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Headline: SP Group to build first micro-grid on mainland Singapore

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GRID operator SP Group is building the first micro-grid on mainland Singapore at the new Punggol campus for Singapore Institute of Technology (SIT), in expectation of the city-state having more of such grids in future for stronger grid resilience.

The Temasek-owned firm also said on Monday that it will be working with Sembcorp Marine to install 4.5 megawatt-peak (MWp) of solar panels at SembMarine's Tuas yard.

SP Group signed memoranda of understanding with both on Monday, the first day of the Singapore International Energy Week.

The urban micro-grid in Punggol will integrate gas, electricity and thermal energy in a smart energy network, and will also incorporate solar energy and energy storage technologies.

Nearly 10 megawatt in size, it will meet almost all of SIT's consumption needs, allowing the 15,000-person campus to have near-zero emissions.

It will be able to operate independently from the national grid in times of emergency. Insights from the grid will help develop innovative solutions for Singapore's future needs, said grid operator SP Group.

"Potentially, for national resilience, there might be an evolution from where we are now towards a future where there is interconnection of multi-energy micro grids," said SP head for its Centre of Excellence Brandon Chia in an interview with *The Business Times*.

South-east Asia's largest single solar rooftop at a shipyard will be installed atop Sembcorp Marine Tuas Boulevard Yard's steel structure fabrication workshop (building on the right with the blue roof).

"This micro-grid set up and the SIT Punggol campus will be the first of its kind and we're using that to draw insights so that we can then form that pathway towards the potential future. . ."

The campus is expected to be completed around 2023. Once operational, the system can help SIT eliminate 13,000 tonnes of carbon emissions, equivalent to removing nearly 2,000 vehicles off Singapore's roads annually.

SIT president Tan Thiam Soon said having the micro-grid will allow students in three power-related programmes to learn from a living lab.

"We also intend to make this a sandbox for local innovators as well as international innovators that can plug into different parts of the building depending on which application they have," he told BT. Unlike most other micro-grids which operate as experiments or back-up grids, this will be its main operating one, he added.

In a separate announcement, SP Group said it is working with Sembcorp Marine to install solar panels and an energy storage system at the latter's Tuas Boulevard Yard.

The entire energy management system, which include energy sensors and a real-time digital platform to monitor, analyse and optimise energy use, is expected to reduce the amount of electricity SembMarine's steel fabrication facility consumes from the grid by 30 per cent during peak production periods.

The solar energy system will have a capacity of 4.5 MWp, and will deliver up to 5.38 gigawatt-hour of energy every year – equivalent to the consumption of almost 17,000 four-room flats.

It will also reduce SembMarine's carbon emissions by 2,500 tonnes a year, similar in effect to removing 530 vehicles from Singapore's roads.

Installation work is expected to start early next year and will be completed in the fourth quarter of 2018.

SembMarine president and CEO Wong Weng Sun said in a statement: "As a major energy consumer, Sembcorp Marine is investing proactively in solutions for sustainable operations that reduce our carbon footprint even as our yard activities expand and grow.

"With the implementation of a digital energy-saving system at Tuas Boulevard Yard, we are taking an important step towards this end, and we look forward to integrating other innovations into our sustainability efforts over time."

work with are the National Climate Change Secretariat (NCCS), Building & Construction Authority (BCA), Housing and Development Board (HDB), Land Transport Authority Authority (LTA) and National Environment Agency (NEA).

Prior to heading Neto, Mr Toh was a programme director at the Energy Research Institute @ Nanyang Technological University (Erion). He has also spent 20 years in public service with the Agency for Science, Technology and Research (A*Star), the National Environment Agency (NEA) and the Singapore Economic Development Board (EDB).

In his speech on Monday, Deputy Prime Minister Teo also disclosed that the public sector would need 250 more power engineers over the next five years.

"Power systems form the backbone of critical infrastructure such as transportation, utilities and buildings," he said.

EMA will lead the development of manpower needs and capabilities for this; other agencies involved include NEA, LTA and national water agency PUB.

To adapt to the fast-changing energy landscape, the EMA on Monday launched its regulatory sandbox for the electricity and gas sectors, four months after consulting the industry on the idea.

The sandbox will enable the energy sector to test new products and services in the electricity and gas sectors, and allow the EMA to assess the impact of these before deciding on the appropriate regulations, it said.

This follows a similar move earlier this year by the UK's energy regulator, the Office of Gas and Electricity

EMA chief executive Ng Wai Choong said in a statement that the agency would like to encourage more experimentation in the electricity and gas sectors, so that promising innovations can be tested and have a chance for wider adoption in Singapore and overseas.

"At the same time, the regulatory sandbox will help EMA adjust its regulatory frameworks to keep pace with advances in technology," he said.

The agency also gave an update on its call for proposal for smart meters made nearly a year ago.

More than 20 proposals have been received. Four companies – Germany's Diehl Metering, local firms Mirai Electronics Pte Ltd and TCAM Technology, and China-backed ZH Technologies International Pte Ltd – have been selected to develop and test-bed their solutions.

Over the next six months, the four firms will have to demonstrate that their proposed solutions will be able to accurately and reliably read meters for electricity, town gas and water in a laboratory environment, said EMA.

Solutions that prove feasible will then be test-bedded at a housing estate in the second half of next year; more details of this trial will be provided at a later date.

The call for proposals also sought ideas on the design of a mobile application that will enable consumers to manage their utility consumption more efficiently.

Some 30 participants submitted prototypes with design features such as usage notifications, gamification and direct billing.

SP Group will incorporate useful ideas gathered when developing the mobile application for the test-bed, said the EMA.