ISOPE PACOMS-2010
BEXCO, Busan, Korea
November 14-17, 2010

Technical Program
Invited and Peer-reviewed Papers from 8 countries

- LNG FSRU & FPSO
- LNG Plant
- Arctic & Ice Technology
- Coastal & Port Hydrodynamics
- Offshore Wind Energy
- Ocean Energy
- Risers/Environment

Organized by:
Korean Society of Ocean Engineers
International Organizing Committee and Local Organizing Committee

Sponsored by:
International Society of Offshore and Polar Engineers (ISOPE) with Cooperating organizations:

Hosted by:
ISOPE PACOMS-2010 Busan Secretariat and LOC, KSOE
E-mail:sayhong@moeri.re.kr
Tel: +82-42-866-3930; Fax: +82-42-866-3919
The PACOMS-2010 participants and PACOMS Executive Committee, International Organizing Committee and Local Organizing Committee would like to thank:

Supporters of ISOPE PACOMS-2010 Busan Symposium

![Samsung](images/samsung.png)
Samsung Heavy Industries Co. Ltd

![DSME](images/dsme.png)
Daewoo Shipbuilding & Marine Engineering Co. Ltd

![ABS](images/abs.png)
American Bureau of Shipping (ABS)

![WOF](images/world-ocean-forum.png)
Busan City

World Ocean Forum (WOF)

**Symposium Registration Form:**
Download from [www.isope.org](http://www.isope.org) > meetings > Symposium

---

ISOPE-2011 Maui

The 21st (2011) International
Ocean and Polar Engineering Conference
Maui, Hawaii, USA, June 19-24, 2010

**Call For Papers**

Abstract Deadline: **October 20, 2010**
Download from [www.isope.org](http://www.isope.org) or ask meetings@isope.org.

Online Abstract Submission (now) and Technical Program (in February, 2011) on [www.isope.org](http://www.isope.org) > call for papers;
Fax 1-650-254-2038
Welcome to PACOMS-2010 Busan

We greatly appreciate the excellent responses and help we have received from colleagues around the North America, Oceania and Asia in the successful organization of the 9th ISOPE Pacific/Asia Offshore Mechanics Symposium (ISOPE PACOMS-2010), Busan, Korea, November 14-17, 2010. The symposium features 15 sessions of peer-reviewed papers and invited papers from 8 Pacific Rim and European countries. This year’s focus is on Ocean Renewable Energy & New LNG chain-related Plants.

The purposes of the ISOPE conference are to:
- promote technological progress and activities, international technological transfer and cooperation, and opportunities for engineers to maintain and improve technical competence; and
- provide a timely international forum for technical activities, cooperation, opportunity and fellowship among researchers and engineers,
by developing focused session topics with peer-reviewed papers accepted through rigorous review, establishing high international standards for publication and worldwide distribution and promoting regional cooperation among the Pacific/Asian countries.

The International Society of Offshore and Polar Engineers (ISOPE) has already held 46 successful international meetings:
- The Annual ISOPE Conference has been held with the world's largest technical program of its kind with refereed papers since 1992. It started in Edinburgh, 1991, and rotated among Europe, Asia and N. America; most recently in Beijing, 2010.
- Additional specialty and regional symposia:

On behalf of PACOMS Executive Committee, International Organizing Committee and Local Organizing Committee, we would like to express our appreciation to the financial sponsors and welcome participants to the PACOMS-2010 Symposium in Busan.

Jin S. Chung, PACOMS Executive Committee and International Organizing Committee
and
Seok Won Hong, Han-il Park, Sa Young Hong,
Local Organizing Committee and International Organizing Committee
**SUNDAY November 14**

**PARADISE HOTEL**

18:00-20:00
REGISTRATION and Proceedings Pickup  
Paradise Hotel, 2F  
Capri room

18:30  
Host Reception  
Paradise Hotel, 2F  
Capri room

**MONDAY November 15**

**BEXCO**

08:00  
BEXCO Rm 106 1F

**On-Site Registration** and Badge and Proceedings Pickup  
**Chairs and Presenters**: Test the PPT files in  
Rm 102,1F

For Tour Information Visit Tour Desk in Registration Area

08:30  
1. PACOMS Opening Session
   
   **Opening Addresses**
   
   Jin S Chung, PACOMS-2010 Chair, ISOPE, USA

   **Welcome Address**
   
   H.-I. Park, PACOMS-2010 Co-Chair, President of KSOE, Korea

   Natural Gas Resources - Korea
   Ocean and Offshore Wind Energy Program – China
   Ocean and Offshore Wind Energy Program – Japan

10:00  
2. WOF Opening Ceremony  
BEXCO  
Convention Hall, 3F

11:10  
Coffee Break

11:30  
3. WOF Plenary Speech  
BEXCO  
Convention Hall, 3F

12:00  
Lunch

13:00  
4. LNG FSRU & FPSO  
BEXCO Rm 106,1F

15:20  
5. Ocean & Wind Energy I  
Rm 106,1F

18:30  
PACOMS Executive Committees  
Paradise Hotel
**TUESDAY November 16**

**BEXCO**

07:30  
Chairs and Presenters: Test the PPT files in Rm 102,1F

08:00  
6. LNG Plant Technology Rm 106,1F

10:30  
7. Arctic Energy & Transport Rm 106,1F

12:30  
PACOMS Lunch

13:30  
8. Ocean and Wind Energy II Rm 106,1F  
9. Arctic Structures & Ocean Environment Rm 101,1F

16:00  
10. Ocean and Wind Energy III Rm 106,1F  
11. Wave- Structure Interactions I Rm 101,1F

**PACOMS Banquet**

19:30  
Tuesday Capri Room, Paradise Hotel, 2F

**WEDNESDAY November 17**

**BEXCO**

07:30  
Chairs and Presenters: Test the PPT files in Rm 102,1F

08:00  
12. Ocean and Wind Energy IV Rm 106,1F  
13. Flow-Induced Vibrations & Structures Rm 101,1F

10:30  
14. Ocean and Wind Energy Technology V Rm 106,1F  
15. Wave, Structure & Environment II Rm 101,1F

13:00-18:00  
**SYMPOSIUM TOURS: GYEONGJU**, historic capital of Silla Kingdom and UNESCO World Heritage Site.  
Free of charge to PACOMS Symposium participants and spouses.  
Bus departs at 13:00 from Paradise Hotel, and return to Hotel at 18:00.

Make your reservation in advance by indicating in the advance registration form; or email to sayhong@moeri.re.kr and/or sayhong0305@gmail.com cc: dspark@moeri.re.kr

*****
Sponsored by
International Society of Offshore and Polar Engineers (ISOPE)
Daewoo Shipbuilding & Marine Engineering Co. Ltd
Samsung Heavy Industries Co. Ltd
American Bureau of Shipping (ABS)
World Ocean Forum (WOF)

Cooperated by
Korea Society of Ocean Engineers (KSOE)

Hosted by
ISOPE-PACOMS 2010, Busan LOC

Symposium Secretariat
Dr. S.Y. Hong, Maritime and Ocean Engineering Research Institute (MOERI) Daejeon, Korea

Symposium Co-Chairmen
Prof. Jin S. Chung, ISOPE, Cupertino, California, USA
Dr. S.W. Hong, MOERI, Daejeon, Korea
Prof. H.-I. Park, KMU, Busan, Korea
Dr. S. Y. Hong, MOERI, Korea

International Organizing Committee (IOC)
Dr. M.A. Atmanand, National Inst. of Ocean Tech., India
Prof. Alexander T. Bekker, Far Eastern State Tech. Univ., Russia
Prof. Somchai Chucheepsakul, King Mongkut's Univ. of Technology Thonburi, Thailand
Prof. Jin S. Chung, ISOPE, California, USA
Prof. Tetsuya Hiraishi, Kyoto Univ., Japan
Dr. Seok Won Hong, Maritime and Ocean Eng Research Inst., Korea
Prof. Hua Liu, Shanghai Jiao Tong University, China
Prof. Shuichi. Nagata, Saga Univ., Japan
Prof. Han-il Park, Korea Maritime Univ., Korea
Prof. Bin Teng, Dalian Univ. of Tech., China

Local Organizing Committee (LOC)
Dr. S.W. Hong, MOERI, KORDI, Daejeon, Korea (Chair)
Prof. S.H. Kwon (Pusan Nat'l Univ.); Dr. S. Hong (MOERI); Prof. W.J. Kim (Mokpo Nat'l Univ.); Prof. ChoongAng Univ.;
Dr. S. Hong (Dong-A Univ.); Prof. C.H. Jo (Inha Univ.); Prof. K.H. Jung (DEU); Mr. Y.T. Han (POSCO)

ISOPE Board of Directors (2010-2012)
D. Angelides (Greece), M. Kashiwagi (Japan), Cuneyt C. Capanoglu (USA), H. I. Park (Korea), S. Prinsenberg (Canada), A. Sarmento (Portugal), R. Ayer (USA) and H. Moshagen (Norway)

ISOPE President
Dr. R. Ayer (2010-2012), ExxonMobil Research & Engineering, USA

PACOMS Executive Committee
Prof. A.T. Bekker, Far Eastern State Tech. Univ., Russia
Prof. Somchai Chucheepsakul, King Mongkut's Univ. of Tech. Thonburi, Thailand
Prof. Jin S. Chung, ISOPE, California, USA
Dr. Seok Won Hong, MOERI, Korea
Prof. M. Isaacson, Univ. of British Columbia, Canada
Prof. Shigeru Naito, Osaka Univ., Japan
Prof. Han-il Park, Korea Maritime Univ., Korea
Prof. Bin Teng, Dalian Univ. of Tech., China
Prof. Hong Zhang, Griffith Univ., Australia
Busan, Korea, November 14–17, 2010

All technical session events will take place at BEXCO Convention Center. Sunday onsite registration and PACOMS reception will take place at Paradise Hotel. The changes on titles or authors the PACOMS-2010 International Organizing Committee (IOC) received in writing before August 1, 2010 are reflected in this program. Final corrections will be updated in the Conference Proceedings (ISBN 978-1-880653-79-1, ISSN 1946-004X). Proceedings CD-ROM of peer-reviewed papers (350 pp. est.) in 15 sessions will be available from ISOPE during and after the Symposium.

PACOMS Symposium proceedings are indexed by Engineering Index, EI Compendex. Further updates will be posted on www.isope.org.

**SUNDAY November 14**

**PARADISE HOTEL**

18:00-20:00
REGISTRATION and Proceedings Pickup
Capri Room
Paradise Hotel, 2F

18:30
PACOMS Host Reception
Capri Room
Paradise Hotel, 2F

**MONDAY November 15**

**BEXCO**

08:00
On-Site Registration and Badge and Proceedings Pickup

**1. OPENING PLENARY SESSION**

Monday November 15 08:30 BEXCO Rm106, 1F

Chair: Seok-Won Hong, Maritime and Ocean Engineering Research Institute, Daejeon, Korea
Co-Chair: Alexander T Bekker, Far Eastern State Technical University, Russia

Opening Address
Jin S Chung, Conference Chair, ISOPE, Cupertino, California, USA

Welcome Address
Han-il Park, President, Korean Society of Ocean Engineers (KSOE), Korea

Invited Presentations
KOGAS' Challenges to Upstream Opportunities for Natural Gas Resources (Oral Presentation)
Jong Ho Lee, Vice-president, KOGAS, Korea

Ocean Energy and Offshore Wind Energy Programs in China (Oral Presentation)
Liang Zhang, Harbin Engineering Univ., China

Latest Status on Ocean Energy Activities in Japan (Oral Presentation)
Shuichi Nagata, Saga Univ., Japan

2. WORLD OCEAN FORUM (WOF)
Opening Ceremony
Monday November 15, 10:00 BEXCO, 3F

3. WOF PLENARY SESSION
Invited Lecture
Ocean Technology and Business: Past and Present in the United States, Asia and Europe
Jin S Chung, ISOPE, Cupertino, California, USA

Lunch
Monday November 15, 12:00 BEXCO

4. LNG FSRU & FPSO
Chair: M.K. Ha, Samsung Heavy Industries Co. Ltd, Korea
Co-Chair: B. Kim, American Bureau of Shipping, USA

Quantitative Risk Analysis for Concept Design of LNG-FSRU
Hee Sung Lee, Hyun Chang Lee, Seung Hyuk Kim and Mun Keung Ha, Samsung Heavy Industries, Korea

Study on Ship Motion Analysis of Turret-Moored LNG FSRU Compared with Experiment
Kyoung-Wan Lee, Yu-Rim Cho, Jea-Ouk Sun, Seung-Gyu Jeong and Young-Dal Choi, STX Offshore & Shipbuilding; Hong Gun Sung and Seok Won Hong, MOERI/KORDI, Korea

Numerical Simulation of Violent Sloshing Motion in Rectangular Tank Using Improved MPS Method
Sung-Chul Hwang, Byung-Hyuk Lee and Jong-Chun Park, Pusan National Univ., Korea

7
Offloading Operability Analysis of Side-by-Side Moored LNG FPSO
Hyeonso Jeong, Munsung Kim, Jinho Lee, Byungwoo Kim and Munkeun Ha, Samsung Heavy Industries, Korea

The Second Order Wave Exciting Force on an Floating Ship Considering Tank Liquid Dynamic Effect
Hiroshi Kawabe, Jongjin Park and Munkeun Ha, Samsung Heavy Industries, Korea

Study on the Dynamics of Turret Moored FSRU in Waves
Seokkyu Cho, Honggun Sung and Sayoung Hong, MOERI/KORDI, Korea

5. OCEAN & WIND ENERGY I

Monday November 15 15:40 Rm 106, 1F
Chair: Hong Zhang, Griffith Univ., Australia
Co-Chair: Sup Hong, MOERI, Korea

Noise Analysis of Offshore Wind Farm
Yonghwan Park, Ingyu Lim, Jaekwang Eom, Seongmyun Hwangbo, Kwangun Park and Kihyun Kim, Samsung Heavy Industries, Korea

Structural Response of Offshore Monopile Foundations to Ocean Waves
Miao Li, Hao Song, Hong Zhang and Hong Guan, Griffith Univ., Australia

Floating Type Ocean Wave Power Station: Unique Work of Oscillating Platform
Tatsuya Kinoshita, Kensuke Matsumoto, Masayuki Orita and Toshiaki Kanemoto, Kyushu Institute of Tech., Japan

Static and Dynamic Analysis Modeling for Offshore Wind Turbine Foundation Structures
Hongwang Ma and Longzhu Chen, Shanghai Jiao Tong Univ., China

18:30
PACOMS Executive Committees Paradise Hotel

TUESDAY November 16

BEXCO

6. LNG PLANT TECHNOLOGY
Tuesday November 16 8:00 Rm 106, 1F
Chair: Y.M. Yang, KOGAS, Korea
Co-Chair: SangKwon Jeong, KAIST, Korea

Modeling and Optimization of Liquefaction Processes in LNG Plant
Wonsub Lim, Il Moon, Yonsei Univ.; Kwangho Choi, Hyouktae Kwon and Daeho Ko, GS Engineering & Construction, Korea
The Study on Natural Gas Liquefaction Cycle Development
Sanggyu Lee, Kyusang Cha, Changwon Park, Chulgu Lee, Yongbum Cho and Young-myung Yang, Korea Gas Corporation, Korea

Design of Samchuck LNG Receiving Terminal of Korea Gas Corporation
Donghyuk Kim, Youngsoon Sohn, Kangwon Lee, Insoo Yoon, and Youngmyung Yang, Korea Gas Corporation, Korea

Micro Channel Heat Exchanger for LNG-FPSO Application
Seungwhan Baek, Jinho Kim and Sangkwan Jeong, KAIST, Korea

A Study on the NDE Reliability Matrix for LNG Plant System
Woong-Ji Kim, Song-Chun Choi and Chul-hee Yu, Korea Gas Safety Corp.; Song-Jin Song, Hun-Hee Kim and Dea-Kwang Kim, Sungkyunkwan Univ., Korea

7. ARCTIC ENERGY & TRANSPORT
Tuesday November 16 10:30 Rm 106, 1F

Co-Chair: Han C. Yu, ABS, USA
Co-Chair: E. Glukhareva Arctic Research Center, Russian Academy of Sciences, Russia

Development of Oil and Gas Production and Transportation Infrastructure of Russian West Arctic Offshore Regions
V.I. Pavlenko and E.K. Glukhareva, Arctic Research Center, Russian Academy of Sciences, Russia

Strength Assessment for Bow Structure of 107k DWT Arctic Tanker under Special Ice Loads
Jae-Yeol Lee, Myo-Jung Kwak and Sung-Geun Lee, Daewoo Shipbuilding & Marine Engineering, Korea; Han Yu, American Bureau of Shipping, USA; Claude Daley, Memorial Univ., Canada

Performance Studies for Technological Complex Platform "Prirazlomnaya" - Moored Tanker in Ice Conditions
Evgeny B. Karulin and Marina M. Karulina, Krylov Shipbuilding Research Inst., Russia

Glacial Ice Loads for Large Bulk Carriers
James W. St. John, Science & Tech. Corp., USA

A Comparison of Ice Breaking Performances for Korean Ice Breaking Research Vessel
Chun-Ju Lee, Seong-Rak Cho and Seong-Yeob Jeong, MOERI, Korea

A Cold Room Experimental Study on the EG/AD Model Ice Properties
Jung-Hyun Kim and Kyungsik Choi, Korea Maritime Univ., Korea

Lunch
Tuesday November 16 12:30 Room A
8. OCEAN & WIND ENERGY II

Tuesday November 16 13:30 Rm 106, 1F

Chair: H.K. Shin, Univ. of Ulsan, Korea
Co-Chair: C.W. Rim, KIMM, Korea

The Motion Performance of Two Offshore Wind Turbine Floating Platforms with Combined Tension Leg-Mooring Line System
Nianxin Ren, Harbin Institute of Tech.; Yugang Li and Jinping Ou, Dalian Univ. of Tech., China

Development of Software for Coupled Aero-Elastic Dynamic Analysis of Wind Turbine System
Chae Whan Rim, Je Sung Bang, Seok Jun Moon and Tae Young Chung, Korea Inst. of Machinery and Materials; Hu Je Cho, VirtualMotion, Inc.; Dea Sung Bae, Hanyang Univ., Korea

Time Domain and Frequency Domain Characterization of Floating Offshore Wind Turbine
Wei Shi, Hyun-chul Park, Chin-wha Chung and Young-chan Kim, Pohang Univ. of Science & Tech., Korea

CFD Application to the Evaluation of Wave and Current Loads on Cylindrical Platform Model for Ocean Wind Turbine
Yeon-Seok Park, Mokpo National Univ., Korea; Zheng-Shou Chen, Zhejiang Ocean Univ., China; Wu-Joan Kim, Mokpo National Univ., Korea

9. ARCTIC STRUCTURES & OCEAN ENVIRONMENT

Tuesday November 16 13:30 Rm 101, 1F

Chair: Alexander T. Bekker, Far Eastern Nat’l Tech. Univ., Russia
Co-Chair: Tomoki Ikoma, Nihon Univ., Japan

The Registration of Temperature during Calculation of the Ice Abrasion

Numerical Simulation of Ice Loads on Gravity-Based Concrete Structures of "Sakhalin-I" and "Sakhalin-II" Projects

Prediction of Extreme Wind Speed under the Background of Climate Change
Lizhen Wang and Jianchun Li, Institute of Mechanics, CAS, China

Experiments on Purification of Sedimentary Sludge by Micro-Bubble and Microorganism Activation
Kyoichi Okamoto and Kenji Hotta, Nihon Univ., Japan

3D Spatial Definition of Water Surface
Matthew Harry, Hong Zhang and Charles Lemckert, Griffith Univ.; Gildas Colleter, Aurecon Australila, Australia
A Study on Quantitative Evaluation for Influence between the Habitats of Clam Ruditapes Philippinarum in Tokyo Bay
Fumikazu Ohtsuka, Nihon Univ. Jr. College; Mao Hironaka, Mitsui Consultants; Koichi Masuda and Tomoki Ikoma, Nihon Univ., Japan

10. OCEAN & WIND ENERGY III
Tuesday November 16 16:00 Rm 106, 1F
Chair: S. Nagata, Saga Univ., Japan
Co-Chair: W.C. Cho, Joong Ang Univ. Korea

Preliminary Study for Optimum Shape of Caisson Structure Embedding Wave Power Generation
Sang-Joon Yoon, Han-Wan Kwak and Won-Dae Jung, Ktsubmarine Co. Ltd.; Jong-Soo Lee, Heon-Tae Kim, Pukyong National Univ., Korea

3D Numerical Investigation on Reservoir System for an Overtopping Wave Energy Converter
Zhen Liu, Ocean Univ. of China, China; Beom-Soo Hyun, Korea Maritime Univ., Keyyong Hong, MOERI/KORDI; Jiyuan Jin, Korea Maritime Univ., Korea

Potential Use of an Oscillating Water Column Located Inside Perforated Caisson
Yong Liu, Ocean Univ. of China; Yucheng Li, Dalian Univ. of Tech., China

Study on the Float-type Wave Energy Converter with Power Stabilization Technique
Kesayoshi Hadano, Katsuya Matsuoka, Pallav Koirala, Keisuke Taneura and Kimihiko Nakano, Yamaguchi Univ., Japan

Thrust Generation by Waves
Hiroshi Ishihiki, Univ. of Ulsan, Korea; Shuichi Nagata, Saga Univ., Japan

Experimental Study of Dynamic Response and Energy Absorption of Fixed Circular Cylindrical OWC Columns in Regular Waves
Yukitaka Yasuzawa and Yoshitaka Okumura, Kyushu Univ., Japan

11. WAVE-STRUCTURE INTERACTIONS I
Tuesday November 16 16:00 Rm 101, 1F
Chair: Y.H. Kim, Seoul National Univ., Korea
Co-Chair: H.G. Sung, MOERI, Korea

Numerical Analysis of Finite Depth Effects on Floating-Body Motions
Taeyoung Kim and Yonghwan Kim, Seoul National Univ., Korea

Numerical Simulation of 3D Free-Surface Flows Using CIP-based and FV-based Methods
Kyungkyu Yang, Bo-Woo Nam and Yonghwan Kim, Seoul National Univ., Korea
An Experimental Study on the Hydro-Elastic Analysis of a Circular Cylindrical Shell
Cheon-hong Min, Han-il Park and Byung-mo Kim, Korea Maritime Univ.; Seong Pyo Kim, Hankuk Academy of Foreign Studies, Korea

Investigation of Gap Effect in Slamming Experiment

Simulation of Radar Image due to Ship Generated Waves
Young Jun Yang, Sun Hong Kwon and Seung Geun Park, Pusan National Univ.; Jun Soo Park, Kyungnam Univ., Korea

Investigation of Characteristics of Impact Pressure Pattern in Sloshing Experiment

WEDNESDAY November 17

12. OCEAN & WIND ENERGY IV
Wednesday November 17 08:00 Rm 106, 1F
Chair: Sun Hong Kwon, Pusan National Univ., Korea
Co-Chair: Koju Hiraki, Kyushu Inst. of Technology, Japan

Research of Behavior of Large Rotary Pontoon of Offshore Wind Turbine in Waves
Victor V. Cheboxarov and Valery V. Cheboxarov, Far Eastern National Tech. Univ., Russia

Effect of Pitching on Aerodynamic Loads for Floating Wind Turbines
Yong-gang Li, Ji-hua Mo, Yan-ping He and Qing He, Shanghai Jiao Tong Univ., China

Research on a Method Decreasing Motions and Drift Force of a Floating Renewable Energy Facility in Waves
Yasutaka Imai, Kazutaka Toyota and Shuichi Nagata, Saga Univ., Japan

Field Test of Straight-bladed Vertical Axis Wind Turbine with a Directed Guide Vane Row
Shinya Okuhara, Kazuyoshi Fujitani, Hiroyuki Takita and Manabu Takao, Matsue College of Tech., Japan

13. FLOW-INDUCED VIBRATIONS & STRUCTURES
Wednesday November 17 08:00 Rm 101, 1F
Chair: Wu-Joan Kim, Mokpo National Univ., Korea
Co-Chair: Shuxue Liu, Dalian Univ. China

Laboratory Investigation on the In-Line Dynamic Characteristic of Long Flexible Riser under Vortex-Induced Vibration
Guo-qiang Tang, Lin Lu and Bin Teng, Dalian Univ., China; Han-il Park, Korea Maritime Univ., Korea; Ji-ning Song, Dalian Univ.; Jian-qiao Zhang, Chinese Academy of Fishery Sciences, China

**Vortex-Induced Vibration of Elastically Supported Circular Cylinder Levered with Hinge** (Oral Presentation Only)
Sup Hong, Jong-Su Choi, Hyung-Woo Kim and Tae-kyung Yeu, MOERI/KORDI, Korea

**Experimental Study on VIV of a Flexible Pipe with Soil Support**
Xiao Chao Li, Yong-Xue Wang, Guang-Wei Li, Mei-Rong Jiang and Xu He, Dalian Univ. of Tech., China

**Strength of Tubular Members - Numerical Comparison of API RP2A to ISO Codes**
Narayanan Sambu Potty, Zafarullah Nizamani and Arazi B. Idrus, Universiti Teknologi PETRONAS, Malaysia

**Sea Environment Assessment for Evaluation of FPSO Hull Structural Scantlings**
Booki Kim, Xiaozhi Wang and Yungsup Shin, American Bureau of Shipping, Houston, USA

**The Mode of Deformation Status of the Offshore Pile Structures with Low-Rigid Raft Foundations**
Alexander T. Bekker and N.Ya. Tsimbelman, Far Eastern National Tech. Univ., Russia

---

**14. OCEAN & WIND ENERGY V**

Wednesday November 17 10:30 Rm 106, 1F

Chair: H. Liu, Shanghai Jiao Tong Univ., China
Co-Chair: K.S. Lee, KORDI, Korea

**Improvement of Straight-bladed Vertical-axis Water Turbine for Tidal Current Power Generation**
Koju Hiraki and Ryo Wakita, Kyushu Institute of Tech., Japan

**Tidal Current Power Rotor Performance Analysis under Various Conditions**
Chul Hee Jo, Kang H. Lee, Jin Y. Yim and Yu H. Rho, Inha Univ., Korea

**A Study on Energy from Salinity Gradient in Primorie, Russia**
Valery V. Knyazhev, Inst. of Marine Tech. Problems, FEB RAS, Russia

**Spectrum Analysis of OTEC System using Ammonia/Water Mixture as Working Fluid by Continuous Operation**
Takafumi Morisaki, Satoru Goto and Yasuyuki Ikegami, Saga Univ., Japan

---

**15. WAVES, STRUCTURES & ENVIRONMENT II**

Wednesday November 17 10:30 Rm 107, 1F

Chair: Bin Teng, Dalian Univ., China
Co-Chair: N.S. Hong, Dong-A Univ., Korea
Effect of Submerged Dike on Overtopping Against Seawall of Composite Profile in Regular Waves
Hua Liu, Xiaoyu Guo and Yanan Liu, Shanghai Jiao Tong Univ., China

Numerical Calculation of Multidirectional Wave Run-up in a Pile Group by a FEM Boussinesq Model
Shuxue Liu, Zhongbin Sun and Junxuan Li, Dalian Univ. of Tech., China

Experimental Study on Phase Difference between Total Horizontal and Vertical Forces Acting on Perforated Caissons Located on a Rubble Mound Foundation
Zhisheng Xia and Dapeng Sun, Dalian Univ. of Tech.; Yong Liu, Ocean Univ. of China; Yucheng Li and Qingyu Wan, Dalian Univ. of Tech., China

Three-Dimensional Numerical Simulation for the Yangshan Port Waters
Li-hong Pan, Jian-rong Zhu and Hui Wu, East China Normal Univ.; Xiao-tao Du, Shanghai Hydraulic Eng. Design & Research Inst., China

Experimental Study on Hydrodynamic Loads on a Horizontal Slab and Pile
Ya-mei Lan, Shanghai Ocean Univ.; Wen-hua Guo, Estuarine & Coastal Sci. Research Ctr.; Hua Liu, Shanghai Jiao Tong Univ.; Qiu-hong Song and Jun-ting Yuan, Shanghai Ocean Univ., China

Modeling for Ship Shifting and Berthing Jobs Scheduling at Dockyard (Proceedings Only)
Jianping Chen and Jiawei Ye, South China Univ. of Tech., China

SYMPOSIUM TOURS: Free of charge to the PACOMS-2010 Symposium participants and spouses.
13:00-18:00
GYEONGJU, Historic capital of Silla Kingdom and UNESCO World Heritage Site.
Bus departs at 13:00 from Paradise Hotel, and return to Hotel at 18:00.

Make your reservation in advance by indicating in the advance registration form; or email to sayhong@moeri.re.kr (and/or sayhong0305@gmail.com), cc: dspark@moeri.re.kr. Reservation Deadline is October 10.
PLACE AND DATE: Busan, Korea, November 14–17, 2010

All ISOPE-PACOMS-2010 Symposium Technical Events will take place at the symposium venue:
BEXCO

All ISOPE-PACOMS-2010 Symposium Social Events will take place at the venue hotel:
Paradise Hotel Busan, 1408-5 Jung-dong, Haeundae-gu
Busan 612-846, Korea
Tel: +82-51-749-2111–3; Fax: +82-51-749-2004
www.paradisehotel.co.kr

Host Reception
Sunday, Nov 14, 18:30, Capri Room.

Symposium Banquet
Tuesday, Nov 16, 19:30, Capri Room.

PARKING: Free parking.

LANGUAGE
The language for the conference is English. No translation service will be arranged.

AIR TRAVEL
Busan is the second largest city of Korea. Busan (Kimhae) International airport is easy to access through Incheon (Seoul) International airport and nearby countries’ main cities. Busan is located about 450 km from Seoul, Express railroad (KTX, 2.5 hrs) and highway buses (4.5 hrs) are also available from Seoul.

CURRENCY EXCHANGE
Currency can be exchanged either at the airport bank or local bank. Pay attention to the exchange rate fluctuation (1166.5 KRW per US$1.00 as of August 5, 2010). ATM machines are available at the airports and the hotel.

AIRPORT TO PARADISE HOTEL BUSAN
The Kimhae (Busan) International Airport is located about 20 km from Paradise Hotel Busan. Limousine bus is very convenient and inexpensive (every 15 minutes, 6,000KRW, US$5.5). Taxi costs US$30–40, and the taxi fare depends on the traffic conditions.
From Busan Railroad station, buses (numbered 1003 or 1001, 1,500 KRW, 1 hrs), taxi (~15,000KRW, ~1 hrs), Metro (1,300 KRW, 1hrs) are available.
From Busan port passenger terminal, the same bus (numbered 1003) is available, too.
For more details, contact sayhong@moeri.re.kr.

HOTEL ACCOMMODATION (must use the Reservation Form)
A limited number of rooms for foreign participants are available at the PACOMS venue hotel: Paradise Hotel Busan.
Make early room reservation directly by fax or e-mail to Paradise Hotel Group Reservation (ISOPE-PACOMS-2010):
pacoms@paradisehotel.co.kr; Paradise Hotel Busan, 408-5 Jung-dong, Haeundae-gu, Busan, 612-846, Korea
Email: pacoms@paradisehotel.co.kr; Fax: 82-51-749-2004
Contact : Ms. SK Hur / Tel: 82-51-749-2111–3

CITY TRANSPORTATION
You can pick-up a city map at Kimhae Airport and Paradise Hotel Busan. Taxi, bus and Metro are very convenient and inexpensive in Busan. The Paradise Hotel Busan is located close to the Haeundae Metro Station: Only 5 minutes by walk from the Hotel to the Haeundae Station. From the station, you can easily access many interesting tourist attractions such as Centum City Shopping Center, Parks, Downtown area, Sites and more. A few steps outside the Hotel, you can enjoy the very attractive and peaceful atmosphere of Haeundae beach, Dongbaek Park, Dalmaji-gil. And, you can go practically anywhere in the greater Busan metropolitan region by bus, Metro, taxi and railroad. Buses and Metro run regularly to all points of the city.

**SYMPOSIUM TOUR. Wednesday, November 17, 13:00 – 18:00**
Bulguksa/Seokguram Grotto and Historic Areas in Gyeongju (Old Capital of Silla Kingdom for more than 1,000 years, and UNESCO World Heritage).

Gyeongju historical areas served as the capital of the Silla Kingdom, which had dominated the southern Korean Peninsula for more than a thousand years. It contains a great number of remains and monuments that are significant to the development of Korean architectural buildings and Buddhism in the neighborhood of Gyeongju, including Mount Namsan. A masterpiece of Silla Kingdom’s craftsmanship with the total realization of architecture, mathematical principle, geometry, religion and art in terms of construction design, Bulguksa is a representative case of how noble Buddhist principles can be integrated in the temple’s structural design. It features a certain architectural quality that is rarely found in any other part of Asia.

Free of charge to the ISOPE-PACOMS 2010 Symposium foreign participants and spouses.

ISOPE-PACOMS 2010 Symposium: Free for PACOMS participants. Check Symposium Tour on Registration form, Or Email by October 10 providing the information below to ISOPE-PACOMS 2010, Busan secretariat

Name: __________________________ (Surname) __________________________ (given name) __________________________
No. of accompanied persons: _________, Date __________________________
e-mail address of applicant: ____________________________________________________
Mail to ISOPE-PACOMS 2010, Busan secretariat (sayhong@moeri.re.kr & dspark@moeri.re.kr)

**PACOMS-2010 ADVANCE SYMPOSIUM REGISTRATION FEES (if received before October 10)**

**REGISTRATION by Email or Fax (can download the Advance Registration Form from www.isope.org)**

Register directly through ISOPE, California, USA: Fax 1-650-254-2038 or meetings@isope.org. Payment of the registration fees should be made only in US dollars.

**Deadline for non-author participants:** October 10.

All persons attending the symposium are required to register, pay the appropriate fee, and get a symposium badge. Registration fees are as follows:

<table>
<thead>
<tr>
<th>Category</th>
<th>Advance Registration Fee (US $)</th>
</tr>
</thead>
</table>

16
Received before the Deadlines

- Author, Co-authors 450
- Session or Symposium Chair, Co-Chair 450
- ISOPE Member 450
- ISOPE member with new application (incl. 2011 membership fee and 1-year journal issues) 540
- Non-Member 520
- Spouses (no proceedings, incl. lunch, banquet) 100
- Full-time Student with 2010 ID Card 300
- Reserve a seat for Wednesday Symposium Tour Free

* The fee in this table is for the advance-registered participants. The Symposium registration fee includes Host Reception, PACOMS Banquet, tea breaks, lunches and the symposium proceedings. Registration after deadline costs additional $100.

REGISTRATION CANCELLATIONS
Request for cancellation of registration by non-authors must be received in writing by October 10, 2010 to be granted a refund minus US$80 processing charge.

REGISTRATION BADGE
Registration badges are required for admittance to all the symposium activities, including the reception and banquet.

ON-SITE SYMPOSIUM REGISTRATION
Participants who miss the advance registration may register at the Symposium Registration Desk, but there is US$80 surcharge. The registration desk will be open during the following hours:

Monday, Nov. 15 08:00-17:00
Tuesday, Nov. 16 08:00-11:00

ISOPE PUBLICATION ORDER
A copy of ISOPE PACOMS-2010 Symposium Proceedings (CD-ROM, ISBN 978-1-880653-79-1, ISSN 1946-004X) is included in the symposium registration fees. A single-volume proceedings in CD-ROM (350 pp. est.) can be ordered by email, fax or air mail at:

$100 (ISOPE Member $80) plus $15 airmail & handling.

ISOPE PUBLICATION can be ordered from ISOPE, 495 North Whisman Road, Suite 300, Mountain View, California 94043-5711, USA: FAX 1-650-254-2038; orders@isope.org. Advance payment is required. MasterCard, VISA, AMEX card, bank wire-transfer or U.S. bank checks in US Dollar payable to ISOPE will be accepted. (Download the ISOPE Publication Order Form from www.isope.org > Orders or email to orders@isope.org for publication order form.)

PACOMS-2010 HEADQUARTERS
BEXCO Rm 102 1F

Host RECEPTION
18:30-20:00 Sunday, Nov. 14
Paradise Hotel Capri Room, 2F

PACOMS SYMPOSIUM BANQUET
19:30-21:30 Tuesday, Nov. 16
Paradise Hotel Capri Room, 2F

AUDIO VISUAL TEST 07:30 daily
BEXCO Rm 102 1F
A power-point projector connected to PC (Read Author Information form) and screen is set up during 07:30-18:00 (Monday, Tuesday, and Wednesday) in the session rooms.
INTERNATIONAL PARTICIPANTS AND VISA APPLICATION

International authors, participants or attendees who need help (except financial) can contact: Dr. Sa Young Hong, PACOMS-2010 Local Secretariat, Maritime and Ocean Engineering Research Institute, KORDI, 171 Jang-dong, Yuseong-gu, Daejeon 305-343, Korea, Tel: +(82) 42-866-3930, Fax: +(82) 42-866-3919, E-mail: sayhong@moeri.re.kr.

Entry Visa. Some participants may be required to apply for an entry visa. Please get an application form at the Korea Consulate in your country. PACOMS-2010 Secretariat may assist, if request of invitation letter from ISOPE-PACOMS 2010, Busan received by Secretariat by September 15.

CLIMATE

The November weather in Busan is fine and cool but sometimes it rains and is windy. Temperature ranges 5℃-15℃.

BEXCO and Paradise Hotel Busan

Meeting Rooms
Night View of Haeundae
Nurimanu (APEC Summit Venue)
Busan China Town
Dongbaek Park
Dalmaji-gil, Haeundae
Sooyoungman Marina
HOTEL RESERVATION FORM (Must Use This Form)

Paradise Hotel, Busan, Korea, November 14−17, 2010

Reservation by either e-mail, fax or mail only.

BEXCO and Paradise Hotel Busan are the official venue for the Conference. In case you make a reservation without this form, indicate the ISOPE-PACOMS Symposium to get special PACOMS room rates. In order to have your room guaranteed, one (1) night's deposit is required.

Send your reservation by September 30, 2010 by (and also confirmation via email or fax by):

Group Reservation (ISOPE-PACOMS-2010):
pacoms@paradisehotel.co.kr
Paradise Hotel Busan
1408-5 Jung-dong, Haeundae-gu, Busan 612-846, KOREA
Email: pacoms@paradisehotel.co.kr Fax: 82-51-749-2004
Contact : Ms. SK Hur / Tel: 82-51-749-2111−3

No reservations will be considered without credit card and signature
(Family Name) First (Fore)
Surname: ___________ & Middle: _____________________
Circle: Male__ Female__; Title Mr.__ Ms. Mrs.__ Prof.__ Dr.__
Company: __________________________________________
Address    __________________________________________
___________________ City _________________________
Country _____________Postal (ZIP) Code ______________
Fax No. _____________; Email ________________________
Arrival: November ___ Time _____; Depart.: ____ _, Time __________
Room Choice: * Please mark X or O
(______) Standard Room City view KRW130,000++
(______) Standard Room Ocean view KRW180,000++
(______) Twin / (______) Double (______)
(______) Breakfast KRW20,000++
* Tax, service charge and breakfast are not included.
** Name of the person to share: ________________________
***Special requests: _______________________________

Advance Deposit and Methods of Payment. Please enter one (1) night's deposit per room. Cancellations and no-shows without 1-week advance notice in writing before the symposium will be charged the total number of nights booked.

I authorize a charge of KRW______ to my credit card (mark x):
__ Visa __ MasterCard __ Diner's Club__American Express __JCB
Card no.: ________________________ 3- or 4-digit code _____
Name on card: ________________________ Exp. Date: _________
Signature: ______________________ Date: _________, 2010

I am enclosing an international money order or check of KRW_______ in Korean Won drawn on a Korean bank, payable to Paradise Hotel Busan.

Copy, Complete, and Send This Form with One-Night's Deposit Directly to Paradise Hotel Busan. as addressed above.

Reserve early to secure a room at ISOPE-PACOMS room rates

Reservation after September 30 is subject to room availability. In case Paradise Hotel Busan is fully booked before September 30, Internet search for other hotel choices in Haeundae beach area.
TECHNICAL PROGRAM

ISOPE PACOMS-2010 Busan
November 14-17, 2010

Find the Hotel Reservation Form inside this program or download Hotel Reservation Form and Advance Registration Form from www.isope.org. >meetings >PACOMS.

Forthcoming ISOPE Meetings

ISOPE-2011 Maui
Abstract Deadline: October 20, 2010

Online Abstract Submission and Technical Program (available in February) on www.isope.org.

Call For Papers on www.isope.org

In addition to the large Conference sessions, ISOPE Symposia will be held:

Arctic Science and Tech-2011
Arctic Materials-2011
Renewable Energy and Environment-2011
Frontier Energy Tech-2011
Sloshing-2011
Strain Based Design-2011
Nanotech-2011
High-performance Materials (HPM-2011)
Friction Stir Welding (FSW-2011)

ISOPE-OMS-2011 Maui Symposium
Mau, Hawaii, USA, June 19-24

International Society of Offshore and Polar Engineers
P.O. Box 189
Cupertino, CA 95015-0189, USA
Fax: 1-650-254-2038
meetings@isope.org; www.isope.org