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Singapore launches ‘plug-and-play’ micro-grid for Southeast Asia

Singapore’s Nanyang Technological University is building the region’s first model electricity grid that can tap and distribute power from multiple energy sources, including fossil fuels and renewable energy.

By Medilyn Manibo Thursday 30 October 2014

Singapore’s Nanyang Technological University is setting up Southeast Asia’s first micro-grid, which will demonstrate how to generate electricity from multiple sources including solar, wind, tidal, diesel, as well as integrate energy storage and power-to-gas technologies.

Minister in the Prime Minister’s Office and second minister for Home Affairs and Trade and Industry, S Iswaran, launched the hybrid micro-grid project - called Renewable Energy Integration Demonstrator- Singapore (REIDS) - on Tuesday at the Asia Clean Energy Summit.

The S$8 million grid infrastructure is backed by Singapore government agencies Economic Development Board (EDB) and the National Environment Agency, industry group Sustainable Energy Association of Singapore and ten multinational firms from the clean energy and power sector.

These include Accenture, Alstom, Class NK, DLRE, GDF Suez, Renewable Energy Corporation, Schneider Electric, Trina Solar, Varta AG and Vestas.

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Lim Kok Kiang, assistant managing director, Economic Development Board

NTU said the initiative will provide a full-scale test-bed for Singapore’s ongoing energy research. In the longer-term, it hopes to pave the way for micro grid technologies to meet critical energy

needs in Asia, particularly in many rural communities which are still not connected to national grids.

At the same time, researchers hope the project can tap new technologies that can stabilise power grids in urban communities.

The micro-grid will be constructed offshore at Semakau Landfill, the country's first and only existing landfill located eight kilometres south of Singapore, and will have the capacity to supply electricity to small islands and off-grid villages, as well as provide back-up power during emergencies.

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It will be able to produce power up to a peak of 1MW (megawatt), sufficient to electrify around 250 four-room apartments built by the country's Housing Development Board, NTU said.

Professor Bertil Andersson, NTU's president, said sustainability is at the core of the university's research. It has been very active in clean energy research, such as tidal, solar and wind technologies.

"This new initiative will allow us to apply our research and integrate the different energy sources. In so doing, we hope to develop practical renewable solutions for the energy integration industry," he added.

NTU will integrate the various renewable energy sources and energy storage systems in phases.

For the first phase, it will build the micro-grid facility and integrate energy storage facilities, solar photovoltaic panels and wind turbines through a variety of smart energy management and storage systems.

In the second phase, the university will develop a scaled-up tidal energy facility around Semakau Landfill and St John's Island, which will then be integrated with the first phase.

EDB assistant managing director Lim Kok Kiang described NTU's initiative as a "strategic living laboratory" for Singapore. With this "plug-and-play" microgrid, cleantech industry leaders can develop and demonstrate a diverse range of clean energy technologies, he commented.

NTU noted that the initiative could generate S$20 million worth of projects over the next five years, apart from the initial S$8 million invested into the grid.

“By providing industry leaders with a unique platform to innovate and commercialise cutting-edge energy solutions suited for the tropical climate, Singapore will be better positioned to meet the growing demand for renewable energy technologies in the Asian region,” said Lim.

The Asia Clean Energy Summit, held at the Marina Bay Sands Expo and Convention Centre, is part of the annual Singapore International Energy Week.