

1st awtec 2012

Asian Wave and Tidal
Energy Conference Series

Hidden Mysteries of the World,
Treasure Island!
JEJU "NEW 7 WONDERS OF NATURE"

Nov. 27 (Tue)-Nov. 30(Fri), 2012, Hyatt Hotel, Jeju Island, Korea

1st Asian Wave and Tidal Energy Conference (AWTEC-2012)

Hyatt Regency Jeju, Jeju Island, Korea
27-30 November 2012

Conference Handbook

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Program Overview

Nov. 27, 2012 (Tue.)	
16:00~18:00	Registration
17:00~18:00	Welcome Reception at Terrace Ballroom
18:00~20:00	Organizing Committee Meeting and Dinner at Omi Restaurant

Nov. 28, 2012 (Wed.)		
08:30~17:00	Registration	
	Regency Ballroom	
09:00~09:15	Opening Ceremony <i>Chair : Young-Ho Lee (Korea Maritime University, Korea)</i>	
09:15~10:30	Plenary Session <i>Chair : J.C.L. Chan (City University of Hong Kong, Hong Kong)</i>	
Coffee Break (10:30~11:00)		
Conference Room	Foyer 1	Foyer 2
11:00~12:30	(A1) Application of Ocean Energy <i>Chair : Cheng-Han Tsai (NTOU, Taiwan), Co-Chair : Shujie Wang (Ocean University of China, China)</i>	(B1) Tidal Energy Converter <i>Chair : Takeshi Kinoshita (Tokyo University, Japan), Co-Chair : Sutthiphong Srigrarom (University of Glasgow, Singapore)</i>
Lunch (12:30~13:30)		
13:30~15:00	(A2) Wave Energy - Numerical Study <i>Chair : Seung-Ho Shin (KIOST, Korea), Co-Chair : Bruce Cameron (Nova Scotia, Canada)</i>	(B2) Tidal Energy Structure <i>Chair : Hongda Shi (Ocean University of China, China), Co-Chair : Jong Chun Park (Pusan National University, Korea)</i>
Coffee Break (15:00~15:20)		
15:20~16:50	(A3) Ocean Energy Converter Testing <i>Chair : Beom-Soo Hyun (Korea Maritime University, Korea) Co-Chair : Weimin Liu (The First Institute of Oceanography, China)</i>	(B3) Ocean Energy and Mooring <i>Chair : AbuBakr Bahaj (University of Southampton, U.K.) Co-Chair : Sang Ho Oh (KIOST, Korea)</i>
16:50~18:30	Networking for business, R&D collaboration session at Terrace ballroom	
Regency Ballroom		
18:30~20:30	Conference Banquet <i>Chair : Josie Close (City University of Hong Kong, Hong Kong)</i>	

Nov. 29, 2012 (Thur.)		
08:30~17:00	Registration	
Conference Room	Foyer 1	Foyer 2
09:10~10:40	(A4) Wave Energy - Experiment & Application <i>Chair : L.M.C. Gato (Technical University of Lisbon, Portugal) Co-Chair : Shin Hyung Rhee (Seoul National University, Korea)</i>	(B4) Site Investigation <i>Chair : Chae Joo Moon (Mokpo National University, Korea) Co-Chair : Tai-Wen Hsu (National Taiwan Ocean University, Taiwan)</i>
Coffee Break (10:40~11:00)		
11:00~12:30	(A5) Wave Energy - Structural Design & Modeling <i>Chair : Young-Ho Lee (Korea Maritime University, Korea) Co-Chair : Kwang-oh Ko (Hyundai E&C Inc., Korea)</i>	(B5) Grid Connection & System Aspects <i>Chair : Shuichi Nagata (Saga University, Japan) Co-Chair : Cheol Oh (Korea Maritime University, Korea)</i>
Lunch (12:30~13:30)		
13:30~15:00	(A6) Asia/U.K. Collaboration Workshop <i>Chair : Cameron Johnstone (University of Strathclyde, U.K.) Co-Chair : Chul H. Jo (Inha University, Korea)</i>	(B6) Tidal Energy - Numerical Study <i>Chair : Mohammed Rafiuddin Ahmed (University of South Pacific, Fiji) Co-Chair : Deog Hee Doh (Korea Maritime University, Korea)</i>
Coffee Break (15:00~15:20)		
15:20~16:50	(A7) Ocean Energy Resources <i>Chair : Mann-Eung Kim (Korean Register of Shipping, Korea) Co-Chair : Joonmo Choung (Inha University, Korea)</i>	(B7) Tidal Energy - Interference Effect <i>Chair : Richard Morris (EMEC Ltd., U.K.) Co-Chair : Chang Jo Yang (Mokpo National Maritime University, Korea)</i>
16:50~17:00	Closing Announcement	

Nov. 30, 2012 (Fri.)	
9:30~15:00	Conference Tour : Smart Grid Village

Note: 1. The buses for the conference tour will depart at 9:30 from the main entrance of Hyatt Regency Jeju.

2. The time of return to Hyatt Regency Jeju from the conference tour is expected around 15:00. However, this will be flexible as per the site condition.



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Wave Power



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LS전선은 초전도케이블, 해저케이블 등 첨단 케이블을 통해
도시는 발전하고, 자연은 살아나며, 사람은 더 살기 좋은 세상을 만들어갑니다

WELCOME

Dear AWTEC 2012 Delegates

Welcome to the 1st Asian Wave and Tidal Energy conference (AWTEC) in the paradise island, Jeju, Korea. It is great honor and pleasure to have you to the first International Conference on ocean energy; Asian Wave and Tidal Energy Conference (AWTEC) 2012. AWTEC has been established to be the regional conference affiliated to the European Wave and Tidal Energy Conference (EWTEC) series, which has been running since 1979. The establishment of AWTEC is to facilitate the trans-national and regional sharing of knowledge and understanding from research activities being undertaken in the development of wave and tidal renewable energy systems, their interactions with the environment and the identification of barriers to be addressed in order to establish and marine renewable energy industry. AWTEC will focus on wave and tidal energy together with other ocean energy aspects of marine renewable energy technologies and recent activities. The conference aims to facilitate and provide opportunities for researchers, engineers, policy makers and stakeholders to exchange knowledge by profound discussions and recent research presentations and promote international and multi-disciplinary collaboration.

Initially about 100 abstracts from 22 countries have been submitted and finally about 80 presenting papers are selected for AWTEC 2012 program. This is very successful result reflecting the need of the ocean energy interest and development even there are limited researchers and industries in this filed in Asia. Having the increased demand for the clean energy utilization in Asia and also realizing the tremendous potential of ocean energy resources in Asia, AWTEC will draw together regional activities in Asia and then interact and collaborate with the European sister conference series (EWTEC) for our mutual benefit.

I would like to take this opportunity to express my sincere gratitude to the reviewers, committee members and sponsors for their contributions and dedications to make the successful conference. The committees of AWTEC are dedicating to make this inaugural conference in Jeju, Korea both memorable and technologically stimulating.

Prof. Chul H. Jo

Chairman, AWTEC

Inha University, Korea

Dear AWTEC 2012 Delegates

It is with great pleasure and in my capacity as the Chairman of the Executive Committee of the European Wave and Tidal Energy Conference (EWTEC) I would like to extend a warm welcome to this historic inaugural Asian Wave and Tidal Energy Conference in Jeju, South Korea. AWTEC exemplifies the importance and need for greater international co-operation; and the sharing of research outcomes and new understanding in the area of marine renewables. There is a plethora of exciting opportunities and development programs being undertaken in marine renewables and a number of these will be shared with delegates throughout this conference.

AWTEC's linkage with EWTEC provides a platform for greater Asia-European researcher interaction, development of international research relationships, and the identification of new methodologies necessary in addressing the challenges in the development of marine renewables. As AWTEC evolves from strength to strength, we hope it can draw insight from the experiences of EWTEC and its humble beginnings. EWTEC's origins can be traced back to an international gathering of approximately 50 wave and tidal energy researchers in Cambridge, UK in 1978; to its current status where over 500 delegates participated in its last meeting in Southampton, UK in 2011.

I would like to take this opportunity to wish you a highly enjoyable conference and encourage you to take advantage of this international gathering and engage in the numerous events and discussions aiding the development of this exciting industry.

Cameron Johnstone

Chairman, Executive Committee

European Wave and Tidal Energy Conference

ABOUT AWTEC

AWTEC is an international technical and scientific conference supported by EWTEC organization which is being recognized as the leading conference in the area of ocean wave and tidal renewable energies and widely respected for its commitment to maintain high standards in the quality of academic and industrial contributions to its proceedings since 1979. AWTEC will provide the attendees with an ideal forum to engage in knowledge transfer and debate at the cutting edge of marine renewable energy technology and also deliver an update on recent global activities and initiatives with a distinctly special interest in the Asian region.

Technical Topics

The conference topics listed below span the fields of wave and tidal energy research, ranging from technical issues through to cross-cutting policy, finance and environmental subjects

- Wave and tidal energy resource characterization
- Offshore wind and OTEC technologies
- Device development and testing
- Device hydrodynamics and structural mechanics
- Power take-off and device control
- Device and environmental modeling
- Environmental impact and appraisal
- Policy development and legislation
- Socio-economic impact
- Grid connection and system aspects
- Future markets and financing
- Smart grid technology

AWTEC MISSION STATEMENT

Marine energy research, technology devices and commercial systems have risen rapidly in the last 10 years. From those experiences, there is an extensive understanding of the challenges and difficulties to be addressed for the successful development of a wave and tidal current power industry.

To facilitate that development, AWTEC's key priorities will be

Information sharing

Share and exchange information on the recent research and development and also testing protocols for the deployment of wave and tidal current power technologies leading to the acceleration of the marine energy industry and so to the development of a wider international marine power market.

Harmonization of standards

Adopt common approaches and solutions for the generic components and systems of wave and tidal current power devices, where possible, so that related industries can benefit from these efforts and establish common solutions to aid the timely development of this international industry. This will be applied not only to the primary industries and supply chains but also to research and development parties.

Policies

Promote the policies and supporting mechanisms of the countries/economies currently leading this development to widen the marine energy industry up-take to an international role.

GENERAL INFORMATION

The Venue

Jeju Island is a volcanic island with a unique landscape that is home to a diversity of plant life animal species that varies by elevation and numerous types of animals. The coastline is made up of a series of fantastic cliffs and beautiful beaches, and at the center of the island around Hallasan Mountain is dotted with over 365 Oreums (the word for "small volcanic mountains" in Jeju dialect). Past volcanic activity has carved out an extensive series of lava caves and sea caves around the island and just off the coastlines are eight inhabited and 53 uninhabited islands scattered throughout the emerald-blue sea.

UNESCO, an agency of the United Nations, has designated Jeju a site of cultural and natural heritages, epitomizing Jeju's tremendous value globally and deserving of preservation and protection. Jeju Island, though a relatively small island, boasts an impressive three World Heritage Sites status, sites that showcase the island's natural beauty and volcanic legacy. Designated in June 2007, these sites include Hallasan National Park, Seongsan Ilchulbong Peak, and the Geomunoreum Lava Tube System. Jeju's phenomenal natural beauty, historical legacies, quirky museums, and array of water sports make it one of the best tourist spots in Korea.

To compliment the Natural heritage aspects of Jeju Island, Jeju is also home to one of the World's Smart Grid demonstration centers. This demonstrates the use of renewable energy systems consisting of wind, solar, wave and tidal energy to power our future built environment and the management of energy to enable society to maintain an existing level of development while being sympathetic to the natural environment.

Transportation

There is the shuttle bus (No. 600) at gate no. 4 from Jeju airport to Hyatt Regency, Jeju. The cost is 3,900Won per person and it would take around 1 hour from the airport. Another way to get to the venue place is taxi which would cost about 35,000~40,000 Won from the airport.

Registration

The registration desk will be open on Nov. 27 (Tue) from 16:00 to 18:00, Nov. 28 (Wed) from 08:30 to 17:00 and Nov. 29 (Thur) from 08:30 to 17:00.

Welcome Reception

The welcome reception will be at Terrace Ballroom, Hyatt Regency from 17:00 to 18:00 on Nov. 27 (Tue). Wine, juice together with refreshment will be served to welcome you to the conference. All delegates are welcome to join.

Organizing Committee Meeting

The organizing committee members are requested to join the OC meeting from 18:00 at Omi restaurant, Hyatt Regency Jeju to discuss on the various subjects of AWTEC. The future activities of AWTEC together with suggestions and comments to make AWTEC more successful and productive will be deliberated among the OC members from representing countries.

Banquet

The banquet will be held on Nov. 28 (Wed) from 18:30 at Regency Ballroom, Hyatt Regency Jeju. The banquet ticket should be submitted to enter the Regency Ballroom. A limited number of further tickets will be available for purchase at the registration desk at USD 100. The banquet program will include the conference report, awards, traditional performance, announcement of AWTEC 2014 and dinner. For those who cannot join the banquet, please advise the registration desk in advance to confirm the number of people to the Hotel. The formal dress code is recommended for the banquet.

Coffee Break

The coffee with refreshment will be served during coffee break in the middle of sessions; Nov. 28 (Wed) 10:30-11:00 and 15:00-15:20, Nov. 29 (Thur) 10:40-11:00 and 15:00-15:20.

Conference Tour

The conference tour is scheduled on Nov. 30 (Fri) from 09:30 to 15:00. The delegates will visit the smart grid village. A light lunch will be served in the bus right after the visit of the smart grid village. If you want to join the tour, please write your name in the participation list in the registration desk. Two buses will be ready at the gate of Hyatt Regency from 09:10 on Nov. 30 (Fri). The buses will depart at 09:30 without delay to meet the appointed time with the smart grid village visitor's center.

Internet Access

The free wi-fi is accessible in everyplace, Hyatt Regency Jeju without any log-in process.

Assistance and Staff

Conference information and help will be available at the registration desk throughout the conference. There will also be numerous conference helpers spread around the place with Staff badge. Please do not hesitate to ask should you have any questions.

Asia/UK Workshop

Asia/UK Collaboration workshop will be held on Nov. 29 (Thur) from 13:30 to 15:00 at Foyer 1. Any delegate who is interested in welcome to the workshop.

Networking for Business, R&D Collaboration Session

The networking for business, R&D collaboration session will be held on Nov. 28 (Wed) from 16:50 to 18:30 at Terrace Ballroom.

Authors Information

- The oral sessions run in two parallel rooms: Foyer 1 and Foyer 2. Please check your session room before your presentation program.
- The speaker is requested to meet the Chair at the session room before the session program.
- Speakers who have not sent the speaker information sheet need to submit it to the Chair before the session.
- Since the presentation file should be uploaded before the session, the file is to be given to the staff at the registration desk during registration. In this case, the file name must be the paper number with session number.
- Please make sure that your presentation file has been uploaded in the computer right before the session.
- If there is any help you need, please contact the staff who will be available in the session room. There will be two (2) staff persons who can be of assistance in the room.
- The time scheduled for each presentation is about 15 minutes including questions.
- According to the decision of Chair, questions to the speaker are allowed at the end of each presentation or at the end of the session as long as the time permits.
- Both Chair and speakers are requested to respect scheduled times.

DETAIL PROGRAM (NOV. 27-28)

Nov. 27, 2012 (Tue.)		
16:00~18:00	Registration	
17:00~18:00	Welcome Reception at Terrace Ballroom	
18:00~20:00	Organizing Committee Meeting and Dinner at Omi Restaurant	
Nov. 28, 2012 (Wed.)		
08:30~17:00	Registration	
	Regency Ballroom	
09:00~09:15	Opening Ceremony	
	Chair : Young-Ho Lee (Korea Maritime University, Korea)	
	AWTEC Chair - Chul H. Jo (Inha University, Korea.)	
	EWTEC Chair - Cemerón Johnstone (University of Strathclyde, U.K.)	
	KETEP CEO - Namsung An (Korea Institute of Energy Technology Evaluation and Planning, Korea)	
09:15~10:30	U.K. Embassy Counsellor - Frances Wood (U.K. Embassy, Korea)	
	Plenary Session	
	Chair : J.C.L. Chan (City University of Hong Kong, Hong Kong)	
	Status of ocean energy projects in Korea, Young Ho Lee (Korea Maritime University, Korea)	
	Update on U.K. ocean energy activities, Cameron Johnstone (University of Strathclyde, U.K.)	
	Recent acceleration of ocean energy utilization in Japan after 3.11, Takeshi Kinoshita (University of Tokyo, Japan)	
	Tidal energy development and projects in Nova Scotia, Bruce Cameron (Nova Scotia, Canada)	
	Recent development of Scottish ocean energy, Howard Jang (SDI, Scotland)	
Coffee Break (10:30~11:00)		
Conference Room	Foyer 1	Foyer 2
11:00~12:30	(A1) Application of Ocean Energy Chair : Cheng-Han Tsai (NTOU, Taiwan), Co-Chair : Shujie Wang (Ocean University of China, China)	(B1) Tidal Energy Converter Chair : Takeshi Kinoshita (Tokyo University, Japan), Co-Chair : Sutthiphong Srigrarom (University of Glasgow, Singapore)
	A1-1 : Analysis of tidal current energy scenarios in UK and Capital cost of energy Abhinaya Sankaran Iyer*, Andy MacGillivray (Edinburgh University, U.K.), S. Couch (Marine Current Turbines Ltd., U.K.), Mark Winskel, Henry Jeffrey, R. Wallace, Ian Bryden (Edinburgh University, U.K.)	B1-1 : Tidal and ocean current farm concept using floating axis water turbine Hiromichi Akimoto* (KAIST, Korea), Jong-Chun Park, Se-min Jeong, Jaekyung Heo (Pusan National University, Korea), Kenji Tanaka (University of Tokyo, Japan)
	A1-2 : An international network on offshore renewable energy Kate Freeman* (Plymouth University, U.K.)	B1-2 : The added value of offshore expertise in tidal energy generation Enk Meyers* (Bluetec Ltd., Netherlands)
	A1-3 : Study on the applicability of tidal jet generator for marine renewable energy Hee-Su Lee*, Jong-Chun Park, Se-min Jeong, Jae-Kyung Heo (Pusan National University, Korea), Yong-Jin Cho (Dong-Eui University, Korea)	B1-3 : On the scaling-up, hydrodynamic similarity laws of designing vertical hydrokinetic turbines Amir Hossein Birjandi, Eric Bibeau (University of Manitoba, Canada), Jinxing Huang* (NRCAN, Canada)
	A1-4 : Planning and consents for the wave and tidal industry - Managing uncertainty Tamsin Watt, Antonius Cobussen* (NIRAS Consulting Ltd., U.K.)	B1-4 : Three-dimensional effects of vertical-axis tidal turbine Beom-Soo Hyun, Jeong-Ki Lee*, Dae-Hyoung Lee (Korea Maritime University, Korea)
	A1-5 : Progress report on Ocean Energies at Voith Hydro Wolfgang Maier* (Voith Hydro Ocean Current Technologies, Germany)	B1-5 : CFD Prediction of Turbulent Flow on an Experimental Tidal Stream Turbine using RANS modelling James McNaughton*, Stefano Rolfo, David Apsley (University of Manchester, U.K.), Imran Afgan (Air University, Pakistan), Peter Stansby, Tim Stallard (University of Manchester, U.K.)
	A1-6 : Modeling ocean energy technology Jeremy Thake, Ian Godfrey* (IT Power, U.K.)	B1-6 : Numerical simulation of a horizontal axis tidal stream turbine considering the effect of blade deformation Se Wan Park, Sun Ho Park, Shin Hyung Rhee* (Seoul National University, Korea)
Lunch (12:30~13:30)		

DETAIL PROGRAM (NOV. 28)

13:30~15:00	(A2) Wave Energy - Numerical Study <i>Chair : Seung-Ho Shin (KIOST, Korea), Co-Chair : Bruce Cameron (Nova Scotia, Canada)</i>	(B2) Tidal Energy Structure <i>Chair : Hongda Shi (Ocean University of China, China), Co-Chair : Jong Chun Park (Pusan National University, Korea)</i>
	A2-1 : Wave energy generation system <i>David Leb* (Eco Wave Power, Israel)</i>	B2-1 : The composite blades for ANDRITZ HYDRO Hammerfest HS1000 - A case study <i>Joe Summers*, Marcus Royle, Luke McEwen (Gurit UK Ltd., U.K.)</i>
	A2-2 : Investigation of Environmental Conditions and Output Power Assessment of a Floating Pendulum Wave Energy Converter <i>Jiyong Park*, Seung-Ho Shin, Sangho Kim, Young Duk Kim, Keyyong Hong (KIOST, Korea)</i>	B2-2 : Structural design and load analysis of tidal current turbine blades based on laminate theory <i>Shujie Wang*, Xuezhi Zhou, Peng Yuan, Junzhe Tan, Chuanming Sheng (Ocean University of China, China)</i>
	A2-3 : Modeling of point absorber wave energy conversion system for integration into power grid <i>Feng Wu*, Tian Ci Xu, Lin Jun Shi, Ping Ju (Hohai University, China), Xiao-Ping Zhang (University of Birmingham, U.K.), Jing-Dong Han, Jing Fang (Hohai University, China)</i>	B2-3 : Performance Assessment of Drag Force Type Vertical Axis Tidal Current Turbine <i>Kwang-Oh Ko, Chang-Beom Park, Kwang-Hoe Jung, Yong-Uk Ryu* (Hyundai E&C, Korea), Chul H. Jo (Inha University)</i>
	A2-4 : Numerical simulations of a cycloidal wave energy converter <i>Jurgen Seidel*, Casey Fagley, Stefan Siegel (Atargis Energy Corp., U.S.A.)</i>	B2-4 : New concept of floating axis wind turbine assisted by a Savonius turbine in water <i>Hiromichi Akimoto* (KAIST, Korea), Takuju Nakamura, Kentaro Mizumukai (MODEC Co., Ltd, Japan), Yutaka Hara (Tottori University, Japan)</i>
	A2-5 : A study on wave-induced motion of floating pendulum wave energy converter <i>Bo Woo Nam*, Sa Young Hong, Seung-Ho Shin (KIOST, Korea)</i>	B2-5 : Effects of extreme loading and fatigue on reliability of tidal stream turbines blades <i>Dimitri Val*, Daniil Yurchenko (Heriot-Watt University, UK), Leon Chernin (University of Dundee, U.K.)</i>
15:20~16:50	A2-6 : Validation of a new wave energy converter design tool with large scale single machine experiments <i>Ed Mackay, Cruz Joao* (GL Garrad Hassan, Portugal), Chris Retzler (Pelamis Wave Power Ltd., U.K.), Peter Arnold, Elva Bannon (Wavebob Ltd., Ireland), Remy Pascal (Abengoa Seapower SA, Spain)</i>	B2-6 : Numerical study on dynamic responses of fixed type offshore wind turbine substructures <i>Yeon-Seok Park*, Ju-In Kim, Jin-Sung Kim, Chang-Yong Song, Ha-Cheol Song, Wu-Joan Kim (Mokpo National University, Korea), Dae-Yong Lee (RIST, Korea)</i>
	Coffee Break (15:00~15:20)	
	(A3) Ocean Energy Converter Testing <i>Chair : Beom-Soo Hyun (Korea Maritime University, Korea), Co-Chair : Weimin Liu (The First Institute of Oceanography, China)</i>	(B3) Ocean Energy and Mooring <i>Chair : AbuBakr Bahaj (University of Southampton, U.K.), Co-Chair : Sang Ho Oh (KIOST, Korea)</i>
	A3-1 : Tidal Technology and Experience <i>Peter Gnos* (ANDRITZ HYDRO Hammerfest, Austria)</i>	B3-1 : Simulation of hydrodynamical forces on a buoy - a comparison between two computational approaches <i>Linnea Sjökvist*, Jens Engström, Stefan Larsson, Magnus Rahm, Jan Isberg, Mats Leijon (Uppsala University, Sweden)</i>
	A3-2 : Testing of a tidal stream device for the sea near Keelung, Taiwan <i>Cheng-Han Tsai*, Young-Zehr Kehr, Dong-Jiin Doong (National Taiwan Ocean University, Taiwan)</i>	B3-2 : Field test for 100kW floating tidal power system <i>Hyun Chung, Dae-Hee Han* (Ocean Space Inc., Korea)</i>
	A3-3 : A Study on Effect of Longitudinal and Lateral Spaces in Tidal Farm by CFX <i>Chang-Jo Yang, Anh Dung Hoang* (Mokpo Maritime University, Korea)</i>	B3-3 : Design of flexible riser and make a process of design in shallow water <i>Chul H. Jo, Yu Ho Rho*, Do Youb Kim, Seong Jun Hong (Inha University, Korea)</i>
16:50 ~ 18:30	A3-4 : Energy Supply Tower of Hercules by systems of wave energy converters in A Coruna, Galicia, Spain <i>Pilar Arizmendi Gutiérrez, Pedro Fernandez* (University of Polit Madrid, Spain)</i>	B3-4 : Micro-marine energy - the perfect fit for SE Asian coastal communities <i>Josie Close*, Simon Jewell, Tristan de Lataillade (City University of Hong Kong, Hong Kong)</i>
	A3-5 : A parametric study of performance of a horizontal tidal turbine by the blade element momentum theory and 3D CFD simulation <i>Quang-Tri Truong, Patar Ebenezer Sitorus, Hoon Cheol Park*, Taesam Kang, Jung Hwan Kim (Konkuk University, Korea), Jin Hwan Koh, Kwang-Soo Lee, and Tuyen Quang Le (KIOST, Korea)</i>	B3-5 : A Study of Design Procedure of Mooring Line of Floating Type Combined Renewable Energy Platforms <i>Joonmo Choung, Gi-Young Jeon* (Inha University, Korea)</i>
	A3-6 : Ocean Energy Testing in the MARINET framework <i>Abhinaya Sankaran Iyer* (University of Edinburgh, U.K.), Tom McCombes, Ian Bryden, Cameron Johnstone (University of Strathclyde, U.K.)</i>	B3-6 : Current status of ocean renewable energy in the Philippines <i>Michael Lochinvar Abundo* (Nanyang Technological University, Singapore), Renato Goco, Miguel Escoto, Laura David, Cesar Villanoy (UP Diliman, Philippines)</i>
Networking for business, R&D collaboration session at Terrace ballroom		
Regency Ballroom		
Conference Banquet <i>Chair : Josie Close (City University of Hong Kong, Hong Kong)</i>		
18:30~20:30		

DETAIL PROGRAM (NOV. 29)

Nov. 29, 2012 (Thur.)		
08:30~17:00	Registration	
Conference Room	Foyer 1	Foyer 2
09:10~10:40	(A4) Wave Energy - Experiment & Application <i>Chair : L.M.C. Gato (Technical University of Lisbon, Portugal), Co-Chair : Shin Hyung Rhee (Seoul National University, Korea)</i>	(B4) Site Investigation <i>Chair : Chae Joo Moon (Mokpo National University, Korea), Co-Chair : Tai-Wen Hsu (National Taiwan Ocean University, Taiwan)</i>
	A4-1 : Fundamental Experimental Studies of a Floating Double Hull Wave Energy Converting System <i>Byung-Ha Kim*, Mohammed Faizal, Chang-Goo Kim, Nak-Joong Lee (Korea Maritime University, Korea) M. Rafiuddin Ahmed (The University of the South Pacific, Fiji), Young-Ho Lee (Korea Maritime University, Korea)</i>	B4-1 : Assessment of potential tidal in-stream energy sites in Singapore <i>Michael Lochinvar Sim Abundo*, Chew Kok Hon, Martin Koh Wei Xiang, Oh Boon Kiat, Wilbur Tan Hong Huat, Giuseppe Cavallaro (Nanyang Technological University, Singapore)</i>
	A4-2 : Wave cancellation experiments using a 1:10 scale cycloidal wave energy converter <i>Casey Fagley*, Stefan Siegel, Jürgen Seidel (Atargis Energy Corp., U.S.A.)</i>	B4-2 : Design, towing tank test and deployment of full scale GEM, a novel tethered system for harnessing tidal energy <i>Domenico P. Coiro, Giancarlo Troise, Ferdinando Scherillo (University of Naples "Federico II", Italy)</i>
	A4-3 : Alteration of wave energy field due to wave-current interaction in Tsugaru Strait, Japan <i>Ayumi Saruwatari* (Hokkaido University, Japan), David Ingram (Edinburgh University, U.K.)</i>	B4-3 : Overview of wave and tidal current energy research in the South Pacific <i>Mohammed Rafiuddin Ahmed (University of South Pacific, Fiji)</i>
	A4-4 : Model Tests and Numerical Analysis on Conversion Efficiency of Floating Pendular Wave Energy Converter <i>Shuichi Nagata* (Saga University, Japan)</i>	B4-4 : An Overview of Tidal Current Energy in South Jeolla Province, Korea <i>Chang Jo Yang* (Mokpo Maritime University, Korea), Young-Ho Lee (Korea Maritime University, Korea)</i>
	A4-5 : The use of a new low-head orthogonal turbine in marine energy <i>Yuli Shpolyanski, Boris Istorik, Viacheslav Sobolev* (JSC "Scientific-research Institute of Energy Structures", Russia)</i>	B4-5 : Dynamic tidal power for Korea <i>Kees Hulsbergen, Dimitri De Boer* (Consortium POWER/DTP, Netherlands), Gijs Van Banning, Rob Steijn (Arcadis, Netherlands)</i>
	A4-6 : Performance studies on a direct drive turbine for wave power generation in a numerical wave tank <i>Deepak Prasad*, Mohammed Rafiuddin Ahmed (University of South Pacific, Fiji), Young-Ho Lee (Korea Maritime University, Korea)</i>	B4-6 : Modeling the Tidal Current Around the Keelung Sill: A Test Site for Tidal Stream Power Generation <i>Yao-Tsai Lo* (National Taiwan Ocean University, Taiwan), Hsien-Wen Li (Minghsin University, Taiwan), Cheng-Han Tsai (National Taiwan Ocean University, Taiwan)</i>
Coffee Break (10:40~11:00)		
11:00~12:30	(A5) Wave Energy - Structural Design & Modeling <i>Chair : Young-Ho Lee (Korea Maritime University, Korea), Co-Chair : Kwang-oh Ko (Hyundai E&C Inc., Korea)</i>	(B5) Grid Connection & System Aspects <i>Chair : Shuichi Nagata (Saga University, Japan), Co-Chair : Cheol Oh (Korea Maritime University, Korea)</i>
	A5-1 : A preliminary structural analysis of the floating pendulum wave energy converter under wave loadings <i>Jung Min Sohn*, Ho Jeong Cheon, Bo Woo Nam, Seung-Ho Shin, Keyyong Hong (KIOST, Korea)</i>	B5-1 : Energy storage to accommodate in-stream tidal electricity generators on weak distribution grids <i>Sebastian Manchester, Behzad Barzegar, Lukas Swan and Dominic Groulx* (Dalhousie University, Canada)</i>
	A5-2 : Wave energy generation model <i>Yusef Fiener* (Al-Zawia University, Libya), Ayad Al-galal (Tripoli University, Libya)</i>	B5-2 : Hydraulic power transmission of the tidal current turbine <i>Hongwei Liu*, Wei Li, Yonggang Lin, Maoshun Shi, Qukun xu, Hongbin Zhou (Zhejiang University, China)</i>
	A5-3 : Three dimensional modeling of discharge characteristics of sluice and turbine caissons for tidal power <i>Sang-Ho Oh*, Kwang-Soo Lee, Weon-Mu Jeong, Se-Chul Jang (KIOST, Korea)</i>	B5-3 : Tidal current power plant electric power grid connection construction technology <i>Moon Seon Jeong*, Chae Joo Moon, Yi-Yoon Kim, Kyung-Sung Lee, Young Hak Chang (Mokpo National University, Korea)</i>
	A5-4 : A design for an experimental method of a slender riser in OTEC <i>Yong-Ju Kwon*, Byung-Mo Kim, Young-Kyo Seo, Cheol Oh (Korea Maritime University, Korea)</i>	B5-4 : Implementation of a new force multiplier gear for wave power generation <i>Adolfo Ventura* (Universidad Politécnica de Valencia, Spain)</i>
	A5-5 : Preliminary mooring design analysis of a floating wave energy converter <i>Mohammed Asid Zullah, Byung-Ha Kim, Young-Ho Lee* (Korea Maritime University, Korea)</i>	B5-5 : Power take off of turbine generator <i>Yoshikazu Homma*, Takahiro Urai (Bosch Rexroth, Japan)</i>
	A5-6 : Design and performance of an artificial regular and irregular wave simulator <i>A. Ramadan*, M. H. Mohamed, S. M. Abdien (Helwan University, Egypt), S. M. Yousief (Arab Academy for Science and Technology and Maritime Transport, Egypt), A. El Feky (Blue Power, Egypt), A. R. El Baz (Ain-Shams University, Egypt)</i>	B5-6 : How turbulence large scales affect the power output quality of vertical hydrokinetic turbines <i>Amir Hossein Birjandi*, Eric Bibeau, Vijay Chatoorgoon (University of Manitoba, Canada)</i> Detail Program (Nov. 29)

DETAIL PROGRAM (NOV. 29)

Lunch (12:30~13:30)		
13:30~15:00	(A6) Asia/U.K. Collaboration Workshop <i>Chair : Cameron Johnstone (University of Strathclyde, U.K.), Co-Chair : Chul H. Jo (Inha University, Korea)</i>	(B6) Tidal Energy - Numerical Study <i>Chair : Mohammed Rafiuddin Ahmed (University of South Pacific, Fiji), Co-Chair : Deog Hee Doh (Korea Maritime University, Korea)</i>
	A6-1 : Update on ocean energy projects in Incheon metropolitan city <i>Young C. Ahn, Kee B. Yun* (Incheon metropolitan city, Korea)</i>	B6-1 : Interference effect of the multi horizontal axis tidal current power system by numerical and CWC experiment approaches <i>Chul H. Jo, Jun Ho Lee*, Do Youb Kim, Kang Hee Lee (Inha University, Korea)</i>
	A6-2 : UK market opportunities <i>Joseph Hussey*, Bernard McNellis (IT Power, U.K.)</i>	B6-2 : Stereo-Video Methodology for Quantitative Analysis of Fish-Turbine Interactions <i>Linus Hammar*, Jimmy Ehnberg (Chalmers University of Technology, Sweden), Linda Eggertsen (Stockholm University, Sweden), Sandra Andersson (Marine Monitoring Research & Consulting, Sweden) Sverker Molander (Chalmers University of Technology, Sweden)</i>
	A6-3 : Plan & design for 500kW ocean renewable energy hybrid system in Qingdao, China <i>Hongda Shi*, Zhen Liu, Feifei Cao (Ocean University of China, China)</i>	B6-3 : Turbulent loads upon tidal turbines: Comparison between experiment and modeling predictions <i>Michael Corsar* (Cranfield University, U.K.)</i>
	A6-4 : High resolution numerical modeling for tidal turbine wake turbulence <i>Tom McCombes*, Cameron Johnstone (Strathclyde University, U.K.)</i>	B6-4 : CFD study of a ducted crossflow turbine concept for high efficiency tidal current energy extraction <i>In-cheol Kim*, Joji Wata (Korea Maritime University, Korea), Mohammed Rafiuddin Ahmed (University of South Pacific, Fiji), Young-Ho Lee (Korea Maritime University, Korea)</i>
	A6-5 : Prosperity fund project : UK-Korea ocean energy technology cooperation <i>Bernard McNellis (IT Power, U.K.), Eunjeoung Kim (British Embassy Seoul, Korea), Young-Ho Lee* (Korea Maritime University, Korea)</i>	B6-5 : Numerical simulation on performance characteristics of a Shrouded tidal current turbine <i>Huihui Sun*, Kyojuka Yusaku (Kyushu University, Japan)</i>
15:20~16:50	A6-6 : The Benefits of a Marine Renewable Test/Demonstration centre <i>Richard Morris (EMEC Ltd., U.K.)</i>	B6-6 : Numerical Study on the Performance of Hydropower Turbine for the System Utilizing Tidal Jet Generator <i>Se-min Jeong, Jong-Chun Park*, Hee-Su Lee, Jae-Kyung Heo (Pusan National University, Korea), Yong-Jin Cho (Dong-Eui University, Korea)</i>
Coffee Break (15:00~15:20)		
15:20~16:50	(A7) Ocean Energy Resources <i>Chair : Mann-Eung Kim (Korean Register of Shipping, Korea) Co-Chair : Joonmo Choung (Inha University, Korea)</i>	(B7) Tidal Energy - Interference Effect <i>Chair : Richard Morris (EMEC Ltd., U.K.) Co-Chair : Chang Jo Yang (Mokpo National Maritime University, Korea)</i>
	A7-1 : High power extracted from flexible flapping tidal generator <i>Tuyen Quang Le, In suk Han (KIOST, Korea), Soo Hyung Park (Konkuk University, Korea), Jin Hwan Ko (KIOST, Korea)</i>	B7-1 : Mechanical performance analysis and structure optimization of support structure of horizontal axis tidal current turbine <i>Shujie Wang*, Shiqiang Xu, Peng Yuan, Junzhe Tan (Ocean University of China, China)</i>
	A7-2 : Turbulence measurements using non-acoustic sensors in a high-flow tidal channel <i>Fabian Wolk, Jeremy Hancyk*, Rolf Lueck Rockland (Scientific, Canada)</i>	B7-2 : Study on the ocean current and tidal current power generation system using multi rotors <i>Yoshimasa Minami* (National Maritime Research Institute, Japan)</i>
	A7-3 : Tidal in-stream energy potential of the Philippines: An initial estimate <i>Mario L. Buhali Jr., Ma. Rosario C. O. Ang, Enrico C. Paringit, Cesar Villanoy (University of the Philippines, Philippines), Michael L. S. Abundo* (Nanyang Technological University, Singapore)</i>	B7-3 : Research on the interaction effect on horizontal axis tidal current turbine arrays in the tidal power farm <i>Junzhe Tan*, Shujie Wang, Peng Yuan, Linjie Li, Baina An (Ocean University of China, China)</i>
	A7-4 : Current Status of Wind Power Industry & Offshore Wind Project in Korea <i>Jinki Sung (KETEP, Korea)</i>	B7-4 : Performance estimation of a tidal current turbine operated in wake region <i>Chul H. Jo, Jun Ho Lee, Do Youb Kim, Kang Hee Lee* (Inha University, Korea)</i>
	A7-5 : Experimental investigation of the biradial self-rectifying air turbine for wave energy converters <i>L.M.C. Gato*, A.F.O. Falcao, E.P.A.S. Nunes (Technical University of Lisbon, Portugal)</i>	B7-5 : Analysis of Tidal Current Energy Estimation and Momentum Balance at the Seokmo Channel of Gyeonggi Bay during Spring and Neap Tidal Cycle <i>Nakyong Choi*, Seung-Buhm Woo (Inha University, Korea)</i>
16:50~17:00	A7-6 : Blue Ocean for Blue Biotechnology - Marine Power Plant Complex with Marine Bioenergy <i>Choul-Gyun Lee* (Inha University, Korea)</i>	B7-6 : Dynamic Response Analysis of the CoRMaT Turbine when Deployed within a Working River Environment <i>Stephanie Ordonez* (University of Strathclyde, U.K.), Cameron Johnstone, Dave Pratt (Nautricity Limited, U.K.), Andrew Grant, Catherine Gracie (University of Strathclyde, U.K.)</i>
Closing Announcement		

DETAIL PROGRAM (NOV. 30)

Nov. 30, 2012 (Fri.)	
9:30~15:00	Conference Tour : Smart Grid Village

Note : 1. The buses for the conference tour will depart at 9:30 from the main entrance of Hyatt Regency Jeju.

2. The time of return to Hyatt Regency Jeju from the conference tour is expected around 15:00. However, this will be flexible as per the site condition.

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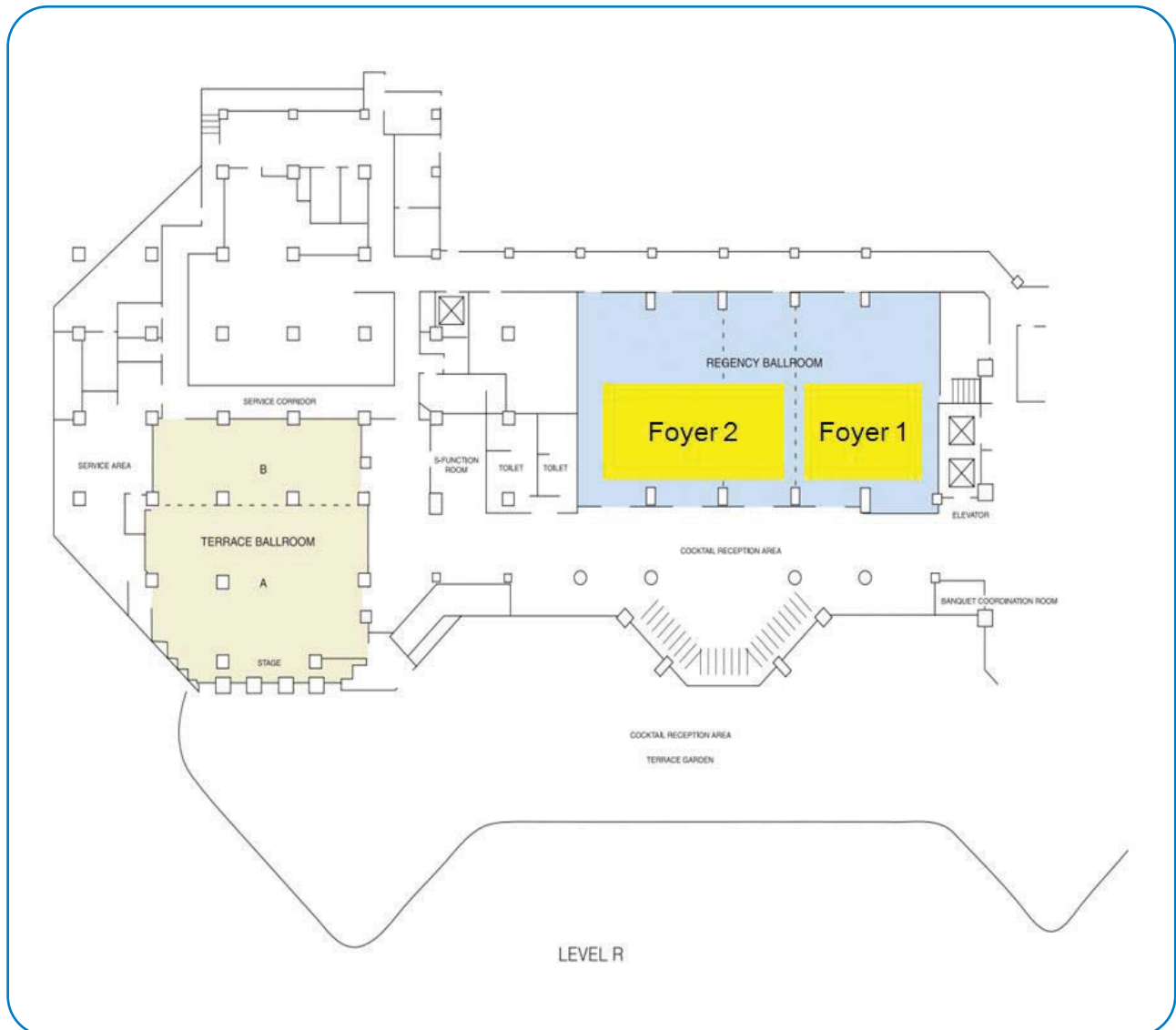
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