1. Title of Seminar:

Joint seminar on offshore renewable energy utilization in Japan and Korea

2. Period of Seminar: From August 30, 2013 To August 30, 2013

1 day

3. Place of Seminar: Tokyo, Japan

4. Total Budget

a. Financial Support by JSPS: Total amount: 467,236 yen

b. Other Financial Support: Total amount: 0 thousand yen

5. Co-Organizers

a. Japanese Organizer

<table>
<thead>
<tr>
<th>Name</th>
<th>Kokichi Iizasa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institution/Department</td>
<td>Department of Ocean Technology, Policy, and Environment</td>
</tr>
<tr>
<td></td>
<td>University of Tokyo</td>
</tr>
<tr>
<td>Position</td>
<td>Professor</td>
</tr>
</tbody>
</table>

b. Korean Organizer

<table>
<thead>
<tr>
<th>Name</th>
<th>Soonhung Han</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institution/Department</td>
<td>Division of Ocean Systems Engineering</td>
</tr>
<tr>
<td></td>
<td>KAIST</td>
</tr>
<tr>
<td>Position</td>
<td>Professor</td>
</tr>
</tbody>
</table>
6. Participants

a. List of Japanese-side Participants (Except for Organizer)

<table>
<thead>
<tr>
<th>Name</th>
<th>Institution/Department</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ken Takagi</td>
<td>Dept. Ocean Tech., Policy, &amp; Env., Univ. Tokyo</td>
<td>Professor</td>
</tr>
<tr>
<td>Masahiko Ozaki</td>
<td>Dept. Ocean Tech., Policy, &amp; Env., Univ. Tokyo</td>
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<tr>
<td>Toru Sato</td>
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<td>Hajime Yamaguchi</td>
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<tr>
<td>Takiji Waseda</td>
<td>Dept. Ocean Tech., Policy, &amp; Env., Univ. Tokyo</td>
<td>Associate Professor</td>
</tr>
<tr>
<td>Shinichiro Hirabayashi</td>
<td>Dept. Ocean Tech., Policy, &amp; Env., Univ. Tokyo</td>
<td>Lecturer</td>
</tr>
<tr>
<td>Shigeru Tabeta</td>
<td>Dept. Ocean Tech., Policy, &amp; Env., Univ. Tokyo</td>
<td>Associate Professor</td>
</tr>
<tr>
<td>Sangyun Lee</td>
<td>Dept. Ocean Tech., Policy, &amp; Env., Univ. Tokyo</td>
<td>Assistant Professor</td>
</tr>
<tr>
<td>Tetsuya Ishihara</td>
<td>Dept. Ocean Tech., Policy, &amp; Env., Univ. Tokyo</td>
<td>Postgraduate Student</td>
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<tr>
<td>Akitaka Miyamura</td>
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</tr>
<tr>
<td>Shigesuke Ishida</td>
<td>National Maritime Research Institute</td>
<td>Group Leader</td>
</tr>
<tr>
<td>Tomoki Taniguchi</td>
<td>National Maritime Research Institute</td>
<td>Researcher</td>
</tr>
<tr>
<td>Toshichi Chujo</td>
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<tr>
<td>Kentaro Kokubun</td>
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</tr>
<tr>
<td>Megumi Shiokari</td>
<td>National Maritime Research Institute</td>
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b. List of Korean-side Participants (Except for Organizer)

<table>
<thead>
<tr>
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<tr>
<td>JinWhan Kim</td>
<td>Division of Ocean Systems Engineering, KAIST</td>
<td>Associate Professor</td>
</tr>
<tr>
<td>Hiromichi Akimoto</td>
<td>Division of Ocean Systems Engineering, KAIST</td>
<td>Visiting Professor</td>
</tr>
<tr>
<td>Yutaek Seo</td>
<td>Division of Ocean Systems Engineering, KAIST</td>
<td>Associate Professor</td>
</tr>
<tr>
<td>Keyeong Hong</td>
<td>Korea Institute of Ocean Science and Technology</td>
<td>Department Director</td>
</tr>
<tr>
<td>Kim, ImGyu</td>
<td>Division of Ocean Systems Engineering, KAIST</td>
<td>Postgraduate Student</td>
</tr>
<tr>
<td>Cho, Seonggil</td>
<td>Division of Ocean Systems Engineering, KAIST</td>
<td>Postgraduate Student</td>
</tr>
<tr>
<td>Kim, San</td>
<td>Division of Ocean Systems Engineering, KAIST</td>
<td>Postgraduate Student</td>
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<tr>
<td>Kim, Hyo Jin</td>
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<td>Yoo, Byunghyun</td>
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<td>Lee, HoJang</td>
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<td>Choi, MinJoo</td>
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<td>Ko, Donghyeong</td>
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<td>Kim, HyunChul</td>
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<tr>
<td>Oh, Junghwan</td>
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<td>Postgraduate Student</td>
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<tr>
<td>Kim, Jak Yong</td>
<td>Division of Ocean Systems Engineering, KAIST</td>
<td>Postgraduate Student</td>
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</tbody>
</table>

c. List of Other Countries’ Participants

<table>
<thead>
<tr>
<th>Name</th>
<th>Institution/Department</th>
<th>Position</th>
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</thead>
</table>

Number of Participants:

Japanese: 34  Korean: 16  Others: 0
7. Objective of Seminar

Japan and Korea are in the similar condition in the utilization of offshore renewable energy. Because of the close locations of the two countries, they share the same technical challenges of survivability in typhoon and tsunami, rapid biofouling of submerged devices and tough negotiation with local fishery etc. These conditions may lead to quite different results of optimized design and economic performance of energy capturing devices from those of Europe and US.

The progress of renewable energy researches in Japan is remarkable after the Tohoku earthquake followed by tsunami and the long maintenance break of nuclear power plants due to the concern of increased risk. Also, in Korea, there is a significant shift of investments from shipbuilding to ocean plant because of the concern of weak profitability of ship building in a medium-term range. In the condition, wind turbine is considered to be one of prosperous fields of future exports. However, because of the rapid increase of researchers in the field and insufficient network to foreign research projects, it shows a little disordered state. Although the research of renewable energy is increasingly active, offshore renewable energy is still a new field. The high cost of floating platform and survival condition in rough sea provide new challenges those cannot be solved by land based engineering.

The purpose of seminar is to share the knowledge and existing problems of ocean renewable energy related to the sea conditions around Korea and Japan. In addition to the East Asian specific sea conditions, the matured shipbuilding industry of two countries can differentiate the cost prediction of energy capturing devices from those of European and US projects. The exchange of state of the art technology in offshore renewable energy will be very beneficial to academic and industrial sectors of two countries. Also, it will provide opportunity of enhanced communication between them for the future international collaborations.

Another object of this seminar is to encourage students and young researchers by giving them opportunities to present their researches in the international seminar. The performance in the student poster session is evaluated by professors and students with good performance are awarded. Future collaborations among young researchers are also expected.
8. Schedule and Topics of Seminar

Seminar Schedule (Please also see the attached program)

Morning Session (General Topics on Ocean Engineering)
Opening Remark and Annual Report of OTPE, Ken Takagi (UT),
Annual Report of OSE, SoonHung Han (KAIST)
Scope of Ocean Development Engineering Laboratory, Kokichi Iizasa (UT)
Ship Route Optimization in Ice Navigation Considering Measurement Uncertainties,
Minju Choi (UT), Hyun Chung (KAIST), Hajime Yamaguchi (UT)
A High-Resolution Hindcast Study for the Northern Sea Route, Liyanarachchi
Waruna Arampath De Silva (UT), Hajime Yamaguchi (UT)
Hydroelastic Design Contour for the Preliminary Design of Pontoon-Type VLFS,
Seong-Pil Cho (KAIST), Jin-Gyun Kim (KAIST), Phill-Seung Lee (KAIST)

Student Poster Session 1

Afternoon Session 1 (Offshore Wind Energy)
Introduction of the Research Activities in NMRI – Focused on Floating Offshore Wind
Turbine –, Shigesuke Ishida (NMRI)
Study of Motion Characteristics of Floating Offshore Wind Turbine with Three Types
of Floaters, Ken Haneda (NMRI)
An Experimental Study on Stability of a Semi-Submersible Hull Type Floating
Offshore Wind Turbine, Tomoki Taniguchi (NMRI)
Effect of Blade Pitch Control for Floating Offshore Wind Turbine, Toshiki Chujo
(NMRI)
A Study of Effects of Earthquake and Tsunami on Floating Offshore Wind Turbine,
Kentaroh Kokubun (NMRI)
Survey on the Underwater Noise from the Bottom Fixed Offshore Wind Turbine
during Construction, Megumi Shiokari (NMRI)

Student Poster Session 2

Afternoon Session 2 (Wave and Ocean Current)
Recent Progress and Future Plan of Renewable Ocean Energy R&D in MOERI,
Keyyong Hong (KIOST)
Wave Energy Converter Test Site at an Island South of Tokyo, Takuji Waseda (UT),
Keiji Kiyomatsu (UT)
Research Projects of Ocean Renewable Energy in KAIST, Hiromichi Akimoto (KAIST)
A Site Selection for Ocean Current Power Generation System and Physical Processes
in Ocean around the Prospective Site, Tsubasa Kodaira (UT)
Surface & Internal Waves in Two Layered Fluids, Donghyeong Ko (KAIST), Yeunwoo
Cho (KAIST)

Poster Session Award Ceremony

Closing Remark