kung University, Taiwan

**Session Co-Chair:** James Kahiatau, Texas A&M University, USA

**An Experimental Study of Effects of Water Depth on Wave Scattering and Motion Responses of a Moored Floating Breakwater in Regular Waves**

Zhenhua Huang, Wenbin Zhang

Nanyang Technological University, Singapore, Singapore

**Application of “Nonlinear Fourier Transform (NFLT)” for the Analysis of Soliton Fission behind Submerged Reefs with Finite Width**

Markus Brühl, Hocine Oumeraci

Technische Universität Braunschweig, Braunschweig, Germany

**Numerical Study of Water Wave Transformation Over a Circular Bowl Pit**

Ali Reza Soltankohi, Behrouz Gatmiri, Asadollah Noorzad

1. University of Tehran, Tehran, Iran; 2. Ecole Nationale des Ponts et Chaussées, and University of Tehran, Paris, France

**Complex Wave Investigations of Protected Marine Water Area**

Boris Divinsky, Ruben Koyan, Sergey Kuklev

The Southern Branch of the P.P. Shirshov Institute of Oceanology, Russian Academy of Sciences, Gelendzhik, Russia

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**Polar and Arctic Sciences and Technology**

**7-1 Numerical Ice Modeling**

**Wednesday June 22**

**Diamond II | 15:30–17:30**

**Challenge Arctic**

OMAE2011-50357

Walter Kuehnlein

SEA2ICE Ltd. & Co. KG, Germany

**Numerical Simulation of Moored Ship in Level Ice**

OMAE2011-49115

Li Zhou, Biao Su, Kaj Riska, Torgeir Moan

1. Norwegian University of Science and Technology, Trondheim, Norway; 2. ILS Oy, Helsinki, Finland

**Computational Methods for Solving Dynamic Ice Structure Interaction Problems**

OMAE2011-50337

Ibrahim Konuk

Technip USA, Inc., Houston, TX, USA

**ADWICE: ADVanced Weathervaning in ICE**

OMAE2011-49154

William Hidding, Guillaume Bonnaffoux, Mamoun Naciri

Single Buoy Mooring, Monaco, Monaco

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**CFD and VIV Symposia**

**8-12 CFD Methods & Cylinder VIV**

**Wednesday June 22**

**Goudriaan I | 15:30–17:30**

**Session Chair:** Samuel Holmes, Red Wing Engineering, Inc., USA

**Session Co-Chair:** Yiannis Constantinides, Chevron, USA

**Multiphysics SPH Simulations with Local Particle Coarsening**

OMAE2011-49197

Christian Ulrich, Sven Bednarek, Thomas Rung

Hamburg University of Technology, Hamburg, Germany

**Random Collocation Method**

OMAE2011-50078

Hiroshi Isshiki

University of Ulsan, Ulsan, Korea

**Parallelization of LBM Code using CUDA Capable GPU Platform for 3D Single and Two-Sided Non-Facing Lid-Driven Cavity Flow**

OMAE2011-50332

Muhammad S. Alam, Liang Cheng

1. University of Western Australia, Perth, WA, Australia; 2. University of Western Australia, Crawley, WA, Australia

**A Basic Research on the VIV Response of Rotating Circular Cylinder in Flow**

OMAE2011-49561

Chang-Kyu Rheem, Koichiro Kato

The University of Tokyo, Tokyo, Japan

**Numerical Simulation on Vortex-Induced Vibration of an Elastically Mounted Circular Cylinder with Two-Degree-of-Freedom**

OMAE2011-49573

Zhigong Huang, Carl M. Larsen

Centre for Ships and Ocean Structures, Norwegian University of Science and Technology, Trondheim, Norway

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**CFD and VIV Symposia**

**8-16 Floaters – Ship Maneuvering & Roll**

**Wednesday June 22**

**Diamond I | 15:30–17:30**

**Session Chair:** Yuming Liu, Massachusetts Institute of Technology, USA

**Session Co-Chair:** J. Kim Vandiver, Massachusetts Institute of Technology, USA

**Ship Motions from Unsteady Maneuvering in Two-Dimensional Waves, Part I: Numerical Simulations**

OMAE2011-49018

Ray-Qing Lin, Joseph T. Klamo

David Taylor Model Basin, NSWCDD, West Bethesda, MD, USA

**Ship Motions from Unsteady Maneuvering in Two-Dimensional Waves, Part II: Analysis of Data**

OMAE2011-49019

Joseph T. Klamo, Ray-Qing Lin

David Taylor Model Basin, NSWCDD, West Bethesda, MD, USA

**Predicting Roll Added Mass and Damping of a Ship Hull Section using CFD**

OMAE2011-49085

Frederick Jaouen, Arjen Koop, Guilherme Vaz

MARIN, Wageningen, Netherlands

**Urans Simulation of an Appended Hull During Steady Turn With Propeller Represented by an Actuator Disk Model**

OMAE2011-50136

Charles Dai, Ronald Miller

Naval Surface Warfare Center, Carderock Division, West Bethesda, MD, USA
Ocean Renewable Energy Symposia

9-15 Wave Energy – V

Wednesday June 22
Van Oldenbarnevelt | 15:30–17:30

Session Chair: João Cruz, GL Garrad Hassan, Portugal
Session Co-Chair: Wei Qiu, Memorial University, Canada

Design of a Point Absorber inside the WindFloat Structure OMAE2011-49015
Antoine Peiffer, Dominique Roddier, Alexia Aubault
Marine Innovation & Technology, Berkeley, CA, USA

Introducing Wave Regeneration by Wind in a Mild-Slope Wave Propagation Model, MILDwave to Investigate the Wake Effects in the Lee of a Farm of Wave Energy Converters OMAE2011-49347
Vasiliki Stratigaki, Peter Troch, Leen Baelus, Yannick Keppens
Department of Civil Engineering, Ghent University, Ghent, Belgium

Power Absorption Measures and Comparisons of Selected Wave Energy Converters OMAE2011-49360
A. Babarit1 Jorgen Hals2 Adi Karniawan3 Jorgen Krokstad3 Jorgen Krokstad3 Jorgen Krokstad31. Centre for Ships and Ocean Structures, Trondheim, Norway; 2. Laboratoire de Mécanique des Fluides (CNRS UMR6598), Ecole Centrale de Nantes, Nantes, France; 3. Statkraft, Trondheim, Norway

Validation of a New Wave Energy Converter Modelling Tool – Application to the Columbia Power WEC OMAE2011-49845
João Cruz1 Michael Livingstone1 Ken Rhinefrank2. GL Garrad Hassan, Lisboa, Portugal; 2. Columbia Power Technologies, LLC, Corvallis, OR, USA

Ocean Renewable Energy Symposia

9-16 Wind Energy – V

Wednesday June 22
Mees Auditorium | 15:30–17:30

Session Chair: Charles Smith, Petroleum Research Atlantic Canada, Canada
Session Co-Chair: Gunjit Bir, Clipper Windpower (United Technologies), USA

Ivar Fylling, Petter Andreas Berthelsen
Marintek, Trondheim, Norway

Numerical Tower Shadow Modeling for a Downwind Wind Turbine Truss Tower OMAE2011-50118
Torbjørn Ruud Hagen, Marit Reiso, Michael Muskulus
Norwegian University of Science and Technology, Trondheim, Norway

Hydrodynamic and Aerodynamic Loads on the Behaviour of Offshore Wind Farm OMAE2011-49490
Wei Gong
Norwegian University of Science and Technology, Trondheim, Norway

Study on the Dynamic Response for Floating Foundation of Offshore Wind Turbine OMAE2011-50329
Tang You-gang, Hu Jun, Liu Li-qin
School of Civil Engineering, Tianjin, China

Developing Deepwater Floating Production Systems
E-Semi
Wet & Dry Tree Semis
ETLP
Spar
Radial Well Bay Spar

www.floatec.com
Concepts, Engineering and Delivery
Thursday, 8:30–10:00

Offshore Technology Symposia

1-11 Installation – Commissioning – I

Thursday June 23

Session Chair: Charlotte van de Kerk, The Offshore Partners B.V., Netherlands
Session Co-Chair: Anil Sablok, Technip, USA

Large Marine Lifts in Shallow Water OMAE2011-49168
Alan Crowie
CB&J, London, UK

Submerged Towing Performed by a Monohull Vessel OMAE2011-49227
Tore Jacobsen1 Bernt Leira2
1. Subsea 7 Norway AS, Stavanger, Norway; 2. Norwegian University of Science and Technology, Trondheim, Norway

Statistical Characterization of Slacking and Snap Loading during Offshore Lifting and Lowering in a Wave Environment OMAE2011-49273
Kevin W. Thurston1 Richard C. Swanson1 Frans Kopp1
1. Shell International Exploration and Production Inc., Houston, TX, USA; 2. RKS Engineering, Houston, TX, USA

Offshore Use of Floating Sheerlegs OMAE2011-49394
Vincent Koster1 Kees Jan Vermeulen2 Peter Kortekaas2
1. Smit, Delft, Netherlands; 2. Smit, Rotterdam, Netherlands

Offshore Technology Symposia

1-21 Ships and Ship Dynamics – I

Thursday June 23

Session Chair: Ronald W. Yeung, University of California at Berkeley, USA
Session Co-Chair: Pierre Ferrant, Laboratoire de Mécanique des Fluides (CNRS UMR 6598), Ecole Centrale Nantes, France

“Wet Handshake”, Workability Study of an Offshore Thruster Exchange Operation OMAE2011-49921
Henk Feikens1 Roel Verwey2 Roel Verwey2 J.W. Serraris3 René Huijsmans1
1. Delft University of Technology, Delft, Netherlands; 2. BigLift Shipping, Henk Feikens2 Roel Verwey2 J.W. Serraris3 René Huijsmans1
1. Delft, Netherlands; 2. BigLift Shipping, Netherlands

Validation of Shiphandling Simulation Models OMAE2011-50107
Tor Einar Berg, Edvard Ringen
1. SMIT, Delft, Netherlands; 2. SMIT, Rotterdam, Netherlands

Organic Boats and Rhibs – Meeting New Demands OMAE2011-50274
Ricardo Batista, Antonio F. Mateus
Portuguese Navy, Alfeite, Portugal

Calculations on the Oil Film Between a Propeller Shaft and the Aft Sterntube Bearing OMAE2011-50301
R. Roemen
R&D Waartsilä Netherlands, Drunen, Netherlands
Structures, Safety and Reliability Symposia

2-39 Risk Analysis and Safety Management — I
Thursday June 23  J.F. Staal  |  8:30–10:00
Session Chair: Haibo Chen, Scandpower Inc. (China), China  
Session Co-Chair: Marcelo R. Martins, University of São Paulo, Brazil  
Avoiding Disasters: Evolution in Integrity and Maintenance Management OMAE2011-49008  
Beatriz Grossman, Carlos C. Witte, Duperron Marango Ribeiro  
PhBsoft, Rio de Janeiro, RJ, Brazil

Analysis of Oil Spill Risk in DP Shuttle Tanker Direct Offloading Operations OMAE2011-50344  
Haibo Chen1 Arve Lerstad2 Torgerin Moan1 Kåre Brevik1  
1. Norwegian University of Science and Technology, Trondheim, Norway;  
2. Scandpower Inc., Beijing, China; 3. Ship Manoeuvring Simulator Centre AS, Trondheim, Norway

Fivos Andritsos1 Hans Cozijn2  
1. European Commission - Joint Research Centre, Ispra, Italy; 2. MARIN, Wageningen, Netherlands

Materials Technology Symposia

3-1 HSE/PSA Workshop on Ageing and Life Extension of Offshore Installations — Regulatory Perspective
Thursday June 23  Town Hall  |  8:30–10:00
Session Chair: Alexander Stacey, Health & Safety Executive, United Kingdom  
Session Co-Chair: Gerhard Ersdal, Petroleum Safety Authority Norway, Norway

A Survey of Industrial Practices for the Management of Ageing Assets and Life Extension that are Relevant to Offshore Structures OMAE2011-49264  
John Wintle1 John Sharp2 Alexander Stacey3 Carol Johnston1  
1. Cranfield University, Cranfield, UK; 2. Health & Safety Executive, London, UK; 3. TWI Ltd, Cambridge, UK

Issues for Consideration in Life Extension and Managing of Ageing Facilities OMAE2011-49261  
Solfrid Håbrekke1 Per Hokstad2 Lars Bodsberg3 Gerhard Ersdal1  
1. SINTEF, Trondheim, Norway; 2. Petroleum Safety Authority Norway, Stavanger, Norway

Experience from Norwegian Programme on Ageing and Life Extension OMAE2011-50046  
Gerhard Ersdal, Erik Hønklund, Hans Spilde  
Petroleum Safety Authority Norway, Stavanger, Norway

KP4: Ageing & Life Extension Inspection Programme for Offshore Structures OMAE2011-49889  
Alexander Stacey  
Health & Safety Executive, London, UK

Pipeline and Riser Technology Symposia

4-13 Fracture and Fatigue — I
Thursday June 23  New York  |  8:30–10:00
Session Chair: Philippe Darcis, TenarisTamsa — R&D Center, Mexico  
Session Co-Chair: Ilson Pasqualino, OPPE/UFJ, Brazil

Assessment of Fatigue Damage Initiation in Oil and Gas Steel Pipes OMAE2011-49944  
Bianca Pinheiro1 Jacky Lesage1 Ilson Pasqualino2 Nouroeddine Benseddik1  
1. LILLE 1, Lille, France; 2. OPPE/UFJ, Rio de Janeiro, RJ, Brazil; 3. Laboratoire de Mécanique de Lille, IUT A – Université Lille 1, Villeneuve d’Ascq, France

HAZ Toughness: Realistic Testing for Pipeline Integrity OMAE2011-49179  
Alexander Amadioha1 Adam Bannister1 Simon Slater2 Martin Connelly2  
1. Tata Steel Research, Development & Technology, Rotherham, UK; 2. Tata Steel UK Ltd, Hartlepool, UK

Characterisation of Slug Flow Conditions in Pipelines for Fatigue Analysis OMAE2011-49583  
Ahmed M. Reda1 Gareth L. Forbes1 Ibrahim A. Sultan1  
1. Department of Mechanical Engineering, Curtin University, Australia, Perth, WA, Australia; 2. School of Science and Engineering, University of Ballarat, Mount Helen, VIC, Australia

Elastic-Plastic Pull-in Strength and Damage Analyses of Steel Catenary Risers in Deepwater OMAE2011-49086  
Chih-Hung Luk, Mark Chang  
Technip USA, Houston, TX, USA

Pipeline and Riser Technology Symposia

4-15 Installation
Thursday June 23  Antwerp  |  8:30–10:00
Session Chair: Duane DeGeer, INTECEA, Inc, USA  
Session Co-Chair: Oishi Chen, C-FER Technologies, Canada

Offshore Pipeline Installation – 3-Dimensional Finite Element Modelling OMAE2011-49832  
Lorenzo Marchionni, Luigino Vitali, Alessandro Lombardi  
Saipem Energy Services, Fano (PU), Italy

Model Tests of Pipe-laying Vessel: Results and Analysis OMAE2011-49967  
Víctor Platonov1 Alevtina Kulikova1 Sandro Focé1  
1. Krylov Shipbuilding Research Institute, St. Petersburg, Russia; 2. Eastproject s.r.l., La Spezia, Italy

Reliability Based Assessment of Minimum Wall Thickness for Reeling OMAE2011-49389  
Daniel Smith, Tomasz Tkaczuk, Sylvain Denniel  
Technip UK Ltd, Westhill, UK

Alternative Method of Installation of Riser Support Buoy OMAE2011-49862  
Ricardo Francisca1 Enrique Casaprima1 José C.L. Almeida1 Jairo B. Araujo1 Antonio C. Fernandes1  
1. PETROBRAS, Rio de Janeiro, RJ, Brazil; 2. Federal University of Rio de Janeiro, RJ, Brazil; 3. PETROBRAS, Macaé, RJ, Brazil
Ocean Engineering Symposia

6-26 Model Tests – V

Thursday June 23

Leeuwen II | 8:30–10:00

Session Chair: Sander Calisal, University of British Columbia, Canada
Session Co-Chair: Antonio C. Fernandes, Federal University of Rio de Janeiro, Brazil

Sporuous Waves During Generation of Multi-Chromatic Waves in the Wave Tank in Shallow Water OMAE2011-50276
M. Hasanat Zaman1 Heather Peng2 Emile Baddour2 Shane Mckay2
1. Memorial University, St. John’s, NL, Canada; 2. National Research Council Canada, Institute for Ocean Technology, St. John’s, NL, Canada

Experimental Investigations of Offshore Triceratops Under Regular Waves OMAE2011-49826
Srinivasan Chandrasekaran, R Sundaravadivelu, Pannaselvam Rajamanickam, Seeam Madhuri, Shyamala Varthini
Indian Institute of Technology Madras, Chennai, TN, India

Solution Verification and Validation in CFD – Review and Example of Use for Wave Propagation OMAE2011-49398
Fahd Faithi1 Luis Eca1 Mart Borbom2
1. SBM GustoMSC, Schiedam, Netherlands; 2. Delft, Netherlands; 3. IST-UTL, Lisboa, Portugal

3D Scour of Submarine Pipeline: An Experimental Investigation OMAE2011-49268
Ambug Dwivedi, Ying Min Low, Yee Meng Chiew, Yushi Wu
Nanyang Technological University, Singapore, Singapore

Ocean Engineering Symposia

6-30 Coastal Engineering – III

Thursday June 23

Leeuwen I | 8:30–10:00

Session Chair: Said Mazaheri, National Institute for Oceanography, Iran
Session Co-Chair: Markus Brühl, Technische Universität Braunschweig, Germany

Hydraulic Transport of Sand/Shell Mixtures OMAE2011-49695
Robert Ramsdell1 Sape Miedema1 Arno Talmon2
1. SBM GustoMSC, Schiedam, Netherlands; 2. Deltares, Delft, Netherlands; 3. IST-UTL, Lisboa, Portugal

Prediction of Cross-Shore Beach Profile Evolution in the Vicinity of Seawalls OMAE2011-49875
Seyed Ahmad Lashteh-Neshaei1 Mohammad Ali Lotfollahi-Yaghin1 Morteza Biklaryan1
1. Delft University of Technology, Delft, Netherlands; 2. Great Lakes Dredge & Dock Co., Oak Brook, IL, USA

Piers Using Artificial Neural Networks OMAE2011-49959
Ehsan Sarshar1 Hossein Sadati1 Amin Sarshar2
1. K. N. Toosi University of Technology, Tehran, Iran; 2. Islamic Azad University Central Tehran Branch, Tehran, Iran

Prediction of Water Wave Breaking Height and Depth Using ANFIS OMAE2011-49825
Ehsan Delavari, Ahmadreza Mostafa Gharabagi, Mohammad Reza Chenaghlohu
Sahand University of Technology, Tabriz, Iran

Polar and Arctic Sciences and Technology

7-2 Ice Model Tests and Analysis of Full Scale Data

Thursday June 23

Diamond II | 8:30–10:00

Session Chair: Ibrahim Konuk, Technip USA, Inc., USA
Session Co-Chair: Walter Kuehnlein, SEA2ICE Ltd. & Co. KG, Germany

Ice Model Testing of Structures with a Downward Breaking Cone in the Waterline Jip: Presentation, Set-Up & Objectives OMAE2011-49380
Per Kristian Bruun1 Arne Güttner2 Arild Sigurdsmoen2 Ted Kokkinis2
1. Akra Solutions, Oslo, Norway; 2. Shell International Exploration and Production, Rijswijk, Netherlands; 3. StatOil, Trondheim, Norway; 4. Chevron Norge AS, Oslo, Norway; 5. ExxonMobil URC, Houston, TX, USA; 6. Norwegian University of Science and Technology, Trondheim, Norway

The Study on the Ice Sea Trial in Chukchi Sea Using Korean Icebreaker Araon OMAE2011-49482
Hyun Soo Kim1 Chun-Ju Lee2 Kyungik Choi1
1. INHA Technical College, Incheon, Korea; 2. Maritime & Ocean Engineering Research Institute, Daejon, Korea; 3. Korea Maritime University, Busan, Korea

Full Scale Measurement on Level Ice Resistance of Icebreaker OMAE2011-50066
Abdillah Susyuthi1 Bertn J. Leira2 Kaj Riska3
1. ILS Oy, Helsinki, Finland; 2. Norwegian University of Science and Technology, Trondheim, Norway

Safety Assessment of Cargo Containment Systems in LNG Carriers under the Impact of Iceberg-Ship Collision OMAE2011-50064
JaeHyun Kim, HoonKyu Oh, DoHyun Kim
Hyundai Heavy Industries Co., LTD., Ulsan, Korea

CFD and VIV Symposia

8-17 Risers – III

Thursday June 23

Diamond I | 8:30–10:00

Session Chair: Michael Triantafyllou, MIT, USA
Session Co-Chair: Steve Leverette, SBM Atlantisia, USA

Effect of Higher Stress Harmonics and Spectral Width on Fatigue Damage of Marine Risers OMAE2011-49728
Rachel Price1 Haining Vandiver2 Michael Triantafyllou1
1. Massachusetts Institute of Technology, Cambridge, MA, USA; 2. University of Massachusetts, Cambridge, MA, USA

Modeling Risers with Partial Strake Coverage OMAE2011-49817
Guido Kuiper2 Sveinung Løset6 Henrik Hannus1
1. Aker Solutions, Oslo, Norway; 2. Shell International Exploration and Production, Rijswijk, Netherlands; 3. StatOil, Trondheim, Norway; 4. Chevron Norge AS, Oslo, Norway; 5. ExxonMobil URC, Houston, TX, USA; 6. Norwegian University of Science and Technology, Trondheim, Norway

Traveling Wave Response in Full-Scale Drilling Riser VIV Measurements OMAE2011-49821
Hayden Marcollo3 Adrian Eassom5 Emmanuel Fontaine3 Michael Tognarelli2 Pierre Beynet2 Yanni Constantioudes3 Owen Oakley, Jr.1
1. Principia, Houston, TX, USA; 2. Principia, La Ciotat, France

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**Ocean Renewable Energy Symposia**

**9-18 Wave Energy – VI**

**Thursday June 23**

**Goudriaan I | 8:30–10:00**

**Session Chair:** Wei Qiu, Memorial University, Canada  
**Session Co-Chair:** Joao Cruz, Gl. Garrad Hassan, Portugal

**Feasibility Study of a Wave Energy Farm in the Western Mediterranean Sea: Comparison Among Different Technologies OMAE2011-49372**  
Renata Archetti1 Silvia Bozzi1 Giuseppe Passoni1  
1. DIPAM University of Bologna, Bologna, Italy; 2. DIAR, Politecnico di Milano, Milano, Italy

Bruno Pereiras1 Manabu Takao2 Fernando Garcia1 Francisco Castro1  
1. University of Valladolid, Valladolid, Spain; 2. Matsue National College of Technology, Matsue, Japan

**Optimization of Mooring Configuration Parameters of Floating Wave Energy Converters OMAE2011-49955**  
Pedro Vicente1 Antonio Falcao1 Paulo Justino1  
1. Technical University of Lisbon, Instituto Superior Técnico, Lisbon, Portugal; 2. National Laboratory for Energy and Geology, Lisbon, Portugal

**Expected Values of Wave Power Absorption around the Japanese Islands Using OWC Types with Projecting Walls OMAE2011-49585**  
Tomoki Iokma1 Hiroyuki Osumi1 Koichi Masuda1 Hisaaki Maeda1  
1. Nihon University, Funabashi, Japan; 2. Japan Agency for Marine-Earth Science and Technology, Yokosuka, Japan

**Ocean Renewable Energy Symposia**

**9-17 Current Energy – V**

**Thursday June 23**

**Van Oldenbarnevelt | 8:30–10:00**

**Session Chair:** Jon Mikkelsen, University of British Columbia, Canada  
**Session Co-Chair:** Madasamy Arockiasamy, Florida Atlantic University, USA

**Experimental Comparisons to Assess the Similarity between VIM (Vortex-Induced Motion) and VIV (Vortex-Induced Vibration) Phenomena OMAE2011-49911**  
Rodolfo T. Gonçalves1 Guillerme F. Rosetti1 André L. C. Fujarra1 Kazuo Nishimoto1 Allan C. Oliveira2  
1. University of São Paulo, São Paulo, SP, Brazil; 2. PETROBRAS, Rio de Janeiro, RJ, Brazil

**Hydro-Dynamic Simulation of a Cylindrical Buoy for Wave Energy Conversion OMAE2011-50229**  
Carlos Velze1 Brent Papes1 Marcel Ille1 Zhuhua Qu1  
1. University of Central Florida, Orlando, FL, USA

**Offshore Geotechnics Symposia**

**10-6 Jack-Up and Spud Can Foundations**

**Thursday June 23**

**Blue | 8:30–10:00**

**Session Chair:** Jelke Dijkstra, Delft University of Technology, Netherlands

**Experimental Investigation of the Undrained Response of a Shallow Skirted Foundation Subjected to Vertical Compression and Uplift OMAE2011-49072**  
Divya Salliyil Kodakkattu Mana1 Susan Gourvenec1 Shazzad Hossain1 Mark F. Randolph2  
1. The University of Western Australia, Crawley, WA, Australia; 2. Centre for Offshore Foundation Systems-The University of Western Australia, Crawley, WA, Australia

**Numerical Studies of Installation and Extraction Processes of Jack-Up Ships OMAE2011-49928**  
Gang Qiu1 Jurgen Grabe1 Nikolai Kukolka1 Hans-Werner Vollstedt1  
1. Hamburg University of Technology, Hamburg, Germany; 2. Bremenports GmbH & Co. KG, Bremerhaven, Germany

**Dynamic Analysis of Jack-up Platforms Subjected to Waves Considering Soil-Structure Interaction OMAE2011-49628**  
Maziar Gholami Korzani, Ali Akbar Aghakhouchak  
Tarbiat Modares University, Tehran, Iran

**Experimental Investigation into Pile Diameter Effects of Laterally Loaded Mono-Piles OMAE2011-30088**  
Etienne Alderlieste, Jelke Dijkstra, A. Fris. Van Tol  
Delft University of Technology, Delft, Netherlands

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**CFD and VIV Symposia**

**8-20 Floaters – Semisubmersibles & Spurs**

**Thursday June 23**

**Goudriaan I | 8:30–10:00**

**Session Chair:** Prashant Soni, Det Norske Veritas (DNV), Norway  
**Session Co-Chair:** Krish Thigaraharjan, The University of Western Australia, Australia

**CFD Simulation of Flow-Induced Motions of a Multi-Column Floating Platform OMAE2011-49437**  
Allan Magee1 Kenneth Yesh Hock Guan1 Jang Whan Kim1  
1. Technip, Houston, TX, USA; 2. Technip Geoproduction Malaysia, Kuala Lumpur, Malaysia; 3. Technip, Kuala Lumpur, Malaysia

**Experimental Study of Vortex-induced Motions (VIM) on a Large-Volume Semi-Submersible Platform OMAE2011-49010**  
Rodolfo T. Gonçalves1 Guillerme F. Rosetti1 André L. C. Fujarra1 Kazuo Nishimoto1 Allan C. Oliveira2  
1. University of São Paulo, São Paulo, SP, Brazil; 2. PETROBRAS, Rio de Janeiro, RJ, Brazil

**Experimental Comparisons to Assess the Similarity between VIM (Vortex-Induced Motion) and VIV (Vortex-Induced Vibration) Phenomena OMAE2011-49911**  
Rodolfo T. Gonçalves1 César M. Freire1 Guillerme F. Rosetti1 Guillerme R. Franzini1 André L. C. Fujarra1 Julio R. R. Meneghini1  
1. University of São Paulo, São Paulo, SP, Brazil; 2. NDF-POLI-University of São Paulo, São Paulo, SP, Brazil

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Thursday, 10:30–12:00

Offshore Technology Symposia

1-12 Installation – Commissioning – II

Thursday June 23

Session Chair: Nell Williams, Wison Floating Systems, USA

Session Co-Chair: Oriol Rijken, SBM Atlantisa, USA

Installation of a Submerged Buoy for Supporting Riser System (BSR) in a Campos Basin Site OMAE2011-50167

Jairo B. Araujo1 José C.L. Almeida1 Antonio C. Fernandes1
1. Federal University of Rio de Janeiro, Rio de Janeiro, RJ, Brazil;
2. PETROBRAS, Macae, RJ, Brazil; 3. PETROBRAS, Rio de Janeiro, RJ, Brazil

Development of a Prototype Test Rig for a Cryogenic, Marine, Heavy Lift, Buoyancy System OMAE2011-49944

Rachel F. Nicholls-Lee, Stephen R. Turnock, Mingyi Tan, Paul C. McDonald, R. A. Shenoi
University of Southampton, Southampton, UK

Detailed Analyses of the Tow Line Behaviour in Single, Double and Triple Towages in Case of Emergency Stop and Catenary OMAE2011-49688

A.J. (Ton) Bos, R. (Richard) Heemskerk
Hydrosman Equipment BV, Schiedam, Netherlands

Offshore Technology Symposia

1-22 Ships and Ship Dynamics – II

Thursday June 23

Session Chair: Jang Whan Kim, Technip, USA

Session Co-Chair: Haiping He, ExxonMobil Upstream Research Company, USA

Assessing the Dynamic Stability of an OSV OMAE2011-49043

Vladimir Shigunov, Ould el Moctar, Thomas Schellin, Jan Kaufmann, Rasmus Stute
Germanischer Lloyd, Hamburg, Germany

Forecasting and Hindcasting Rogue Waves OMAE2011-50296

Alfred R. Osborne
University of Torino, Torino, Italy

Structures, Safety and Reliability Symposia

2-27 Extreme Seas – II

Thursday June 23

Session Chair: Elzieta Maria Bitner-Gregersen, Det Norske Veritas AS, Norway

Session Co-Chair: Felice Arena, Mediterranea University of Reggio Calabria, Italy

Influence of Wave Group Characteristics on Loads in Severe Seas OMAE2011-49940

Gunther F. Claus, Matthias Dudek, Marco Klein
Technical University Berlin, Berlin, Germany

Statistics of Non-Gaussian Wave Groups Generated in an Offshore Wave Basin OMAE2011-50317

Z. Cherneva1 Carlos Guedes Soares1
1. Technical University of Lisbon, Lisbon, Portugal; 2. Technical University of Lisbon, Instituto Superior Técnica, Lisbon, Portugal

Application of Regional Frequency Analysis for Identification of Homogeneous Regions of Design Wave Conditions Offshore Portugal OMAE2011-50214

Claudia Lucas1 Gangadhara Muraleedharan1 Carlos Guedes Soares1
1. Technical University of Lisbon, Lisbon, Portugal; 2. Instituto Superior Técnica, Lisbon, Portugal

Structures, Safety and Reliability Symposia

2-36 Structural Analysis and Optimisation – IV

Thursday June 23

Session Chair: Sang-Rai Cho, University of Ulsan, Korea

Session Co-Chair: Paulo Mauricio Videiro, PETROBRAS, Brazil

Buckling Analysis of Offshore Jackets in Removal Operations OMAE2011-49005

W. Xia1 P.C.J. Hoogenboom2
1. Delft University of Technology, Hoogmade, Netherlands; 2. Delft University of Technology, Delft, Netherlands

Case Study for Fixed Offshore Platform Failure in Gulf of Suez OMAE2011-49005

Mohamed A. El-Reedy
Gulf of Suez Petroleum Company (Maadi-Projects), Cairo, Egypt
Structures, Safety and Reliability Symposia

2-40 Risk Analysis and Safety Management – II

Thursday June 23

J.F. Staal | 10:30–12:00

Session Chair: Haibo Chen, Scandpower Inc. (China), China
Session Co-Chair: Bernt Leira, NTNU, Norway

Design and Testing of a Thermally-Actuated Gas Lift Safety Valve OMAE2011-49927
Eric Gilbertson¹ Franz Hovers¹ Jose Arellano¹ Bryan Freeman¹
1. Massachusetts Institute of Technology, Cambridge, MA, USA; 2. Chevron, Houston, TX, USA

System Reliability Approach for Improving Fire Safety Onboard Ships OMAE2011-49006
Apurba Kar, Bhargab Dutta
Indian Register of Shipping, Mumbai, MH, India

Thermal Requirements for Surviving a Mass Rescue Incident in the Arctic – Preliminary Results OMAE2011-49471
Lawrence Mak¹ Brian Farnworth¹ Eugene Wissler¹ Michel DuCharme¹
Wendell Uglene¹ Renee Boileau¹ Pete Hackett¹ Andrew Kuczora¹

Materials Technology Symposia

3-3 HSE/PSA Workshop on Ageing and Life Extension of Offshore Installations – Ageing Management

Thursday June 23

Town Hall | 10:30–12:00

Session Chair: Alexander Stacey, Health & Safety Executive, United Kingdom
Session Co-Chair: Gerhard Ersdal, Petroleum Safety Authority Norway, Norway

Industry Developed Guidelines and Standards for Ageing and Life Extension OMAE2011-49898
Per Otto Selnes¹ Gerhard Ersdal¹
1. Petroleum Safety Authority Norway, Stavanger, Norway; 2. The Norwegian Oil Industry Association, Stavanger, Norway

The Use of Capability Maturity Modelling to Ensure Ageing and Life Extension are Adequately Considered in Structural Integrity Management OMAE2011-49335
John Sharp¹ Gerhard Ersdal¹ David Galbraith¹

John Sharp¹ Ed Terry¹ John Wintle³
1. Cranfield University, Cranfield, UK; 2. Sauf Consulting Ltd., London, UK; 3. TWI Ltd, Cambridge, UK

Pipeline and Riser Technology Symposia

4-14 Fracture and Fatigue – II

Thursday June 23

New York | 10:30–12:00

Session Chair: Ilson Pasqualino, COPPE/UFRJ, Brazil
Session Co-Chair: Philippe Darci, TenarisTamsa - R&D Center, Mexico

Effects of Sensitive Factors on the VIV-induced Fatigue Damage in Free Standing Hybrid Riser (FSHR) OMAE2011-49602
Kang Zhuang, Liang Wenzhou, Jia Lusheng, Chen Wang
Harbin Engineering University, Harbin, Heilongjiang, China

Free Standing Hybrid Riser Global Motion Fatigue Analysis OMAE2011-49605
Zhuang Kang, Hui Li, Chen Wang
Harbin Engineering University, Harbin, Heilongjiang, China

Pipeline and Riser Technology Symposia

4-25 Steel Riser – I

Thursday June 23

Antwerp | 10:30–12:00

Session Chair: Howard Wang, ExxonMobil Development Company, USA
Session Co-Chair: Mike Campbell, 2H Offshore, USA

Challenges Faced in the Design of SLWR Configurations for the Pre-Salt Area OMAE2011-49096
Stael Ferreira Senra¹ Marcio Martins Mourelle¹ Edmundo Queiroz de Andrade¹ Ana Lucia Torres¹
1. PETROBRAS / CENPES, Rio de Janeiro, RJ, Brazil; 2. Petrobras Research Center (CENPES), Rio de Janeiro, RJ, Brazil

Design Challenges of Top Tensioned Risers in Ultra Deepwater Applications OMAE2011-50127
Yongming Cheng, Lixin Xu, Paul Stanton
Technip, Houston, TX, USA

Deepwater SCR Benchmarking Methodology OMAE2011-50195
Songcheng Li² Lee Tran² Prabhaj Enuganti² Mike Campbell² Yiannis Constantinides¹
1. Chevron, Houston, TX, USA; 2. 2H Offshore, Houston, TX, USA

Estimating Long-Term Distributions of Extreme Response of a Catenary Riser OMAE2011-50151
Elizabeth Passano¹ Philippe Mainçon¹
1. Centre for Ships and Ocean Structures, Department of Marine Technology, Norwegian University of Science and Technology, Trondheim, Norway; 2. Marintek, Trondheim, Norway
Ocean Engineering Symposia

6-5 Underwater Technology

Thursday June 23

Leeuwen II | 10:30–12:00

Session Chair: Andrea Kauffeldt, Technical University of Berlin, Germany
Session Co-Chair: Daniel T. Valentine, Clarkson University, USA

High Resolution Seabed Sub-Bottom Profiler for AUV OMAE2011-49024
Willfrid Merlin1 Darrell Moulard2 William Markske3 Peter King4 Ron Lewis5 Dan Walker6 Gary J. Dinn7
1. Memorial University of Newfoundland, St John’s, NL, Canada; 2. PanGeo Subsea Inc., St John’s, NL, Canada

CFD Analysis of Axisymmetric Underwater Vehicles with Experimental Validation OMAE2011-49535
Subrata Kumar Bhattacharyya1 S. G. Shereena2 V.G. Idirchandy3
1. Indian Institute of Technology Madras, Chennai, TN, India; 2. Indian Institute of Technology Madras, Madras, TN, India

Surasak Phoemsapthawee1 Marc Le Boulluec2 Jean-Marc Laurens3 François Deniset4
1. Ifremer, Plouzane, France; 2. Ensieta, Brest, France; 3. École Navale, Brest, France

Conceptual Design of a Submersible Remotely Operated Swimming Dredger (SROSD) OMAE2011-49668
Mridul Kumar Sarkar1 Neil Bose2 Shuhong Chai3 Kim Dowling4
1. Australian Maritime College, Launceston, TAS, Australia; 2. Excavation & Equipment Manufacturing (P) Ltd., Kolkata, WB, India; 3. School of Science and Engineering, Ballarat, VIC, Australia

Ocean Engineering Symposia

6-31 Coastal Engineering – IV

Thursday June 23

Leeuwen I | 10:30–12:00

Session Chair: René Huijsmans, Delft University of Technology, Netherlands
Session Co-Chair: Keith MacHutchon, Coastal Marine Technology, South Africa

Role of Vortices in Sediment Entrainment OMAE2011-50289
Ambuj Dwivedi1 Yee Meng Chiew2 Ying Min Low3
1. Nanyang Technological University, Singapore, Singapore; 2. Australian Maritime College, Launceston, TAS, Australia

The Interaction of Tsunamis with Ocean Swell: An Experimental Study OMAE2011-49936
James Kahiata1 Hoda El Safty2
1. Texas A&M University, College Station, TX, USA

Response Behaviour of Perforated Cylinders in Regular Waves OMAE2011-49839
Srinivasan Chandrasekaran1 Parameswara Pandian2
1. Indian Institute of Technology Madras, Chennai, TN, India; 2. Dept. of Ocean Engineering, Chennai, TN, India

Set-Up Due to Random Waves: Influence of the Directional Spectrum OMAE2011-49977
Giuseppe Barbano1 Giandomenico Foti2 Giovanni Malara3
1. Mediterraneo University of Reggio Calabria, Reggio Calabria, Italy

Polar and Arctic Sciences and Technology

7-3 Structures in Ice

Thursday June 23

Diamond II | 10:30–12:00

Session Chair: Per Kristian Bruun, Aker Solutions, Norway
Session Co-Chair: Walter Kuehnlein, SEA2ICE Ltd. & Co. KG, Germany

A Novel Design of Mobile Offshore Drilling Unit for Arctic Conditions OMAE2011-49137
Alexei Bereznitski
Huisman Equipment BV, Schiedam, Netherlands

Analysis of Ship-Iceberg Impact Loads Based on Bayesian Network Method OMAE2011-50028
Zhenhai Liu1 Luca Garre2 Jorgen Amdahl2
1. Norwegian University of Science and Technology, Trondheim, Norway

Sjoerd Wille1 Guido Kuiper2 Andrei Metrikine3
1. Shell International Exploration and Production, Rijswijk, Netherlands; 2. Shell International Exploration and Production, Rijswijk, Netherlands; 3. Delft University of Technology, Delft, Netherlands

First Offshore Windmill Foundation for Heavy Ice Conditions OMAE2011-49663
Eero Lehtonen1 Esa Eranti2 Heikki Pukkila3 Lasse Rantalainen4
1. Technip Offshore Finland, Pori, Finland; 2. Eranti Engineering Oy, Espoo, Finland; 3. Suomen Hyötytuuli Oy, Pori, Finland

CFD and VIV Symposia

8-18 Risers – IV

Thursday June 23

Goudriaan I | 10:30–12:00

Session Chair: Steve Leverette, SBM Atlantia, USA
Session Co-Chair: Guangqiang Yang, ExxonMobil Upstream Research Company, USA

A Double Birkhoff Wake Oscillator for the Modeling of Vortex-Induced Vibration OMAE2011-49435
Richard Ogink
Heerema Marine Contractors, Leiden, Netherlands

Fluid-Structure Energy Transfer of a Tensioned Beam Subject to Vortex-Induced Vibrations in Shear Flow OMAE2011-49057
Remi Bourguet1 Michael Triantafyllou2 Michael Tognarelli3 Pierre Beynet2
1. Massachusetts Institute of Technology, Cambridge, MA, USA; 2. BP America Production Co., Houston, TX, USA

A Finite Element Study of Multi-mode VIV of Slender Riser Experiencing Non-Uniform Flow OMAE2011-49296
Min Li1 Weimin Chen2 Liwu Zhang3
1. Institute of Mechanics, Chinese Academy of Sciences, Beijing, China; 2. Beijing University of Aeronautics and Astronautics, Beijing, China; 3. Key Laboratory of Environmental Mechanics, Institute of Mechanics, Chinese Academy of Sciences, Beijing, China

VIV Response Inference from Tension Measurements OMAE2011-49552
Li Lee1 Heine Gerretsen2
1. Royal Netherlands Mareearch Institute for the Sea, Edam, Netherlands; 2. Shell International Exploration and Petroleum, Houston, TX, USA
CFD and VIV Symposia

8-21 Floaters – Semisubmersibles

Thursday June 23 | Diamond 1 | 10:30–12:00

Session Chair: Tim Bunnik, Marin, Netherlands
Session Co-Chair: William Bowen, University of Canterbury, New Zealand

Model Test and CFD Verification of New Semisubmersible Designs for Low Vortex-Induced Motion OMAE2011-49119
Qi Xu, Jang Whan Kim, Jim O’Sullivan, Kostas Lambrokos
Technip USA, Inc., Houston, TX, USA

Calculation of Wave Forces and Internal Loads on a Semi-Submersible at Small Draft Using an IVOF Method OMAE2011-49236
Rogier De Bruijn1 Fons A. Huijs2 René Huijsmans1 Tim Bunnik1 Marc Gerritsma2
1. Delft University of Technology, Delft, Netherlands; 2. GustoMSC, Schiedam, Netherlands; 3. MARIN, Wageningen, Netherlands

Benchmark Study on Thruster-Hull Interaction on a Semi-Submersible Crane Vessel OMAE2011-49433
Harald Ottens, Radboud van Dijk, Geert Meskers
Heerema Marine Contractors, Leiden, Netherlands

Model-Scale and Full-Scale CFD Calculations for Current Loads on Semi-Submersible OMAE2011-49204
Arjen Koop1 Alexei Bereznitski1
1. Huisman Equipment BV, Schiedam, Netherlands; 2. MARIN, Wageningen, Netherlands

Ocean Renewable Energy Symposia

9-19 Wind Energy – VI

Thursday June 23 | Van Oldenbarnewelt | 10:30–12:00

Session Chair: Dominique Roddier, Marine Innovation & Technology, USA
Session Co-Chair: Lance Manuel, University of Texas at Austin, USA

Long-Term Reliability Analysis of a Spar Buoy-Supported Floating Offshore Wind Turbine OMAE2011-50072
Abhinav Sultania, Lance Manuel
University of Texas at Austin, Austin, TX, USA

Neil Luxcey1 Harald Ormberg2 Elizabeth Passano1
1. Marintek, Trondheim, Norway; 2. Norwegian Marine Technology Research Institute (MARINTEK), Trondheim, Norway

Harald Ormberg1 Elizabeth Passano1 Neil Luxcey1
1. Marintek, Trondheim, Norway; 2. Norwegian Marine Technology Research Institute (MARINTEK), Trondheim, Norway

A Generic 5 MW WindFloat for Numerical Tool Validations & Comparison Against a Generic Spar OMAE2011-50278
Dominique Roddier1 Antoine Pelffler1 Alexia Aubault1 Joshua Weinstein1
1. Marine Innovation & Technology, Berkeley, CA, USA; 2. Principle Power, Seattle, WA, USA

Ocean Renewable Energy Symposia

9-20 Current Energy – VI

Thursday June 23 | Mees Auditorium | 10:30–12:00

Session Chair: Teresa Pontes, IDMEC / IST, Portugal
Session Co-Chair: Jennifer Matthews, Offshore Energy Research Associations, Canada

Extracting Energy From Free Streams through a Novel Von Karman Vortex Shedding Device OMAE2011-49098
Thorsten Stoesser1 Brittany Bruder1 Francesco Fedele1
1. Georgia Institute of Technology, Savannah Campus, Savannah, GA, USA; 2. Georgia Institute of Technology, Atlanta, GA, USA

Reliability-Based Fatigue Life Estimation of Ocean Current Turbine Rotor Blades OMAE2011-49760
Shaun Hurley, Madasamy Arockiasamy
Florida Atlantic University, Boca Raton, FL, USA

Effects of Tidal Stream Turbines on Material Transport OMAE2011-50338
Michael Hartnett, Stephen Nash, Noreen O’Brien, Agnieszka Olbert, Fearghal O’Donncha
National University of Ireland, Galway, Ireland

Efficiency and Optimal Loading of Contra-Rotating Marine Turbines OMAE2011-50008
Wei Xu1 Spyros Kinnas2
1. MARIN USA, Houston, TX, USA; 2. The University of Texas at Austin, Austin, TX, USA

Offshore Geotechnics Symposia

10-7 Pipeline Geotechnics

Thursday June 23 | Blue | 10:30–12:00

Session Chair: Peter Larkin, Senergy, United Kingdom

Offshore Pipeline Embedment in Cohesive Soil – A Comparison Between Existing and Cel Solutions OMAE2011-50230
Han Shi, Jason Sun, Kabir Hossain, Ayman Eltaher, Paul Jukes
MCS Kenny, Houston, TX, USA

The Resistance of Soil Berms During Lateral Buckling of Pipelines on Soft Clay: An Interpretation of Centrifuge Modelling Data OMAE2011-49037
Amin Roshmanian1 Dave J. White1 Johnny C.Y. Cheuk2
1. IMR, Nedlands, Perth, WA, Australia; 2. COFS, UWA, Crawley, Perth, WA, Australia; 3. AECOM, Shatin, New Territories, Hong Kong, China

Lateral Movement of Pipelines on a Soft Clay Seabed: Large Deformation Finite Element Analysis OMAE2011-49124
Santram Chatterjee, Dave J. White, Mark F. Randolph
Centre for Offshore Foundation Systems-The University of Western Australia, Crawley, Perth, WA, Australia

Faecal Pellets in Deep Marine Soft Clay Crusts: Implications For Hot-Oil Pipeline Design OMAE2011-49339
Matthew Kuo, Malcolm D. Bolton
University of Cambridge, Cambridge, UK
Thursday, 13:30–15:00

Offshore Technology Symposia

1-18 Hydrodynamics – III

Thursday June 23

Session Chair: Bill Webster, University of California, Berkeley, USA
Session Co-Chair: Longbin Tao, Newcastle University, United Kingdom

Wet Tree Semi-Submersible with SCRs for 4000 Ft Water Depth in the Gulf of Mexico OMAE2011-50002
Jingyun Cheng1 Sherry Xiang2 Peimin Cao2
1. SBM, Houston, TX, USA; 2. SBM Atlantis, Houston, TX, USA

Coupled Dynamic Modeling of a Moored Floating Platform with Risers OMAE2011-49553
Xiaoning Jing1 Bill Webster2 Qi Xu1 Kostas Lambrakos1
1. Technip USA, Inc., Houston, TX, USA; 2. University of California, Berkeley, Kensington, CA, USA

Performance Analysis of a Semicircular Free Surface Breakwater OMAE2011-49700
Hee Min Teh, Vengatesan Venugopal, Tom Bruce
University of Edinburgh, Edinburgh, UK

Noise and Vibration Prediction for Semi-Submersible Drilling Rig OMAE2011-49205
Chen Gang, Yuan Hongtang, Wang Qi
Shanghai Waigaoqiao Shipyard Co. Ltd., Shanghai, China

1-25 QA/QC, Global Processes, Optimisations and Environmental Challenges of Offshore Projects

Thursday June 23

Session Chair: Kostas Lambros, Technip USA, Inc., USA
Session Co-Chair: Richard D. Schachter, Universidade Federal do Rio de Janeiro - UFRJ, Brazil

Compilation of a Software Manual Facing Complex Activities in the Oil & Gas Sector OMAE2011-49404
Paula Cabral de Menezes
PhDsoft Tecnologia Ltda, Rio de Janeiro, RJ, Brazil

Development of a Biometric Underwater Vehicle for Offshore Investigation OMAE2011-49787
Ikuo Yamamoto, Tomokazu Nakamura, Hidemasa Hanahara
The University of Kitakyushu, Fukuoka, Japan

Richard D. Schachter1 Nair Maria Maia de Abreu1 Valdir Augustinho de Melo2 Eliane M. Loiola2
1. Universidade Federal do Rio de Janeiro, Rio de Janeiro, RJ, Brazil; 2. Universidade Estadual de Pernambuco, Recife, PE, Brazil

2-24 CresT – I

Thursday June 23

Session Chair: Bas Buchner, MARIN, Netherlands
Session Co-Chair: Kevin Ewans, Metocean Engineer, Malaysia

New Insights in Extreme Crest Height Distributions (A Summary of the CresT Project) OMAE2011-49846
Bas Buchner1 Kevin Ewans1 Janou Henning1 Marios Christou2 George Forristall2
1. Forristall Ocean Engineering, Inc., Camden, ME, USA; 2. MARIN, Wageningen, Netherlands; 3. Metocean Engineer, Kuala Lumpur, Malaysia; 4. Shell Projects & Technology, Rijswijk, Netherlands

Modeling Very Extreme Sea States (VESS) in Real and Synthetic Design Level Storms OMAE2011-49731
Vincent Cardone, Andrew Cox
Oceanweather Inc., Cos Cob, CT, USA

Maximum Crest Heights Under a Model TLP Deck OMAE2011-49837
George Forristall
Forristall Ocean Engineering, Inc., Camden, ME, USA

Examining a Comprehensive Dataset Containing Thousands of Freak Wave Events. Part 1 – Description of the Data and Quality Control Procedure OMAE2011-50168
Marios Christou1 Kevin Ewans1
1. Metocean Engineer, Kuala Lumpur, Malaysia; 2. Shell Projects & Technology, Rijswijk, Netherlands

2-37 Structural Analysis and Optimisation – V

Thursday June 23

Session Chair: Philippe Rigo, University of Liege, ANAST, Belgium
Session Co-Chair: Mohamed A. El-Reedy, Gulf of Suez Petroleum Company (Maadi-Projects), Egypt

Identification of Excitation and Reaction Forces Spectra for Offshore Structures Using Neural Networks OMAE2011-49001
Ahmed Elshafey1 M.R. Haddara1 H. Marzouk2
1. Memorial University, St. John’s, NL, Canada; 2. Ryerson University, Toronto, ON, Canada

Permanent Means of Access Structure Design using Multi-Objective Optimization OMAE2011-49259
Ming Ma1 Owen F. Hughes2
1. DRS Defense Solutions, LLC, Stevensville, MD, USA; 2. Aerospace and Ocean Engineering, Virginia Tech, Blacksburg, VA, USA

A Rational Approach to Automated Pre and Post Processing of Offshore Structure Global Strength Finite Element Analysis OMAE2011-49266
Zhiyong Yang, Otto DaSilva
Exmar Offshore Company, Houston, TX, USA

Explosion Simulations/Structural Analysis With FLAC3D and USFOS OMAE2011-49333
UII Danielsen1 Camilla Berge Vik1 Jorgen Amdahl1
1. Department of Marine Technology, Norwegian University of Science and Technology, Trondheim, Norway; 2. Scandpower, Trondheim, Norway

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Structures, Safety and Reliability Symposia

2-41 Risk Analysis and Safety Management – III

Thursday June 23  |  Mees Auditorium  |  13:30–15:00

Session Chair: Marcelo R. Martins, University of São Paulo, Brazil
Session Co-Chair: Bernt Leira, NTNU, Norway

Bayesian Networks on Risk Analysis of a Regasification System on an Offshore Unit OMAE2011-49393
Adriana M. Schleder1 Marcelo R. Martins1 Gilberto Francisco Martha Souza1
1. Department of Naval Architecture & Ocean Engineering (São Paulo University), São Paulo, SP, Brazil; 2. University of São Paulo, São Paulo, SP, Brazil

Consequence Analysis of a Liquefied Natural Gas Floating Production Storage Offloading (LNG FPSO) Leakage OMAE2011-49396
Nilton Hiroaki Ikeda1 Marcelo R. Martins1 Gilberto Francisco Martha Souza1
1. Department of Naval Architecture & Ocean Engineering (University of São Paulo), São Paulo, SP, Brazil; 2. University of São Paulo, São Paulo, SP, Brazil

Bayesian Networks on Risk Analysis of a Regasification System on an Offshore Unit OMAE2011-49393
Adriana M. Schleder1 Marcelo R. Martins1 Gilberto Francisco Martha Souza1
1. Department of Naval Architecture & Ocean Engineering (São Paulo University), São Paulo, SP, Brazil; 2. University of São Paulo, São Paulo, SP, Brazil

Consequence Analysis of a Liquefied Natural Gas Floating Production Storage Offloading (LNG FPSO) Leakage OMAE2011-49396
Nilton Hiroaki Ikeda1 Marcelo R. Martins1 Gilberto Francisco Martha Souza1
1. Department of Naval Architecture & Ocean Engineering (University of São Paulo), São Paulo, SP, Brazil; 2. University of São Paulo, São Paulo, SP, Brazil

Materials Technology Symposia

3-4 HSE/PSA Workshop on Ageing and Life Extension of Offshore Installations – Mobile & Fixed Installations

Thursday June 23  |  Town Hall  |  13:30–15:00

Session Chair: Gerhard Ertsdal, Petroleum Safety Authority Norway, Norway
Session Co-Chair: John Sharp, Cranfield University, United Kingdom

Structural Integrity Management Framework for Mobile Installations OMAE2011-49656
Alexander Stacey1 John Sharp2
1. Health & Safety Executive, London, UK; 2. Cranfield University, Cranfield, UK

Ageing & Life Extension Considerations in the Integrity Management of Fixed and Mobile Offshore Installations OMAE2011-49090
Alexander Stacey1 John Sharp2
1. Health & Safety Executive, London, UK; 2. Cranfield University, Cranfield, UK

Review and Assessment of Material Property Requirements for Mobile Installations OMAE2011-49654
Alexander Stacey1 Hensky Piasarski3
1. Health & Safety Executive, London, UK; 2. TWI Ltd, Cambridge, UK

Criticality Rating of Ageing Fixed Offshore Structures OMAE2011-49091
Alexander Stacey1 David Sanderson1 Shashank Gupta2
1. Health & Safety Executive, London, UK; 2. MMI Engineering Ltd., Warrington, UK

Pipeline and Riser Technology Symposia

4-26 Steel Riser – II

Thursday June 23  |  Antwerp  |  13:30–15:00

Session Chair: Mike Campbell, 2H Offshore, USA
Session Co-Chair: Howard Wang, ExxonMobil Development Company, USA

Qualification of Reeled Clad SCR Weld Fatigue Damage OMAE2011-49798
Howard Wang1 Troy Widen1 Wan Kan1 Jim Sutherland1 Richard Jones2
1. ExxonMobil Development Company, Houston, TX, USA; 2. Subsea7, Glascow, UK

Comparison of Different Approaches for Fatigue Damage Accumulation in Steel Risers OMAE2011-49888
Fernanda C.M. Takafuji, Clovis Martins
University of São Paulo, Sao Paulo, SP, Brazil

Comparison of SCR Field Response with Analytical Predictions OMAE2011-50150
Yianmis Constantinides1 Jen-Iwa Chen1 Lee Tran2 Prahlad Enuganti1 Mike Campbell1
1. Chevron, Houston, TX, USA; 2. 2H Offshore, Houston, TX, USA

Advanced Numerical Simulation to Meet Design Challenges of XHPT Metallurgically Clad PIP Platform Riser OMAE2011-49679
Tao Zhao, Dan Lee, Kasra Farahani, Philip Cooper
INTECSEA (UK), Kanphill, UK
Ocean Engineering Symposia

6-6  Towed and Undersea Cables and Pipes, Mooring, and Buoy Technology – I

Thursday June 23  | Leeuwen I  | 13:30–15:00

Session Chair: Jon Mikkelsen, University of British Columbia, Canada
Session Co-Chair: Steven Schmied, University of Tasmania
Australian Maritime College, Australia

Adaptive Vibration Control of Towed Seismic Cable  OMAE2011-49304
Tao Liu, Weijing Zhang, Jie Ma, Guanglei Zhang
Shanghai Jiao Tong University, Shanghai, China

Research on Hydrodynamic Interaction and Global Response of Tandem-Moored Tankers  OMAE2011-49590
Hongwei Wang1 Yong Luo1 Xiaoming Cheng2 Gang Ma3
1. Harbin Engineering University, Harbin, Heilongjiang, China; 2. GL Noble Denton, London, UK

Coupled Analysis of Floating Structures with New Mooring System  OMAE2011-49597
Zhiming Yuan, Chunyaion Ji, Mingliu Chen, Yun Zhang
Jiangsu University of Science and Technology, Zhongjiang, Jiangsu, China

Ocean Engineering Symposia

6-10  Computational Mechanics and Design Applications

Thursday June 23  | Leeuwen II  | 13:30–15:00

Session Chair: Solomon Yim, Oregon State University, USA
Session Co-Chair: Thomas C Fu, Naval Surface Warfare Center, Carderock Division, USA

The Effect of Pressure Solution in SPH Simulations of Sinking Flow  OMAE2011-49215
Ashkan Rafee1 Sharen Cummins1 Murray Rudman1 Krish Thigaran1
1. School of Mechanical Engineering. The University of Western Australia, Crawley, WA, Australia; 2. Computational and Mathematical Modelling, CSIRO Mathematics, Informatics and Statistics, South Clayton, VIC, Australia; 3. The University of Western Australia, Crawley, WA, Australia

A Simple Method for Analysis of Seabed Deposits Deformation Due to Methane Hydrate Dissociation  OMAE2011-49282
Zou Degao1 Xu Bin1 Dan Zhou2 Xianjing Kong1
1. Dalian University of Technology, Dalian, Liaoning, China; 2. Dalian University of Technology, Liaoning, China

Filip Van den Abeele, John Vande Voorde
OCAS N.V., Zelzate, Belgium

Polar and Arctic Sciences and Technology

7-4  Operations in Ice and Structural Integrity

Thursday June 23  | Diamond II  | 13:30–15:00

Session Chair: Charlotte van de Kerk, The Offshore Partners B.V., Netherlands
Session Co-Chair: Walter Kuehnlein, SEA2ICE Ltd. & Co. KG, Germany

Development of Hull Forms for a 190,000 DWT Icebreaking Ore Carrier  OMAE2011-49499
K.D. Park1 Y.K. Chang1 Y.S. Jang1 Hyun Soo Kim1 David Molyneux1
1. IWIHA Technical College, Incheon, Korea; 2. Hyundais Heavy Industries, Ulsan, Korea; 3. Oceanic Consulting Corporation, St. John’s, NL, Canada

Analysis of Towing-Gear Concepts using Iceberg Towing Simulations  OMAE2011-49355
Christin Vetter, Christian Ulrich, Thomas Rung
Hamburg University of Technology, Hamburg, Germany

Improved Structural Integrity for Arctic Designs by Ignition Isolation Control  OMAE2011-49402
Joar Dalheim1 Jan Pappas1 Sverre Nodland2
1. Sandpower, Kjeller, Norway; 2. Sandpower, Houston, TX, USA; 3. Sandpower, Sandvika, Norway

CFD and VIV Symposia

8-19  Risers – V

Thursday June 23  | Goudriaan I  | 13:30–15:00

Session Chair: Michael Tognarelli, BP America Production Co., USA
Session Co-Chair: Luis Eca, IST-UTL, Portugal

Slender Buoy VIM and VIR Analysis by CFD/FSI Approach  OMAE2011-49965
Ange Luppi1 Matthieu Minguet2 Stephane Pattede1 René Maloberti3
1. Seal Engineering, Nîmes, France; 2. Technip, Paris, France

Effects of Varying Tension and Stiffness on Dynamic Characteristics and VIV of Slender Riser  OMAE2011-49295
Weimin Chen1 Zhongqin Zheng2 Min Li3
1. Institute of Mechanics, Chinese Academy of Sciences, Beijing, China; 2. Beijing University of Aeronautics and Astronautics, Beijing, China

Flat Buoy Concept for Free Standing Riser Application: An Improvement of the In-Place Hydrodynamic Behaviour  OMAE2011-49329
Romain Vivet1 Matthieu Minguet2 Christian Berhault1 Erwan Jacquin1 Francois Petrie2 Olivier Flamand2
1. Seal Engineering, Nîmes, France; 2. Technip, Paris, France; 3. Principia, La Ciotat, France; 4. Hydrocean, Nantes, France; 5. Oceande, La Seyne Sur Mer, France; 6. CSTB, Nantes, France

An Experimental Study about the Effect that Vibration Mode Change Gives Riser VIV  OMAE2011-49677
Tomo Fujiiwara, Shotoar Uto, Shiges Canada
National Maritime Research Institute of Japan, Tokyo, Japan

CFD and VIV Symposia

8-22  Floaters – Ships & Multi Column Floaters

Thursday June 23  | Diamond I  | 13:30–15:00

Session Chair: Arjen Koop, MARIN, Netherlands
Session Co-Chair: Tim Bunnik, MARIN, Netherlands

A Numerical Study on Squat of a Wigley Hull  OMAE2011-49893
Mahmoud Alidadi1 Sander Calisal2
1. School of Engineering, University of British Columbia, Vancouver, BC, Canada

A Numerical Study on Water Flooding in a Damaged Oil Carrier  OMAE2011-49616
Liang-Hee Cheng, Diogo Vieira Gomes, Adriano Mitsuo Yoshino, Kazuo Nishimoto
University of Sao Paulo, Sao Paulo, SC Brazil

Vortex Induced Motion (VIM) Performance of the Multi Column Floater (MCF): Drilling and Production Unit  OMAE2011-50347
Arcandra Tahar, Lyle Finn
Horton Wilson Deepwater, Houston, TX, USA

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Model Tests for VIM of Multi-Column Floating Platforms OMAE2011-49751
Allan Magee1 Rizwan Sheikh1 Jaime Tan Hui Choo1 Adi Maimun Abdul Malik1
Mohamad Pauzi Abdul Ghani1 Hassan Abiy1 Kenneth Yeoh Hock Guan1
1. Technip Geoproduction Malaysia, Kuala Lumpur, Malaysia; 2. Shell Malaysia Deepwater, Kuala Lumpur, Malaysia; 3. Technip, Kuala Lumpur, Malaysia; 4. Universiti Teknologi Malaysia (UTM), UTM Skudai, Malaysia; 5. Marine Technology Dept., Mechanical Engineering Faculty, Johor Bahru, Malaysia; 6. Marine Technology Centre (MTC), Universiti Teknologi Malaysia (UTM), Johor Bahru, Malaysia; 7. Technip, Kuala Lumpur, Malaysia

Design Optimization of Top-Tensioned Risers for Deepwater HPHT Applications (Part II) OMAE2011-49550
Lin Xin
Technip, Houston, TX, USA

Offshore Technology Symposia

1-13 Station Keeping
Thursday June 23
Session Chair: Hans Cazijn, MARIN, Netherlands
Session Co-Chair: Krish Thiagarajan, The University of Western Australia, Australia
Fabiano P. Rampazzo1 Eduardo Tammaru1 João L.B. Silva1
Antonio L. Pacifico1 Daniel P. Vieira1 Lázaro Moratelli Jr.1
1. University of São Paulo, São Paulo, SP, Brazil; 2. Numerical Offshore Tank, University of São Paulo, São Paulo, SP, Brazil; 3. Petróleo Brasileiro S.A. - PETROBRAS, Rio de Janeiro, RJ, Brazil; 4. Instituto de Pesquisas Tecnológicas do Estado de São Paulo - IPT, São Paulo, SP, Brazil
Current Feed Forward Control in Dynamic Positioning OMAE2011-49144
Maarten Smitt1 Arjen Tj全能ma1 Rene Huismans1
1. Delft University of Technology, Delft, Netherlands; 2. Bluewater Energy Services BV, Hoofddorp, Netherlands
Prediction of Supply Vessel Motion During Transfer to a Fixed Structure OMAE2011-49406
Thomas Joose1 Alexis Billet1 Sean Leen1
1. National University of Ireland, Galway, Ireland; 2. Resilience Energy Ltd, Galway, Ireland
A Generic Optimization Algorithm for the Allocation of DP Actuators OMAE2011-49116
Ed van Daalen1 Claire Loussouarn2 Hans Cozijn1 Piet Hemker1
1. MARIN, Netherlands; 2. University of Bergen, Bergen, Norway

Structures, Safety and Reliability Symposia

2-25 Crest – II
Thursday June 23
Session Chair: Kevin Ewans, Metocean Engineer, Malaysia
Session Co-Chair: Janou Hennig, MARIN, Netherlands
Examining a Comprehensive Dataset Containing Thousands of Freak Wave Events. Part 2 – Analysis and Findings OMAE2011-50169
Marios Christou1 Kevin Ewans1
1. Metocean Engineer, Kuala Lumpur, Malaysia; 2. Shell Projects & Technology, Rijswijk, Netherlands
How Quartet Resonance Might or Might Not Amplify Large Waves into Freak Waves OMAE2011-49982
Peter Tromans
Ocean Wave Engineering Ltd, Liss, UK
Wave Statistics in Nonlinear Sea States OMAE2011-50100
Chris Swan, Mohamed Latheef
Imperial College, London, UK
Extreme Load-Response Mechanisms of a Tension Leg Platform Due to Larger Wave Crests – Some Results of the ‘Crest’ JIP OMAE2011-50199
Janou Hennig, Jule Schamke, Bas Buchner, Joris van den Berg
MARIN, Wageningen, Netherlands
Reliability Assessment for TLP Tether Overload in Nonlinear Waves OMAE2011-50112
Oistein Hagen
Det Norske Veritas, Havvik, Norway

Reliability Assessment of TLP Air-gap in Nonlinear Waves OMAE2011-50153
Elizbieta Maria Bitner-Gregersen
Det Norske Veritas, Havvik, Norway

Structures, Safety and Reliability Symposia

2-38 Structural Analysis and Optimisation – VI
Thursday June 23  Goudriaan II | 15:30–17:30
Session Chair: Mohamed A. El-Reedy, Gulf of Suez Petroleum Company (Maadi-Projects), Egypt
Session Co-Chair: Philippe Riga, University of Liege, ANAST, Belgium

Application of a Mobile Submerged Tank to Reduce Responses of Fixed Offshore Platforms OMAE2011-49051
Mehti Shafiee, Mahmodreza Mohammadi Gargari
Tarbiat Modares University, Tehran, Iran

Geometrical Parametric Study and Development of Design Formulæ for the SCF Distribution along the Weld Toe in Multi-planar CHS DKT-Connections of Offshore Structures OMAE2011-49121
Mohammad Ali Lotfollahi-Yaghin, Hamid Ahmadi, Sajad Shahverdi
University of Tabriz, Tabriz, Iran

Experimental Investigation into the Behaviour of a New Replaceable Braiding System OMAE2011-50328
S.V. Khomskiñ1 George L. England2 Mahmoud Moradi1 Davoud Zarei1
1. Sharif University of Technology, Tehran, Iran; 2. Imperial College of Science, Technology and Medicine, London, UK

Three-dimensional Joint Flexibility Element for Modeling of Offshore Tubular Connections OMAE2011-50334
Pejmán Alanjari1 Behrouz Asgarian2
1. PETROBRAS, Rio de Janeiro, RJ, Brazil; 2. Federal University of Rio de Janeiro, Rio de Janeiro, RJ, Brazil

Structures, Safety and Reliability Symposia

2-42 Risk Analysis and Safety Management – IV
Thursday June 23  Mees Auditorium | 15:30–17:30
Session Chair: Haibo Chen, Scandpower Inc. (China), China
Session Co-Chair: Marcelo R. Martins, University of São Paulo, Brazil

Review of Fuzzy Set Theory Applications in Safety Assessment for Marine and Offshore Industries OMAE2011-50244
Ayhan Mentes, Ismail H. Helvacioğlu
Istanbul Technical University, Istanbul, Turkey

Structural Health Monitoring of Concrete Filled Steel Tube Arch Bridge for Oil Wharf OMAE2011-50073
Jing Zhou, Xin Feng, Liang Ren
Dalian University of Technology, Dalian, Liaoning, China

Extensive Dynamic Analyses to Achieve Stringent Noise and Vibration Levels for an Offshore Reciprocating Compressor System OMAE2011-49926
André Eijk1 Hans Eefstink1
1. TNO Oil & Gas, Delft, Netherlands; 2. Thomassen Compression Systems B.V., Rheden, Netherlands

Mooring Line Failure Detection System – MOORASSURE OMAE2011-49247
Pei An, Duane King, Sandip Ukani
Pulse Structural Monitoring, Woking, UK

Materials Technology Symposia

3-5  HSE/PSA Workshop on Ageing and Life Extension of Offshore Installations – Assessment & Maintenance
Thursday June 23  Town Hall | 15:30–17:30
Session Chair: Gerhard Erdsal, Petroleum Safety Authority Norway, Norway
Session Co-Chair: Alexander Stacey, Health & Safety Executive, United Kingdom

Assessment of Ageing Structures – Case Studies OMAE2011-49959
Einar Landet1 Trond Sørensen1 Harve Oma1 Gerhard Erdsal1 Gudmumin Sigurjsson1

Fatigue Damage Repair and Life Extension of a Floating Production Unit: The VFb Platform Revisited OMAE2011-50319
Per Jahn Haagensen1 Jan E. Larsen1 Ole T. Vårdal1
1. Norwegian University of Science and Technology, Trondheim, Norway; 2. Statoil, Bergen, Norway; 3. Dolphin AS, Stavanger, Norway

Fatigue Life Extension of Offshore Structures by Ultrasonic Peening OMAE2011-49935
Luis Lopez-Martinez
LET Global, Rotterdam, Netherlands

Fatigue Life Improvement of Welded Elements and Structures by Ultrasonic Impact Treatment OMAE2011-50310
Yuriy Kudryavtsev, Jacob Kleiman
Structural Integrity Technologies Inc., Markham, ON, Canada

Maintenance Integrity: Managing Flange Inspections on Ageing Offshore Production Facilities OMAE2011-49050
R.M. Chandima Ratnayake, Samindi Samarakoon, Tore Markeset
University of Stavanger, Stavanger, Norway

Pipeline and Riser Technology Symposia

4-27  Steel Riser – III
Thursday June 23  Antwerp | 15:30–17:30
Session Chair: Howard Wang, ExxonMobil Development Company, USA
Session Co-Chair: Mohamed Chebaro, C-FER Technologies, Canada

Vibration Reduction in Steel Catenary Risers by the Use of Viscoelastic Materials OMAE2011-50052
Flavia Borges1 Ney Roitman1 Carlos Magluta1 Daniel A. Castello1 Ricardo Francis1
1. PETROBRAS, Rio de Janeiro, RJ, Brazil; 2. Federal University of Rio de Janeiro, Rio de Janeiro, RJ, Brazil; 3. COPPE/UFRO, Rio de Janeiro, RJ, Brazil; 4. UFRO, Rio de Janeiro, RJ, Brazil

Application of Comparative Analysis Approaches for Deepwater SCR SCS OMAE2011-50300
Basim Mekha1 Armin Tavassoli2 Jianjun Xia3
1. Chevron, Houston, TX, USA; 2. 2H Offshore, Houston, TX, USA; 3. VM Offshore Consulting, Inc., Katy, TX, USA

Steel Catenary Riser Response Identification Based on Field Measurements OMAE2011-50148
Yiannis Constantinides1 Lee Tran2 Prahlad Enuganti3 Mike Campbell4
1. Chevron, Houston, TX, USA; 2. 2H Offshore, Houston, TX, USA

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Development and Validation by Testing of High Strength Threaded & Coupled Premium Connectors Product Line for Outer Production Riser and Single Barrier Riser Applications in Ultra Deepwater OMAE2011-49859
Céline Sches1 Olivier Caron2 Antoine Dekervel1
1. Vallourec & Mannesmann Tubes, Audigny-Aymeries, France; 2. Vallourec & Mannesmann Tubes, Houston, TX, USA

Pipeline and Riser Technology Symposia
4-34 Flexible Pipes – VI
Thursday June 23 New York | 15:30–17:30
Session Chair: Alan Dobson, Technip Umbilicals, United Kingdom
Session Co-Chair: Nils Sodahl, Det Norske Veritas, Norway

Consistent VIV Fatigue Analysis Methodology for Umbilicals OMAE2011-49459
Nils Sodahl1 Oddrun Steinkjer2 Elisabeth Gjølmesli2 Kay Hansen-Zahl1
1. Nexans Norway AS, Halden, Norway; 2. Det Norske Veritas, Oslo, Norway

Multiaxial Fatigue Analysis on Reeled Steel Tube Umbilical OMAE2011-49147
Qingquan Li1 He Zhen Yang1 Hua Jun Li2
1. Shanghai Jiao Tong University, Shanghai, China; 2. Ocean University of China, Qingdao, Shandong, China

Comparison Between a Motion Capture System and Conventional Instrumentation Methods in a Dynamic Study of Flexible Lines OMAE2011-49836
Rodrigo M. Amarante1 André L. C. Fujarra1 Felipe Rateiro2 Fabiano P. Rampazzo2
1. University of São Paulo, São Paulo, SP, Brazil; 2. TPN/USP Numerical Offshore Tank, São Paulo, SP, Brazil

Innovative Supports of Risers and Corresponding Installation Procedures OMAE2011-50011
Daniel Saito, Letícia Rosa dos Santos Cordeiro, Felipe de Araújo Castro, Cipriano Jose de Medeiros Jr., Glaucio de Deus Ribeiro
Petrobras S.A., Rio de Janeiro, RJ, Brazil

COOL™ Hose Qualification Process of the First EN1474-2 LNG Floating Hose OMAE2011-49481
Jean Pierre Queau, Giorgio Torre
SBM Offshore, Monaco

Ocean Engineering Symposia
6-28 Towed and Undersea Cables and Pipes, Mooring, and Buoy Technology – II
Thursday June 23 Leeuwen I | 15:30–17:30
Session Chair: James Kaibat, Texas A&M University, USA
Session Co-Chair: Said Mazaheri, National Institute for Oceanography, Iran

Performance Evaluations of Taut-Wire Mooring Systems for Deepwater Semi-submersible Platform OMAE2011-49281
Peng Chen1 Shuhong Chai2 Jun Ma1
1. Dalian University of Technology, Dalian, Liaoning, China; 2. Australian Maritime College, Launceston, TAS, Australia

Application of Groebner Basis Methodology to Nonlinear Analysis of an Underwater Cable OMAE2011-49797
Y. Jane Liu, George R. Buchanan
Tennessee Tech University, Cookeville, TN, USA

Stochastic Response and Stability Analysis of Two-Point Mooring System OMAE2011-49714
A.K. Banik1 Tushar Datta2
1. NIT, Durgapur, WB, India; 2. Indian Institute of Technology Delhi, New Delhi, India

Polar and Arctic Sciences and Technology
7-5 Evacuation in Ice
Thursday June 23 Diamond II | 15:30–17:30
Session Chair: Walter Kuehnlein, SEA2ICE Ltd. & Co. KG, Germany
Session Co-Chair: Charlotte van de Kerk, The Offshore Partners B.V., Netherlands

Hyperbaric Evacuation in the Arctic and Cold Climate Regions OMAE2011-49243
Bjørn Serck-Hanssen1 Ove Gudmestad2
1. University of Stavanger, Stavanger, Norway; 2. Aker Solutions, Stavanger, Norway

Secure Launch of Lifeboat in Cold Climate, Looking into Requirements for Winterization OMAE2011-49479
Steinar Torheim1 Ove Gudmestad2
1. University of Stavanger, Stavanger, Norway; 2. Aker Solutions, Stavanger, Norway

Evacuation Challenges for Shallow Ice Covered Waters OMAE2011-50358
Walter Kuehnlein
SEA2ICE Ltd. & Co. KG, Hamburg, Germany

Physical Modelling of Brine Discharge:
Effect of Depth on Dilution OMAE2011-50039
Murat Aksel1 Sedat Kabdasli2
1. Istanbul Kultur University, Istanbul, Turkey; 2. Istanbul Technical University, Istanbul, Turkey

Efficiency Enhancement of a FLNG System using Deep Cold Tropical Sea-Water OMAE2011-50126
Martin Brown
GL Noble Denton, Aberdeen, UK

Ocean Engineering Symposia
6-8 Marine Environmental Engineering
Thursday June 23 Leeuwen II | 15:30–17:30
Session Chair: Daniel T. Valentine, Clarkson University, USA
Session Co-Chair: Ceren Bilgin Guney, Istanbul Technical University, Turkey

Effects of Ammonia on Electrochemical Chlorine Generation for Ballast Water Treatment OMAE2011-49224
Ceren Bilgin Guney, Fatma Yonsel
Istanbul Technical University, Istanbul, Turkey

An Oil Spill and Response Activities Scenarios after the Fuel Tank Seepage in a Port: Haydarpasa Port Case Study OMAE2011-50129
Aysun Koroglu, Sedat Kabdasli
Istanbul Technical University, Istanbul, Turkey

Design and Research on Some Key Technologies of Combined Hydrocyclone OMAE2011-49294
Yong Zhang
Northeast Petroleum University, Daqing, Heilongjiang, China
Ocean Renewable Energy Symposia

9-12 Wave Energy – IV
Thursday June 23
Van Oldenbarnevelt | 15:30–17:30

Session Chair: Antonio Falcao, Technical University of Lisbon - Instituto Superior Técnico, Portugal
Session Co-Chair: Wei Qiu, Memorial University, Canada

Design of an Oscillating Water Column around the Columns of the Windfloat
OMAE2011-49014
Alexia Aubault, Marco Alves, Antonio Sarmento, Dominique Roddier, Antoine Peiffer
1. Marine Innovation & Technology, Berkeley, CA, USA; 2. Instituto Superior Tecnica, Lisbon, Portugal; 3. Wave Energy Centre, Lisbon, Portugal

Experimental Wave Generation and Cancellation with a Cycloidal Wave Energy Converter
OMAE2011-49212
Stefan Siegel, Marcus Roemer, John Imamura, Casey Fagley, Thomas McLaughlin
US Air Force Academy, Colorado Springs, CO, USA

Cancellation of Non-Harmonic Waves Using a Cycloidal Turbine
OMAE2011-49262
John Imamura, Stefan Siegel, Casey Fagley, Thomas McLaughlin
US Air Force Academy, Colorado Springs, CO, USA

Modelling and Simulation of a Floating Oscillating Water Column
OMAE2011-49263
Adi Kurniawan, Jorgen Hals, Torgeir Moan
1. Centre for Ships and Ocean Structures, Norwegian University of Science and Technology, Trondheim, Norway; 2. Norwegian University of Science and Technology, Trondheim, Norway

Development of Utility Scale Buoyant Energy Storage Technology
OMAE2011-49517
Reza Ghorbani, Tyler Thombrue
University of Hawaii, Honolulu, HI, USA

CFD and VIV Symposia

8-23 Panel on CFD & VIV Benchmarking
Thursday June 23
Diamond I | 15:30–17:30

Session Chair(s): Owen Oakley, Jr. Chevron Energy Technology Co
Session Co-Chair(s): Hayden Marcollo AMOG Consulting

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Conference Tours

Rotterdam Boat Tour
Sponsored by Huisman Equipment B.V.

Date: Tuesday, June 21
Time: 18:30 – 20:30
The departure time from the WTC is 17:45. At 20:30 the boat will be back at the Spido Dock.
Meeting Point: Participants are requested to gather at the Registration Desk and they will be escorted in groups to the Spido dock.
Note: Attendees and accompanying persons are invited to join the boat tour

Rotterdam is one of the main ports of Europe. The port is the gateway to the European market of more than 350 million consumers. Participate in an organized two-hour tour to experience what Rotterdam has to offer for the offshore market. Without disembarking, the tour shows Rotterdam’s city skyline and several harbours of the port from the water. The tour offers small presentations and complimentary drinks and snacks by sponsors.
Technical Tours

**IHC Shipyard**

**Date:** Friday, June 24  
**Time:** 09:00 – 18:00  
**Meeting Point:** WTC  
**Fee:** €65 (lunch included)

Visit the IHC shipyard in Krimpen aan den IJssel, close to Rotterdam, with its showcase 250m long assembly hall, a new outfitting quay, an additional 23x90m hall for a panel assembly line and a flexible unit building to accommodate yard offices, suppliers and sub-contractors. This yard is the biggest manufacturing facility of IHC Merwede, a company that was at the birth of modern dredging. Ships currently under construction include a suction hopper dredger and a heavy lift vessel.

The tour will then visit Kinderdijk, a UNESCO World Heritage Site with 19 windmills that date back to the 18th Century and were used for land reclamation and dewatering that turned the rough and wet peat bog of the Alblasserwaard polder into productive farmland.

The tour will end at the Storm Surge Barrier in the Eastern Scheldt estuary, part of the famed Deltaworks that protect the Rhine-Meuse-Scheldt delta and the urbanized area around Rotterdam from the sea.

**MARIN Test Facilities**

**Date:** Friday, June 24  
**Time:** 09:00 – 18:00  
**Meeting Point:** WTC  
**Fee:** €45 (lunch included)

Visit Kinderdijk, a UNESCO World Heritage Site with 19 windmills that date back to the 18th Century and were used for land reclamation and dewatering that turned the rough and wet peat bog of the Alblasserwaard polder into productive farmland.

The tour will then visit the Maritime Research Institute of the Netherlands (MARIN) in Wageningen. MARIN was founded in 1929 and has been involved in offshore projects since 1960. MARIN has an exceptional range of model testing, computer simulation, full-scale measurement and training facilities. This tour provides the opportunity to visit one of the world’s leading institutes in its field, with various dedicated test basins (including a 10.5m deep offshore basin with wave, wind and current generators) and bridge simulators.
Sightseeing Tours

Rotterdam by Foot including Splashtours
Date: Monday, June 20
Time: 09:00 – 13:00
Meeting Point: WTC
Fee: €31,50

Before we will start touring Rotterdam’s unique attraction, we will have a guided walking tour. Splashtours offers city tours ‘with a difference’ through Rotterdam. Touring in the unique amphibious bus is a truly unforgettable experience for all ages! In approximately 75 minutes we will take you to the city’s most special and beautiful places. Then comes the ‘splash’: a spectacular dive into the Meuse River. The bus seems to be transformed into a seaworthy vessel, continuing the journey over water along Rotterdam’s fabulous sky-line!

Amsterdam Panoramic City Tour
Date: Tuesday, June 21
Time: 09:00 – 15:00
Meeting Point: WTC
Fee: €68 (lunch included)

Past and present, trade and leisure, religion and coffee shops, diamonds and beer, all flourish together in splendid Amsterdam! On this extensive bus excursion you will see all that Amsterdam has to offer you, from the historical monuments in the centre to the modern architecture from the 21st Century. A picture stop at a windmill and a visit to a diamond factory are included. We will see the Dam Square, the Flower Market, a flea market and other attractions. We will also visit the Rijksmuseum.
Royal the Hague and Delft

Date: Wednesday, June 22
Time: 09:00 – 13:00
Meeting Point: WTC
Fee: €48

During this tour you will visit two cities which have both played a crucial role in the history of the Netherlands: The Hague and Delft. You will see some of the highlights of these cities like The Mauritshuis Museum in The Hague and the Porcelain Fles, the only Delftware factory that remained in Delft. We start with a drive to The Hague for a visit to the Mauritshuis. This museum, which rises out of the water like a Venetian palace, houses an outstanding collection of paintings from the Golden Age. You will see paintings from the famous painters Rembrandt van Rijn, Frans Hals and Johannes Vermeer. Continue to Delft, the city where Vermeer lived and painted. Enjoy a walk in the beautiful old centre of town along the canals and many almshouses. Afterwards you will visit the Royal Dutch Delftware Manufactory De Porcelain Fles. The factory was established in 1653 and is the last remaining Delftware factory from the 17th Century. The world famous Royal Delftware is still entirely hand-painted according to centuries old tradition.

Castles and River Vecht

Date: Thursday, June 23
Time: 09:00 – 15:00
Meeting Point: WTC
Fee: €80 (lunch included)

This tour offers a charming drive along the romantic river Vecht, between Amsterdam and the City of Utrecht. Along this river many noblemen of the 17th Century constructed their country homes and estates. This area is part of the green heart of Holland, with narrow winding roads and agricultural farm land. A visit will be made to the Muiderslot. This medieval castle was originally built in the 13th Century for Count Floris V. Nowadays the Muiderslot is used as a museum. Continue through the Lake District of Loosdrecht to the fortified town of Naarden, shaped like a star with five points, miraculously preserved despite a history of bloody sieges.
Overview

The ASME Ocean, Offshore and Arctic Engineering Division (OOAE) of the International Petroleum Technology Institute (IPTI) is hosting a specialty forum at OMAE 2011. The specialty forum is designed for students who may not be familiar with the industry as well as those who have already specialized in this area.

This is the fifth year of the Outreach for Engineers Forum. Highlights of the Forum will include presentations of the various technologies required (e.g. from geosciences to mechanical/structural engineering and project management), types of job opportunities and possible career paths, as well as site tours.

In addition, Outreach for Engineers Specialty Forum attendees will be provided with the opportunity to participate at the 30th International Conference on Ocean, Offshore and Arctic Engineering as Full Conference attendees.

Attendee Profile

- Senior Undergraduate Students enrolled in Engineering or Science Curricula
- Graduate Students (both Masters and Doctoral levels) with specialization in fields such as ocean and/or offshore engineering, civil engineering, mechanical engineering, petroleum engineering, and aerospace engineering

If you are a paid OMAE 2011 attendee and wish to attend the Outreach Forum, you may at no additional cost. However, you must be a qualified student.

Scholarships

Through funding provided by the OOAE Division of ASME, the Forum organizers provide scholarships to cover registration costs of some attendees. The scholarships are open to students from around the world each year.

Schedule

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<th>Date</th>
<th>Event</th>
<th>Time</th>
<th>Location</th>
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<tr>
<td>Saturday, June 18th</td>
<td>Outreach Welcome Reception</td>
<td>Evening</td>
<td>Offsite</td>
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<tr>
<td>Sunday, June 19th</td>
<td>Outreach Presentations, Welcome &amp; Introductions, Industry Presentations</td>
<td>13:00 – 17:30</td>
<td>Goudriaan Room I &amp; II</td>
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<td></td>
<td>OMAE 2011 Conference Registration</td>
<td>13:00 – 20:00</td>
<td>Mercurius Hall</td>
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<tr>
<td></td>
<td>OMAE 2011 Conference Welcome Reception</td>
<td>18:00 – 20:00</td>
<td>Shipping Hall</td>
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<tr>
<td>Monday, June 20th</td>
<td>OMAE Conference</td>
<td>See detailed program for session locations and times</td>
<td>Oscar Auditorium</td>
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<td></td>
<td>Outreach Team Building Exercise</td>
<td>15:30 – 17:30</td>
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<tr>
<td>Tuesday, June 21st</td>
<td>OMAE Conference</td>
<td>See detailed program for session locations and times</td>
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<tr>
<td>Wednesday, June 22nd</td>
<td>OMAE Conference</td>
<td>See detailed program for session locations and times</td>
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<tr>
<td></td>
<td>OMAE Maritime Banquet (Optional)</td>
<td>19:00 – 23:00</td>
<td>Maritime Museum</td>
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<tr>
<td>Thursday, June 23rd</td>
<td>Outreach Breakfast/ Feedback Session</td>
<td>07:30 – 09:00</td>
<td>WTC Art Gallery II</td>
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<td></td>
<td>OMAE Conference</td>
<td>See detailed program for session locations and times</td>
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<tr>
<td>Friday, June 24th</td>
<td>OMAE Conference Tours (Optional)</td>
<td>See tour schedule for locations and times</td>
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Get the best training available globally with ASME-IPTI’s career building short courses. Topics include the latest technologies in the petroleum, pipeline, ocean, offshore and arctic engineering fields. ASME-IPTI courses are instructed by world-renowned experts.

**Engineering Ethics in Action**  
May 26 ONLINE WEBINAR  
September 28 Houston, TX (Classroom)  
November 3 ONLINE WEBINAR  
December 7 Houston, TX (Classroom)

**Flow Assurance**  
October 18 Houston, TX IOPF 2011

**Fundamentals of Deepwater Project Development**  
June 19 Rotterdam, The Netherlands OMAE 2011  
October 17 Houston, TX IOPF 2011

**Fundamentals of Deepwater Riser Engineering**  
June 19 Rotterdam, The Netherlands OMAE 2011  
October 18 Houston, TX IOPF 2011

**Fundamentals of Dynamic Positioning**  
June 19 Rotterdam, The Netherlands OMAE 2011

**Fundamentals of Model Testing**  
June 18 Rotterdam, The Netherlands OMAE 2011

**Ice Engineering**  
June 18 Rotterdam, The Netherlands OMAE 2011

**Pipeline Engineering: Design, Construction & Assessment**  
Oct. 31 - Nov. 2 Los Angeles, CA

**Pipeline Engineering: Design & Construction**  
September 19 Rio, Brazil Rio Pipeline Conference

**Pipeline Engineering: In-Line Inspection**  
September 19 Rio, Brazil Rio Pipeline Conference  
November 4 Los Angeles, CA

**Pipeline Engineering: Integrity Management**  
September 19 Rio, Brazil Rio Pipeline Conference  
November 3 Los Angeles, CA

**Pipeline Engineering: Operations & Integrity Management**  
September 7-8 Langfang, China CIPC 2011

**Subsea Integrity Management**  
November 14-15 Houston, TX SURF IM Forum

**Subsea Pipeline Design Overview**  
October 17 Houston, TX IOPF 2011

For additional course information and registration, visit our website at [www.asme-ipti.org](http://www.asme-ipti.org)  
Questions? Contact Melanie Diaz: diazm@asme.org -281-493-3491  
ASME-IPTI - 11757 Katy Freeway, Suite 865, Houston, TX 77079  
(Courses and dates are subject to change)  
In addition to the public courses offered above, classes can be customized to meet your company’s needs.
Listing of Committees

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Dr. H. Ronald Riggs – Technical Program Chair

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Prof. dr. ir. René Huijsmans, TU Delft
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Dr. ir. Jaap Harm Westhuis,
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Drs. Jasper van Alten, The Royal Institute of Engineers in the Netherlands — KIVI
NIRIA
Angelique van Tongeren, The Royal Institute of Engineers in the Netherlands — KIVI

OMAE 2011 Volunteers
The Local Organizing Committee would like to express its gratitude to the following 28 OMAE 2011 volunteers:

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Wouter Henstra, Keppel Verolme
Jeroen Hoving, TU Delft
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SYMP 2: Structures, Safety and Reliability
Symposium Coordinator: Carlos Guedes Soares, Technical University of Lisbon

SYMP 3: Materials Technology
Symposium Coordinator: Mamdouh Salama, Conocophillips Company

SYMP 4: Pipeline and Riser Technology
Symposium Coordinator: Segen Estefen, COPPE/UFRJ

SYMP 5: Ocean Space Utilization
Symposium Co-coordinator: Hideyuki Suzuki, University of Tokyo
Symposium Co-coordinator: Takeshi Kinoshita, University of Tokyo

SYMP 6: Ocean Engineering
Symposium Coordinator: R.C. Erteken, University of Hawaii at Manoa

SYMP 7: Polar and Arctic Sciences and Technology
Symposium Coordinator: Walter Kuehnlein, SEA2ICE Ltd. & Co. KG

SYMP 8: CFD and VIV
Symposium Coordinator: Owen H. Oakley, Jr., Chevron Energy Technology Co.

SYMP 9: Ocean Renewable Energy
Symposium Co-coordinator: Charles Smith, Petroleum Research Atlantic Canada
Symposium Co-coordinator: R.C. Erteken, University of Hawaii at Manoa

SYMP 10: Offshore Geotechnics
Symposium Co-coordinator: Horst Brandes, University of Hawaii
Symposium Co-coordinator: Dong-Sheng Jeng, Shanghai Jiao Tong University

SYMP 11: Jan Vughts Symposium on ‘Design Methodology of Offshore Structures’
Symposium Co-coordinator: René Huijsmans, Delft University of Technology
Symposium Co-coordinator: Jaap-Harm Westhuis, SMØ Offshore / GustoMSC

SYMP 12: Jo Pinkster Symposium on ‘Second Order Wave Drift Forces on Floating Structures’
Symposium Co-coordinator: René Huijsmans, Delft University of Technology
Symposium Co-coordinator: Jaap-Harm Westhuis, SMØ Offshore / GustoMSC

SYMP 13: Johan Wichers Symposium on ‘Mooring of Floating Structures in Waves’
Symposium Co-coordinator: René Huijsmans, Delft University of Technology
Symposium Co-coordinator: Jaap-Harm Westhuis, SMØ Offshore / GustoMSC

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## OMAE 2011: Co-sponsoring Organizations

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<td>Society for Underwater Technology</td>
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<td>Ian Gallett</td>
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<td>Society of Danish Engineers</td>
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<td>Kristian Smestad</td>
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<td>Michael Bernitsas</td>
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<td>Taiwan, China</td>
<td>Chang New Chen</td>
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<td>TWI (formerly The Welding Institute)</td>
<td>UK</td>
<td>Reza Razmjoo</td>
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### Event Organizer

KIVI NIRIA  
T: 31-70-391-98-90  
F: 31-70-391-98-40  
W: www.kiviniria.net/omae2011  
E: omae2011@kiviniria.nl
OMAE 2012 will be held in Rio de Janeiro, 10-15 June, 2012.

With recent discoveries of Pre-Salt reservoirs in deepwater offshore Brazil, the country proven reserve has doubled so far. Prospects of substantial amount of oil and gas in the Pre-Salt region include an offshore area of 800 Km by 200 Km in the Brazilian economic exclusive offshore zone.

A series of supply companies are establishing offices, manufacture facilities and research centers in Brazil in order to benefit from and contribute to the expansion of the oil and gas industry to the new Pre-Salt frontier.

OMAE 2012 will be held in Rio de Janeiro, having this challenging and exciting scenario as a background. Industry and academia will have an opportunity to discuss the technical progress in the field of ocean, offshore and arctic engineering in recent years and be aware of the new challenges of the near future.

The Conference has 10 traditional Symposia:
1. Offshore Technology,
2. Structures, Safety and Reliability,
3. Materials Technology,
4. Pipeline and Riser Technology,
5. Ocean Space Utilization,
6. Ocean Engineering,
7. Polar and Arctic Sciences and Technology,
8. CFD and VIV,
9. Ocean Renewable Energy and
10. Offshore Geotechnics.

In addition, two special events will be organized by: the Pre-Salt Workshop: Challenges and Opportunities and the Special Symposium in honor of Professor Ronald W. Yeung for his long-term contributions to the field of Offshore Hydrodynamics.

Participants of OMAE 2012 will also be able to enjoy the city of Rio de Janeiro that will host two major world sport events: The FIFA Football World Championship in 2014 and the Olympic Games in 2016.
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### Jo Pinkster Symposium on ‘Second Order Wave Drift Forces on Floating Structures’

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