

PRESS RELEASE

30 October 2018

TWO NEW CONSORTIA TO ACCELERATE ADOPTION OF NEW TECHNOLOGIES IN THE ENERGY SECTOR

*NRF and EMA will set aside up to \$9 million over three years for
both consortia under the Energy Grid 2.0 Programme*

The National Research Foundation Singapore (NRF) and the Energy Market Authority (EMA) are setting up two new consortia to drive R&D and push for the adoption of novel technologies in the energy sector. The **Smart Grid and Power Electronics Consortium Singapore (SPECS)** and the **Cooling Energy Science and Technology Singapore (CoolestSG) Consortium** will bring together research institutes, companies and government agencies to come up with solutions in smart grid and cooling technologies. NRF and EMA will set aside up to S\$9 million over three years for both consortia.

2 Singapore has invested steadily in research in smart grid technologies in the past decade. These investments have grown a strong base of researchers with expertise in the smart grid and power electronics domain. SPECS will provide a platform for companies to access the latest technologies developed by these researchers, and to translate them into commercially-viable products and services.

3 At the same time, as a tropical country, Singapore needs to develop and deploy efficient cooling technology to improve our liveability in a way that minimises carbon emissions. CoolestSG aims to achieve this by enabling companies and researchers to share facilities to testbed new cooling technologies for deployment.

4 **NRF CEO Professor Low Teck Seng** said: “Against the backdrop of the rapidly evolving energy landscape, researchers and companies need to continually rethink the way that energy is stored, managed, and distributed in Singapore. This includes incorporating advanced digital technologies such as artificial intelligence and cybersecurity measures to support a smart, secure and resilient energy infrastructure. The two latest technology consortia will deepen our research capabilities in grid management and cooling technologies, and provide companies a leg-up in commercialising these capabilities.”

5 **EMA CE Mr Ngiam Shih Chun** said: “Our energy grid is evolving, with more bidirectional flows and connections to the distribution grid. The establishment of the consortia will provide a platform for our companies to collaborate with institutes of higher learning and research institutes. Developing solutions, such as Solid State Transformers that effectively interface DC loads such as solar and wind with conventional AC sources and loads, and building deep technical expertise to reduce cooling demand that makes up 25% of our electricity consumption are key areas that will contribute towards a future grid system that is more efficient, sustainable and resilient.”

Smart Grid and Power Electronics Consortium (SPECS)

6 The Smart Grid and Power Electronics Consortium (SPECS) is set up to keep pace with the fast-evolving energy landscape. It will enable companies to work with publicly-funded researchers to translate intellectual property around Energy Grid 2.0 technologies into solutions for deployment and commercialisation. The consortium will focus on areas in advanced power electronics such as solid state transformers, energy management systems such as load and generation balancing, and cybersecurity. Technologies in these areas will help to achieve energy savings, and support a smarter grid system that is secure and resilient.

7 SPECS is a national consortium that will be hosted at Nanyang Technological University, Singapore (NTU Singapore). The management board will be co-chaired by the Energy Research Institute @ NTU (ERI@N) and EMA to facilitate the eventual deployment of smart grid and power electronics technologies developed in the Energy Grid 2.0 programme. 17 companies have joined the consortium, including AMETEK Programmable Power Inc, EPI Technology Venture Pte Ltd, IESVE Singapore Pte Ltd, Interwell Pte Ltd, Lite Unite Pte Ltd, Sembcorp Industries Ltd and TransferFi Pte Ltd. See Annex A for the list of companies.

8 **Professor Lam Khin Yong, NTU's Vice President for Research**, said: "The SPECS consortium will enable companies to tap the advanced research on energy grid and related technologies in Singapore to develop innovations and services for deployment and commercialisation. It is an integral part of the value chain pathway in the energy ecosystem, which blends industrial experience with translational research excellence such as NTU's strengths in sustainability, artificial intelligence, and clean energy solutions."

9 **Matthew Friedman, Chief Digital Officer of integrated energy company, Sembcorp Industries**, said: "We are pleased to be part of this consortium that will support the translation of innovative solutions from laboratory to market and the commercialisation of new technologies. We hope such partnerships will bring great benefits to the energy industry and contribute to its long-term growth."

Cooling Energy Science and Technology Singapore (CoolestSG)

10 Cooling Energy Science and Technology Singapore (CoolestSG) will develop and accelerate the deployment and commercialisation of cooling technologies, which can be applied to buildings, data centres and industry. Technologies include both active and passive cooling, and cooling by integrated design.

11 Under CoolestSG, industry partners and research performers will interact and work together to identify relevant topics. They will develop novel solutions that meet the needs of the industry. Companies that join the consortium will get to test their technologies at the facilities of research institutes and government agencies here, such as the Building and Construction Authority's (BCA) SkyLab.

12 Through interactions with government agencies, companies can gain insights into Singapore's future cooling needs and focus areas. These include policy and industry roadmaps, and programmes that are available to fund the development of the required cooling technologies. The consortium will also be working alongside government agencies to achieve national sustainability goals for energy efficient cooling, including BCA's Super Low Energy Buildings Technology Roadmap, and the Infocomm Media Development Authority's (IMDA) Green Data Centre Technology Roadmap.

13 CoolestSG is a national consortium that will be hosted at the National University of Singapore (NUS). Its management board will be co-chaired by senior management from NUS and BCA. A technical committee comprising representatives from NUS, industry and government agencies will provide technical guidance for the consortium and actively engage industry partners to build strong networks and identify pipeline projects. 30 companies including Ascendas-Singbridge Group, CapitaLand Limited, ENGIE Services Asia Pacific, Mitsubishi Electric Asia Pte Ltd, Natflow Pte Ltd, and Shinhan Tech-Engineering Pte Ltd, will be joining the consortium. See [Annex B](#) for the list of companies.

14 **Professor Philip Liu Li-Fan, NUS Vice President (Research and Technology) and Co-Chair, CoolestSG Management Board**, said: "CoolestSG aims to accelerate the creation of innovative cooling solutions and translating these technological advancements from the lab into real-world applications. Through this unique public-private partnership, academic institutions, government agencies and the industry will team up, pool resources as well as share knowledge and capabilities to co-create cooling technologies that are energy efficient and commercially viable. These industry projects will also serve as training opportunities to build a strong talent pipeline to meet Singapore's future energy needs."

15 **Er. Tay Cher Seng, Managing Director, Natflow Pte Ltd**, said: "Participating in the CoolestSG consortium will allow Natflow to learn about the latest cooling technology developed by research institutes. We can also work with researchers to provide better energy-saving solutions for our customers."

About the National Research Foundation Singapore

The National Research Foundation (NRF) is a department within the Prime Minister's Office. The NRF sets the national direction for research, innovation and enterprise (RIE) in Singapore. It seeks to invest in science, technology and engineering, build up the technological capacity of our companies, encourage innovation by industry to exploit new opportunities that drive economic growth, and facilitate public-private partnerships to address national challenges.

Under RIE2020, NRF is committed to create greater value in Singapore from our investment in research, innovation and enterprise through 1) closer integration of research thrusts, 2) stronger dynamic towards the best teams and ideas, 3) sharper focus on value creation, and 4) better optimised RIE manpower.

For more information, visit www.nrf.gov.sg/RIE2020

About the Energy Market Authority

The Energy Market Authority (EMA) is a statutory board under the Ministry of Trade and Industry. Our main goals are to ensure a reliable and secure energy supply, promote effective competition in the energy market and develop a dynamic energy sector in Singapore. Through our work, EMA seeks to forge a progressive energy landscape for sustained growth. Please visit our website at www.ema.gov.sg for more information.

About Nanyang Technological University, Singapore

A research-intensive public university, Nanyang Technological University, Singapore (NTU Singapore) has 33,000 undergraduate and postgraduate students in the Engineering, Business, Science, Humanities, Arts, & Social Sciences, and Graduate colleges. It also has a medical school, the Lee Kong Chian School of Medicine, set up jointly with Imperial College London.

NTU is also home to world-class autonomous institutes – the National Institute of Education, S Rajaratnam School of International Studies, Earth Observatory of Singapore, and Singapore Centre for Environmental Life Sciences Engineering – and various leading research centres such as the Nanyang Environment & Water Research Institute (NEWRI) and Energy Research Institute @ NTU (ERI@N).

Ranked 12th in the world, NTU has also been placed the world's top young university for the past five years. The University's main campus is frequently listed among the Top 15 most beautiful university campuses in the world and it has 57 Green Mark-certified (equivalent to LEED-certified) building projects comprising more than 230 buildings, of which 95% are certified Green Mark Platinum. Apart from its main campus, NTU also has a campus in Singapore's healthcare district.

For more information, visit www.ntu.edu.sg.

About National University of Singapore (NUS)

The National University of Singapore (NUS) is Singapore's flagship university, which offers a global approach to education, research and entrepreneurship, with a focus on Asian perspectives and expertise. We have 17 faculties across three campuses in Singapore, as well as 11 NUS Overseas Colleges across the world. Close to 40,000 students from 100 countries enrich our vibrant and diverse campus community.

Our multidisciplinary and real-world approach to education, research and entrepreneurship enables us to work closely with industry, governments and academia to address crucial and complex issues relevant to Asia and the world. Researchers in our faculties, 29 university-level research institutes, research centres of excellence and corporate labs focus on themes that include energy, environmental and urban sustainability; treatment and prevention of diseases common among Asians; active ageing; advanced materials; as well as risk management and resilience of financial systems. Our latest research focus is on the use of data science, operations research and cybersecurity to support Singapore's Smart Nation initiative.

For more information on NUS, please visit www.nus.edu.sg.

ANNEX A

List of Participating Companies under the Smart Grid and Power Electronics Consortium (SPECS)

1. AMETEK Programmable Power Inc
2. APECUS Technology Pte Ltd
3. Durapower Technology (Singapore) Pte Ltd
4. Enetek Power Asia Pte Ltd
5. EPI Technology Venture Pte Ltd
6. Evercomm Ubi-Tech Singapore Pte Ltd
7. IESVE Singapore Pte Ltd
8. Interwell Pte Ltd
9. Lite Unite Pte Ltd
10. Robert Bosch (SEA) Pte Ltd
11. ROHM Semiconductor Singapore Pte Ltd
12. Rolls-Royce Singapore Pte Ltd
13. Sembcorp Industries Ltd
14. SP Group
15. TransferFi Pte Ltd
16. Vortec Pte Ltd
17. Whizpace Pte Ltd

ANNEX B

List of Prospective Companies under the Cooling Energy Science and Technology Singapore (CoolestSG) Consortium

1. AlfaTech VestAsia Pte Ltd
2. Ascendas-Singbridge Group
3. Beca Carter Hollings & Ferner (S.E. Asia) Pte Ltd
4. CapitaLand Limited
5. City Developments Limited
6. Comfort Management Pte Ltd
7. CPG Consultants Pte Ltd
8. Durapower Technology (Singapore) Pte Ltd
9. ebm-papst SEA Pte Ltd
10. Energy Renewed Pte Ltd
11. ENGIE Services Asia Pacific
12. HAIER Singapore Investment Holding Pte Ltd
13. Heat-AX Pte Ltd
14. IES Engineering (S) Pte Ltd
15. Integrated Technology Solutions Pte Ltd
16. IX Technology Pte Ltd
17. Keppel Corporation – Keppel DHCS
18. Legrand – SJ Manufacturing Pte Ltd
19. Meinhardt (Singapore) Pte Ltd
20. Mitsubishi Electric Asia Pte Ltd
21. Natflow Pte Ltd
22. Open Computing Singapore Pte Ltd
23. Shinhan Tech-Engineering Pte Ltd
24. Sitoca Engineering Pte Ltd
25. SP Group – Singapore District Cooling
26. Squire Mech Pte Ltd
27. Tian Building Engineering Pte Ltd
28. Ingersoll Rand Engineering & Technology Center, Asia-Pacific
29. Vertiv Singapore Pte Ltd
30. WSP Consultancy Pte Ltd