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## **PRESS RELEASE**

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## **Ecospec and leading players from maritime industry reinforce commitment to sustainable marine transportation**

- *Conference attendees briefed by leading maritime companies on key environmental issues affecting the industry*
- *Ecospec presented CSNOx<sup>TM</sup>, the first commercially viable solution to scrub greenhouse gases and exhaust pollutants all in one process and in a single system*

**SINGAPORE – 19 March 2009 – Ecospec Global Technology Pte Ltd (“Ecospec”)**, together with leading players from the maritime industry, today drove home the message on sustainable marine transportation to over 100 key business and opinion leaders at the “*Green Business on Blue Oceans – Environmentalist Dream or Commercial Reality?*” conference.

Organized by the Royal Norwegian Embassy, Innovation Norway and the Norwegian Business Association, Singapore (NBAS), the half-day event highlighted the increasingly pressing issue of sustainability in the global shipping industry which is faced by many Norwegian and Singapore maritime companies today.

The conference also saw leading Norwegian maritime companies joining forces with their Singapore counterparts to discuss the issue, and attendees learnt more about Ecospec's CSNOx<sup>TM</sup>, the first-in-the-world and commercially viable solution available today that will enable them to fulfill their roles as good corporate citizens in protecting the environment.

Following the introduction by Mr Bjorn O. Tonsberg, Norwegian Business Association (Singapore) and opening address from H.E. Janne Julsrud, Ambassador to Singapore, Royal Norwegian Embassy, the speakers and attendees dived right into the enthralling discussion, where the issue was tackled from different perspectives. Rounding up the discussion was Mr Chew Hwee Hong, Managing Director and Founder of Ecospec, who gave the conference attendees a detailed introduction of CSNOx<sup>TM</sup> and its unique method of scrubbing greenhouse gases and exhaust pollutants in ships all in one process and in a single system.

Mr Chew also shared the results of the CSNOx<sup>TM</sup> pilot test, which was performed on board an ocean-going supertanker with the American Bureau of Shipping ("ABS") and a leading tanker company in December 2008, in which the device was shown to have over 90%, 80% and 70% efficiency for scrubbing sulphur dioxide ("SO<sub>2</sub>"), nitrogen oxide ("NOx") and carbon dioxide ("CO<sub>2</sub>") respectively.

"Following the successful pilot test, the CSNOx<sup>TM</sup> is currently undergoing a second round of tests on board an ocean-going supertanker for type-approval by ABS. The test is going well and we hope to get the CSNOx<sup>TM</sup> type-approved in the near future, so that we can actively roll out the CSNOx<sup>TM</sup> to our prospective customers in the shipping industry," said Mr Chew.

### ***Ecospec's CSNOx<sup>TM</sup>***

In January 2009, Ecospec introduced CSNOx<sup>TM</sup>, a first-in-the-world and commercially viable process capable of reducing CO<sub>2</sub>, SO<sub>2</sub>, NOx and Particulate Matters ("PM") emitted by ships in a single system. Briefly, the CSNOx<sup>TM</sup> treats seawater and uses it to scrub all the greenhouse gases and exhaust pollutants from emissions when fuel oil is burned by a ship's engine.

The CSNOx<sup>TM</sup> increases the pH level or alkalinity of seawater to approximately pH 10 to buffer and neutralize the acidifying effect from CO<sub>2</sub>, SO<sub>2</sub>, and NO<sub>x</sub> scrubbing. This is achieved by utilising an Ultra Low Frequency wave assisted electrolysis treatment process to make seawater more reactive and effective in the absorption of CO<sub>2</sub>, SO<sub>2</sub>, and NO<sub>x</sub>. At the end of the process, alkalinity of seawater reverts back to original and there are no harmful secondary pollutants discharged into the environment, while PM is separated out as solid waste and removed from the ship at the port.

More importantly, the scrubbing process by CSNOx<sup>TM</sup> is achieved at a net carbon credit gain, meaning there is no net increase in CO<sub>2</sub> to the atmosphere. The CSNOx<sup>TM</sup> also does not discharge any acidic water into the sea, and in fact, it is the only process that can reverse seawater acidification as ships can release their discharge water, which has a healthy alkalinity of around pH 8 post-scrubbing, back into the sea.

“CSNOx<sup>TM</sup> is highly cost-effective and its compact design enables installation on ships where space is limited. Going forward, there are immense potential for other onshore and offshore applications as CSNOx<sup>TM</sup> can also be deployed in other sectors, such as oil and gas, offshore exploration and production, and power generation,” said Mr Chew.

Typically a container ship with 50 MW power will need to spend between S\$5 million and S\$10 million for a solution that removes SO<sub>2</sub>, other gases and PM. Hence, CSNOx<sup>TM</sup> is likely to appeal to shipowners as it is compact and the system costs only a fraction of what is currently available in the market.

The market potential for CSNOx<sup>TM</sup> is also estimated to be substantial, as the latest Clarkson Report lists the world cargo fleet at about 55,500 ships, while ABS has about 10,600 ships in class.



*Mr Chew Hwee Hong,  
Managing Director & Founder,  
Ecospec Global Technology*

### ***About Ecospec Global Technology***

Ecospec is a Singapore technology company that develops cost effective solutions for solving pressing environmental issues in the water, energy and marine industries. Founded in 2001, Ecospec has since established itself as a pioneer and global market leader in advanced non-chemical water and oil treatment technologies, with more than 10 technology patents filed or granted to date.

The Group's R&D capabilities cover basic research in non-chemical water and oil treatment, and application development in Singapore, plus electronic and hardware research at its ISO17025 laboratory facility in China. In addition, Ecospec has a worldwide presence spanning Singapore, China, India, Indonesia, Thailand, the Far East, Europe, Central America and USA.

In January 2009, Ecospec introduced **CSNOx<sup>TM</sup>**, a first commercially viable process capable of reducing carbon dioxide, sulphur dioxide, nitrogen oxide, and particulate matter emitted by ships all in one process and in a single system. The scrubbing by CSNOx<sup>TM</sup> is achieved at a net carbon credit gain without a net increase in CO<sub>2</sub> to the atmosphere, no acidifying of the ocean, and with no other secondary pollutants or harmful substances discharged into the sea. CSNOx<sup>TM</sup> is also highly cost-effective and its compact design enables installation on ships, with immense potential for onshore applications in the near future.

### **Appendix: Conference Programme**

1. Addressing the Environmental Challenges for Shipping and Port Activities  
*BG (NS) Tay Lim Heng, Chief Executive, Maritime and Port Authority of Singapore (MPA)*
2. Shipping and the Environment - Setting the Course  
*Mr. Sturla Henriksen, Managing Director, Norwegian Shipowners' Association*
3. Reducing Environmental Impact from an NOL/APL Point of View – A major Operator's Experience  
*Capt. Tey Yoh Huat, Vice President - Technical Services, APL Co. Pte. Ltd.*
4. Shipping in an Environmental Perspective; How DNV is responding to Owners' Requirements  
*Mr Helge Kjeøy, Regional Manager Maritime and Vice President, Det Norske Veritas (DNV)*
5. Green Ships Vessel Performance Technology  
*Mr Lasse Brynsrud, Sales Manager Merchant Marine Asia, Kongsberg Maritime*
6. Turning Vision Into Reality; Ulstein's Contribution to Sustainable Maritime Transportation  
*Mr Tore Ulstein, Deputy CEO, Ulstein Group*
7. The Wilhelmsen Group; A Total Provider of Environmental Solutions for Ships  
*Mr Iver Iversen, Business Development Director, Wilhelmsen Ships Equipment*
8. Cleaning up the Ocean for Bluer Skies  
*Mr Chew Hwee Hong, Managing Director, Ecospec Global Technology Pte. Ltd.*

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