

NTU deploys Singapore's first long-span wind turbine

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Singapore's first wind turbine is part of NTU's offshore hybrid microgrid at Semakau Landfill, which will integrate with various renewable energy sources such as solar, tidal, diesel, and power-to-gas technologies. Credit: NTU Singapore

Ushering in winds of change in clean energy, Nanyang Technological

University, Singapore (NTU Singapore) has deployed the nation's first long-span wind turbine at Semakau Landfill, which is one of several to be installed in Singapore's drive towards sustainable energy solutions.

At 14 storeys high, the turbine comes with three 10.5-metre long-span rotor blades that produces an electrical output rating of 100 kilowatts, enough to power 45 four-room apartment units a year.

The wind turbine is also sensitive enough to generate power even with wind speeds as low as 3 metres/second, up to a maximum of 20 metres/second.

Professor Lam Khin Yong, NTU's Acting Provost, Chief of Staff and Vice President for Research, said, "The deployment of Singapore's first wind turbine is a big milestone in the nation's commitment in developing [clean energy](#) technologies for the region. As a leading global university, NTU is proud to support Singapore's efforts in meeting its sustainability objectives and pave the way towards a greener future."

In partnership with French multinational electric utility company ENGIE, the new turbine is part of NTU's Renewable Energy Integration Demonstrator - Singapore (REIDS) initiative being built at Semakau Landfill. Under this initiative, several hybrid microgrids will be developed in the coming years, producing enough energy to power 100 four-room HDB flats for a whole year.

Along with the wind turbine, each of the hybrid [microgrid](#) will integrate with various renewable energy sources such as solar, tidal, diesel, and power-to-gas technologies.

Currently, over 4,500 square metres of photovoltaic (PV) panels, large-scale lithium-ion energy storage systems as well as a hydrogen refuelling station are already operating on the island.

Each of the microgrid is expected to produce stable and consistent power in the half-megawatt range, suitable for small islands, isolated residential areas, and emergency power supplies. The microgrids will eventually occupy over 64,000 square metres of land or roughly about nine soccer fields.

Managed by NTU's Energy Research Institute (ERI@N), the REIDS initiative is expected to attract \$20 million worth of projects over the next four years, in addition to the initial \$10 million investment in infrastructure at the landfill.

Ever-growing industry support with new partnerships

Supported by the Singapore Economic Development Board (EDB) and the National Environment Agency (NEA), REIDS has also been attracting investments from top energy and microgrid companies.

Besides the founding members ENGIE, GE Grid Solutions and Schneider Electric, over 20 companies have partnered with REIDS to co-develop sustainable energy solutions for offshore islands around Southeast Asia. These include ClassNK, DLRE, Murata, REC and Trina Solar.

Twelve new partners will be signing Memorandums of Understanding (MOUs) with REIDS during the 2017 Singapore International Energy Week, to advance the development and eventual deployment of microgrid solutions in the region.

This includes strong industry representation from both technology providers Emerson, EDF and Keppel, as well as technology adopters such as Medco, an Indonesian power conglomerate, Adaro, a leading Indonesian coal mining company, and Nortis, a Thai Independent Power Producer (IPP).

These partnerships will strengthen the microgrids ecosystem in Singapore and allow REIDS to better develop and evaluate microgrid solutions to solve regional electricity problems.

Speaking on the latest announcements by REIDS, Mr Goh Chee Kiong, Executive Director, Cleantech, EDB, said, "The diversity and scale of the investments at REIDS to date demonstrate confidence in Singapore as the leading regional hub for clean energy innovation. The strong presence of leading [energy](#) providers and adopters is testament to REIDS' success in developing an ecosystem, to pilot and develop microgrid innovations from Singapore. We welcome more like-minded partners to join us in our efforts to harness practical [renewable energy](#) for the region."

The REIDS initiative will pave the way for similar technologies to be developed and exported to serve the need for interconnected urban microgrids and remote communities in Southeast Asia and beyond. It has already attracted the interest of regional adopters such as island communities and utilities.

Provided by Nanyang Technological University

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