LNG Bunkering & Training Challenges

Dr Evangelos Boulougouris
University of Strathclyde

Technology and Innovation Centre
14th-16th September 2015
Glasgow
Welcome to the OTMW-N Project Conference on **LNG Bunkering & Training Challenges**

- 3 Days of presentations from leading experts
- 20 Presentations
- A great opportunity for the Academia & the Industry to discuss the future and the challenges of LNG fuelled ships
<table>
<thead>
<tr>
<th>Time</th>
<th>Programme</th>
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<tr>
<td>12:00</td>
<td>Registration &amp; Coffee</td>
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<tr>
<td>12:45</td>
<td>Chairman’s Opening Remarks&lt;br&gt;Dr. Evangélos Boulaougouris, Strathclyde</td>
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<td>University</td>
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<td>13:00</td>
<td>Opening address and welcome speeches&lt;br&gt;Professor Sandy Day, Head of</td>
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<td>Department NAOME, Strathclyde University</td>
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<td>13:15</td>
<td>Maritime education and training&lt;br&gt;Dr Nicola Crawford, City of Glasgow</td>
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<td>College</td>
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<td>13:45</td>
<td>LNG Investment Assessment Scheme&lt;br&gt;Miss Eleni Filippi, Ocean Finance</td>
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<td>14:15</td>
<td>Considerations regarding Ship to Ship Bunkering Procedures of LNG fueled</td>
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<td>vessels&lt;br&gt;Mr Ioannis Bakas, EPE</td>
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<td>15:00</td>
<td>Lunch</td>
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<td>16:00</td>
<td>Contributing to building awareness on LNG training: a two-folded goal&lt;br&gt;</td>
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<td>Dr. Giacomo Benedetti, University of Genoa</td>
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<td>16:30</td>
<td>The onthemosway.eu&gt;<a href="http://onthemosway.eu">http://onthemosway.eu</a> portal: Knowledge, Training and</td>
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<td>Information Center&lt;br&gt;Ms Valeria Burlando, Circle</td>
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<td>17:00</td>
<td>Chairman’s Closing Remarks</td>
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<td>End of the day</td>
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<td>09:00</td>
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<td>09:30</td>
<td>LNG fuelled vessels: where are we? Rosetti Marino Shipyard’s point of view,</td>
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<td>concerns about training needs&lt;br&gt;Mr. Mattia Raimondi, Rosetti Marino</td>
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<td>Shipyard</td>
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<td>10:00</td>
<td>SGMF and its role in training&lt;br&gt;Mr David Haynes, SGFM</td>
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<td>10:45</td>
<td>Effective firefighting strategies for LNG during bunkering&lt;br&gt;Dr. Dimitrios</td>
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<td>Daliklis, World Maritime University</td>
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<td>11:15</td>
<td>Networking Refreshment Break</td>
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<td>11:45</td>
<td>The LNG supply chain scenarios: the downstream from port to land&lt;br&gt;Mr</td>
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<td>Pacciardi Simone, La Spezia Port Authority</td>
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<td>12:30</td>
<td>LNG Bunker Checklists; Criticality of Personnel &amp; Arrangements&lt;br&gt;Mr</td>
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<td>Jarrod DeWitz, World Maritime University</td>
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<td>13:15</td>
<td>Everything you ever wanted to know about LNG, but were afraid to ask –</td>
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<td>Part I&lt;br&gt;Mr James Ashworth, TRI-ZEN International Pte Ltd</td>
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<td>14:00</td>
<td>Lunch</td>
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<td>15:00</td>
<td>LNG as marine fuel – The market and Technologies&lt;br&gt;Mr Tomas Aminoff,</td>
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<td>16:00</td>
<td>LNG awareness and training of port personnel&lt;br&gt;Mr Ola Jøslin, Head of</td>
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<td>Energy Ports at the Port of Stockholm</td>
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<td>LNG as runner in the marathon of alternative fuels of Marine Industry&lt;br&gt;Mr Muhammad A Shafique, City of Glasgow College</td>
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<td>10:00</td>
<td>Everything you ever wanted to know about LNG, but were afraid to ask – Part II&lt;br&gt;Mr James Ashworth, TRI-ZEN International Pte Ltd</td>
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<td>11:00</td>
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<td>11:30</td>
<td>Crew operation to enhance energy efficiency on-board&lt;br&gt;Professor Osman Turan, Strathclyde University</td>
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<td>12:00</td>
<td>LNG - To risk or not to risk&lt;br&gt;Dr Iraikis Lazakis, Strathclyde University</td>
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<td>12:30</td>
<td>LNG fuelled ships - Future undergraduate and postgraduate courses requirements&lt;br&gt;Dr Gerasimos Theotokatos, Strathclyde University</td>
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<td>13:00</td>
<td>Open Discussion</td>
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**End of the day**
On The MoS Way Network (OTMW-N)
Upcoming regulations on the reduction of CO2 footprint in the shipping industry lead ship owners to search for alternative energy sources and new technologies.

LNG is a solution as it is a very clean energy source at low price and high safety standards.

There is a clear need for training and capacities building and interest from the sector's stakeholders.
Objectives

To promote:

• The use of LNG fuel as a **cheap** and **clean** fuel for the shipping industry aiming to:
  • Reduce transport cost
  • Meet the tight emission limits

• The understanding and the appreciation of the **pros** and **cons** of LNG’s use as a marine fuel

• Developing a new culture in all the actors (onboard and offshore) to understand their role to the **safe operation** of LNG fuelled ships

• To bridge the **different perspective** that the crew onboard and at the port have, creating a common understanding.
Partners

- City of Glasgow College
- Università Degli Studi di Genova
- Circle Srl
- Authorita' Portuale Della Spezia
- World Maritime University
- Environmental Protection Engineering S.A
- OceanFinance
Training Modules

• Module 1: LNG fuelled vessels design training (6th July to 10th July 2015- University of Strathclyde)

• Module 2: Safety of LNG handling on plant, bunkering station and on board vessels (7th September to 11th September 2015- World Maritime University)

• Module 3: LNG cargo and ballast management training on LCHS simulator (Mid October-City of Glasgow College)

• Module 4: Manoeuvring of LNG driven vessel, special conditions and operations (Late October- City of Glasgow College)

• Module 5: Propulsion and power generation training of LNG driven vessel (Late October-EPE-Ocean Finance-University of Strathclyde)
Module 1 ‘LNG Fuelled Vessels Design Training’
1. Background-Environmental Regulations
2. Shipping Industry Overview
3. Compliance Strategies of Owners with the Regulations
4. LNG Supply Chain
5. Design of LNG Fuelled Vessels
6. Case Studies-Existing Vessels Powered with LNG
7. Standards and Guidelines for Natural Gas Fuelled Ship Projects
**IT tools**

- **Local Students:**
  - In classroom presentations and tutorials
- **Distant Learning Students**
  - Use of Spontania for real-time participation to the courses (available for Microsoft, Mac & Android platforms)
- **All lectures are recorded and uploaded for future use by the registered students**
Local & Distance Learning Students

- Total Number of Students: 26

- Countries:
  - UK
  - Greece
  - Italy
  - Sweden
  - Croatia

![Pie Chart]

- Local Students: 62%
- Distance Learning Students: 38%
Assessment Results

LNG Bunkering & Training Challenges
THANK YOU!