MEDIA RELEASE

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EMA in S$10 million Partnership Renewal with Sembcorp for R&D and Manpower Development

Announced today by Minister for Trade & Industry Chan Chun Sing at the Singapore International Energy Week (SIEW) 2018, the Energy Market Authority (EMA) and Sembcorp Industries (Sembcorp) have renewed a S$10 million partnership. This will involve initiatives to catalyse Research and Development (R&D) and to develop new capabilities in Singapore's energy sector.

2. The S$10 million renewal this year will take EMA and Sembcorp's joint commitment to over S$20 million to date. The refreshed Sembcorp-EMA Energy Technology Partnership (SEETP) will allow Sembcorp and EMA to encourage the translation and commercialisation of R&D solutions in areas of strategic interest to Singapore. Researchers and companies will have the opportunity to develop new technologies that could potentially be test-bedded at Sembcorp's facilities. They can also leverage on Sembcorp's strong business networks for commercialisation.

3. Thus far, S$10 million in grants have been awarded under the SEETP to three R&D projects, of which two teams are from A*STAR's Institute for Infocomm Research (I^2R), and one team from the Nanyang Technological University, Singapore (NTU Singapore). Announced by Minister Chan today, the awardees will develop solutions to:

i. Enhance the efficiency of pipeline inspections via autonomous vehicles and automation (I^2R);
ii. Recover low-grade waste heat and enhance energy efficiency at industrial plants (NTU Singapore); and
iii. Automate plant boiler inspections through online condition monitoring and data science (I^2R).

(Details of the projects are in the ANNEX.)

4. Research teams for the three projects will comprise local small and medium enterprises, such as optical microspectroscopy solutions provider TechnoSpex and aerospace precision engineering firm Flare Dynamics. These companies will, respectively,

help to develop local capabilities in real-time plant boiler inspection and the use of autonomous vehicles to monitor pipelines.

5. Aside from supporting R&D through the SEETP, there is also a need to build a pipeline of future-ready talent to support the evolving needs of the energy sector. EMA and Sembcorp are working together to attract young people to explore careers in the energy sector. One avenue is through the Sembcorp-EMA Energy Challenge (SEEC). This incorporates an energy-related gaming competition, learning journeys and internship opportunities for students from Institutes of Higher Learning (IHLs).

6. The SEEC competition aims to give participants a taste of solving real-world issues that power sector professionals face in the course of their work. The experiential learning journeys take students to sites generally inaccessible to the public, such as the Pulau Ubin Micro-grid Test-bed and Sembcorp’s energy facilities. These visits will allow students to interact with engineering professionals and gain a richer understanding of the energy sector. Over the past three years, more than 300 students from various IHLs have benefited from the SEEC.

7. On the significance of the partnership, EMA's Chief Executive, Mr Ngiam Shih Chun, said: "Our partnership with Sembcorp will help to catalyse R&D innovations to enhance the resilience of Singapore's energy sector. To make this possible, we are also working to nurture a future-ready and competent workforce to keep the lights on for Singapore."

8. Matthew Friedman, Chief Digital Officer at Sembcorp Industries, said: "As a homegrown energy player with over two decades in Singapore’s power and utilities market, Sembcorp is thrilled to extend our partnership with EMA in supporting R&D, and developing a new generation of future energy professionals. Our joint initiatives with EMA are in line with Sembcorp’s belief in technology and innovation, attracting good talent and giving back to our community. They will also help to support the long-term growth of Singapore’s energy sector."

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ANNEX

ABOUT R&D PROJECTS AWARDED GRANTS UNDER THE SEETP

No.	Title	Description	Project Team
1.	An Online Process Monitoring Scheme to Improve the Accuracy of the Tube Boiler Inspection Process.	**Current situation:** The current method of inspecting boiler tubes for defects requires significant downtime, which represents substantial lost revenue. **Aim:** To develop an online condition monitoring system that will allow for automated plant boiler inspections. The system is capable of detecting the onset of boiler defects by employing innovative sensors, data analytics, and machine learning technologies. The aim of the system is to reduce inspection time and hence, overall downtime of the boiler.	**Principal Investigator:** Dr Emily Hao Jianzhong, Institute for Infocomm Research (I^2R) **Co-Investigators:** • Dr Li Xiaoli, I^2R • Dr Xiang Shili, I^2R • Dr Wang Yixin, I^2R • Dr Jiang Wenyu, I^2R • Assoc Prof Steven Hoi, Singapore Management University **Collaborator:** Dr. Eddie Tan K M, TechnoSpex Pte Ltd

2.	Automated Pipeline Monitoring with Unmanned Aerial Imaging System	**Current situation:** Aboveground pipeline condition monitoring and inspection currently requires considerable manpower and capital **Aim:** To develop an autonomous unmanned aerial vehicle (UAV), equipped with video cameras and sensors, capable of performing automated visual inspection and leak detection for pipelines. The aim is for the system to cover large areas with minimal manpower, thus significantly reducing operational costs.	**Principal Investigator:** Dr Zheng Jinghong, I^2R **Co-Investigators:** • Mr Lu Weiyao, Flare Dynamics Pte Ltd • Mr Kevin Young, DNV GL

3.	Development of Absorption Chiller System with Optimised Heat Exchange Network for High Utilisation of Low Grade Waste Heat	**Current situation:** Many industry processes consume enormous amounts of energy and release large amounts of waste heat. Current heat recovery systems are often inefficient as a significant amount of useful waste heat is released to the environment. There are opportunities to harness this low-grade waste heat and convert it into useful resources such as electricity and chilled water. **Aim:** To develop a novel absorption chiller with seawater cooling and other innovative features. The aim of the system is to enhance overall efficiency of an industrial plant by enabling recovery of low-grade waste heat to produce chilled water.	**Principal Investigator:** Prof Yang Chun Charles, Nanyang Technological University, Singapore (NTU Singapore) **Co-Investigator:** Assoc Prof Tong Yen Wah, National University of Singapore **Collaborator:** Prof Wang Ruzhu, Shanghai Jiao Tong University