

## MEDIA RELEASE

15 July 2022

# Second Grant Call to Supercharge Singapore's Clean Energy Future

Today at the Energy Market Authority's (EMA) annual Energy Innovation 2022 event, EMA and the Singapore Institute of Technology (SIT) jointly launched their second grant call for research and development (R&D) proposals in next-generation energy technologies. Funds from the S\$20 million **Exploiting Distributed Generation (EDGE)** programme, which was started in 2019, would be used to develop innovative power engineering projects that will boost power engineering capabilities and support Singapore's transition to a more sustainable energy future.

With the increase in distributed energy resources (DERs) such as solar photovoltaic installations and the rise in the adoption of electric vehicles, power systems of the future will need to be flexible and responsive. It is, therefore, necessary for Singapore's power grid to evolve and adapt to variable power sources while continuing to ensure the reliability and stability of our power system.

Recognising this need, EMA and SIT are seeking innovative solutions to manage the increasing DERs while ensuring continued grid stability and reliability. Successful grant applicants would be able to test-bed their solutions on SIT's Multi-Energy Microgrid at its Punggol Campus, located in the heart of the Punggol Digital District when ready in 2024. The Multi-Energy Microgrid serves as a platform for the industry and academics to catalyse R&D by allowing them to test-bed their solutions under real-world conditions. This could enable their ideas to be developed into market-ready solutions for commercialisation.

**Mr Ngiam Shih Chun, Chief Executive of EMA**, said: "Singapore's energy demand is forecasted to grow in the next decade, driven by increasing electrification and digitalisation. Singapore's power grid needs to evolve to support a more complex power system as we transition into various sources of cleaner energy and integrate them into our power system to meet increasing demand. EMA is pleased to partner with SIT as we invite the industry and research community to co-create solutions for greater energy sustainability."

**Professor Chua Kee Chaing, SIT President**, said: "As Singapore's University of Applied Learning, SIT is well-poised to nurture innovative solutions to address the challenges in energy and sustainability. Through EDGE, we aim to leverage Singapore's first campus microgrid infrastructure for SIT's Punggol Campus, which will serve as a national infrastructure that is open to the research community and businesses in Singapore. This platform allows new technologies and solutions to be tested in a controlled environment within the main grid while providing SIT students with the opportunity to work with industry partners and energy start-ups."

In 2018, EMA and SIT launched the EDGE programme to support the building of capabilities in distributed energy technologies to prepare Singapore for an increasingly decentralised energy landscape. Since then, three projects in the research areas of microgrid design and distributed energy optimisation and management have been awarded (more information on projects in the Annex).

This second EDGE grant call is open to researchers from Singapore-based institutions of higher learning, research institutes, public sector agencies, as well as local companies and company-affiliated research laboratories/institutions. Funded projects must be implemented in Singapore. All proposals must be submitted by 15 October 2022, 1200hrs, Singapore time.

More details of the EDGE grant calls and application details can be found at [www.singaporetech.edu.sg/EDGE](http://www.singaporetech.edu.sg/EDGE).

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#### **About Energy Market Authority (EMA)**

The Energy Market Authority (EMA) is a statutory board under the Singapore Ministry of Trade and Industry. Through our work, we seek to forge a progressive energy landscape for sustained growth. We aim to ensure a reliable and secure energy supply, promote effective competition in the energy market and develop a dynamic energy sector in Singapore. Visit [www.ema.gov.sg](http://www.ema.gov.sg) for more information.

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#### **About Singapore Institute of Technology (SIT)**

The Singapore Institute of Technology (SIT) is Singapore's first University of Applied Learning, offering specialised degree programmes that prepare its graduates to be work-ready professionals. With a mission to develop individuals and innovate with industry to impact the economy and society in meaningful ways, SIT aims to also be a leader in innovative workplace learning and applied research.

The University's unique pedagogy integrates work and study, embracing authentic learning in a real-world environment through collaborations with key strategic partners. Its focus on applied research with business impact is aimed at helping the industry innovate and grow. The University's centralised campus in Punggol, when ready in 2024, will feature a fit-for-purpose campus within the larger Punggol Digital District, where academia and industry will be tightly integrated with the community.

### Annex A: Awarded Projects from the First EDGE Grant Call in December 2019

| Project Title   | Project Description   | Project Team  |
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| <p>Micro-grid Digital Twin Development for Effective Energy Management and Deployment</p>                                       | <p>The project will develop a plug-and-play digital twin model of an existing lab-based microgrid, using real-time data collected as well as accelerated degradation test of Photovoltaic and Lithium-Ion batteries. This will enable future replication of other physical microgrids in Singapore's context with reduced adaptation effort.</p> <p>The digital twin may be tested at the Multi-Energy Microgrid at SIT's Punggol Campus to potentially simulate the interconnection with islanded grids. This will promote reliability and stability of power provision in events of power surges or outages. The validation process together with the multi-microgrid interconnection topology and control algorithm can further be explored for commercialisation.</p> | <p><b>Principal Investigator:</b><br/>Wang Aimin, Senior Principal Engineer, Sustainable Energy Solutions, SP Group Pte Ltd</p> <p><b>Partner Organisation:</b><br/>Singapore Institute of Technology (SIT)</p>     |
| <p>Optimisation of Energy Management in Multiple Micro-grids System Based on Predictive Control and Artificial Intelligence</p> | <p>The project will develop an integrated real-time optimised energy management system based on artificial intelligence and predictive control to effectively manage the exchange of energy between multiple microgrids, which can have very different operating characteristics and dynamics.</p> <p>The system will be piloted at the Multi-Energy Microgrid at SIT's Punggol Campus to potentially be reconfigured into multiple nano- and DC grids that can interconnect with one another for power-sharing from the main distribution grid. The outcomes of this project will be able to promote the adoption of renewable solar PVs, reduce carbon emissions and increase energy efficiency.</p>  | <p><b>Principal Investigator:</b><br/>Yu Ming, Senior Engineer, Power Automation Pte Ltd</p> <p><b>Partner Organisations:</b><br/>SIT, National University of Singapore (NUS)</p>                                   |
| <p>Platform for Interconnected Micro-grid Operation (PRIMO)</p>   | <p>The project will develop an integrated Energy Management System controller and microgrid planning and optimisation tool. It will develop and integrate software modules for different elements, e.g., user behaviour and social acceptance of the flexible loads.</p> <p>The platform will be piloted at the Multi-Energy Microgrid at SIT's Punggol Campus to potentially be positioned as a cost-optimal tool for the operation of the microgrid via flexible Distributed Energy Sources</p>   | <p><b>Principal Investigator:</b><br/>Romain Migné, Smart Grids Research Manager, EDF Lab Singapore Pte Ltd</p> <p><b>Partner Organisations:</b><br/>SIT, TUMCREATE Ltd, Nanyang Technological University (NTU)</p> |

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|  | (DES). With realistic data collected, the framework may be readily applied without much additional adaptation effort. |  |
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