

Standing tall at 14 storeys, wind turbine at Pulau Semakau is Singapore's largest



The turbine is one of up to seven which will generate power for hybrid microgrids on the landfill south of Singapore, together with other sources such as photovoltaic (solar) panels. ST PHOTO: ALPHONSUS CHERN

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SINGAPORE - The Republic's largest wind turbine was unveiled at Semakau Island on Friday (Oct 20), marking the first time the renewable energy source is connected to the island's power grid.

The turbine comes with three 10.5m long-span roto blades that produce an electrical output rating of 100 kilowatts, which is enough to power 45 four-room HDB flats.

It is part of the region's first large-scale, offshore power grid system, called the Renewable Energy Integration Demonstrator (Reids), an initiative by Nanyang Technological University.

The turbine is one of up to seven which will generate power for hybrid microgrids on the landfill south of Singapore, together with other sources such as photovoltaic (solar) panels, as part of Singapore's drive towards developing sustainable energy.

Said Professor Choo Fook Hoong of NTU's Energy Research Institute, which manages the initiative: "The role here is to look at renewable energy, integrating them into microgrids, so that it can benefit not only remote islands and villages (in the region), but also urban microgrids that will benefit Singapore in the longer term in terms of a more stable and resilient power supply."

The project, now in its second phase, is supported by the Economic Development Board (EDB) and the National Environment Agency (NEA).

The first phase, which consisted of installing more than 4,500 sq m of photovoltaic panels, large-scale lithium-ion energy storage systems and a hydrogen refuelling station, has been completed.

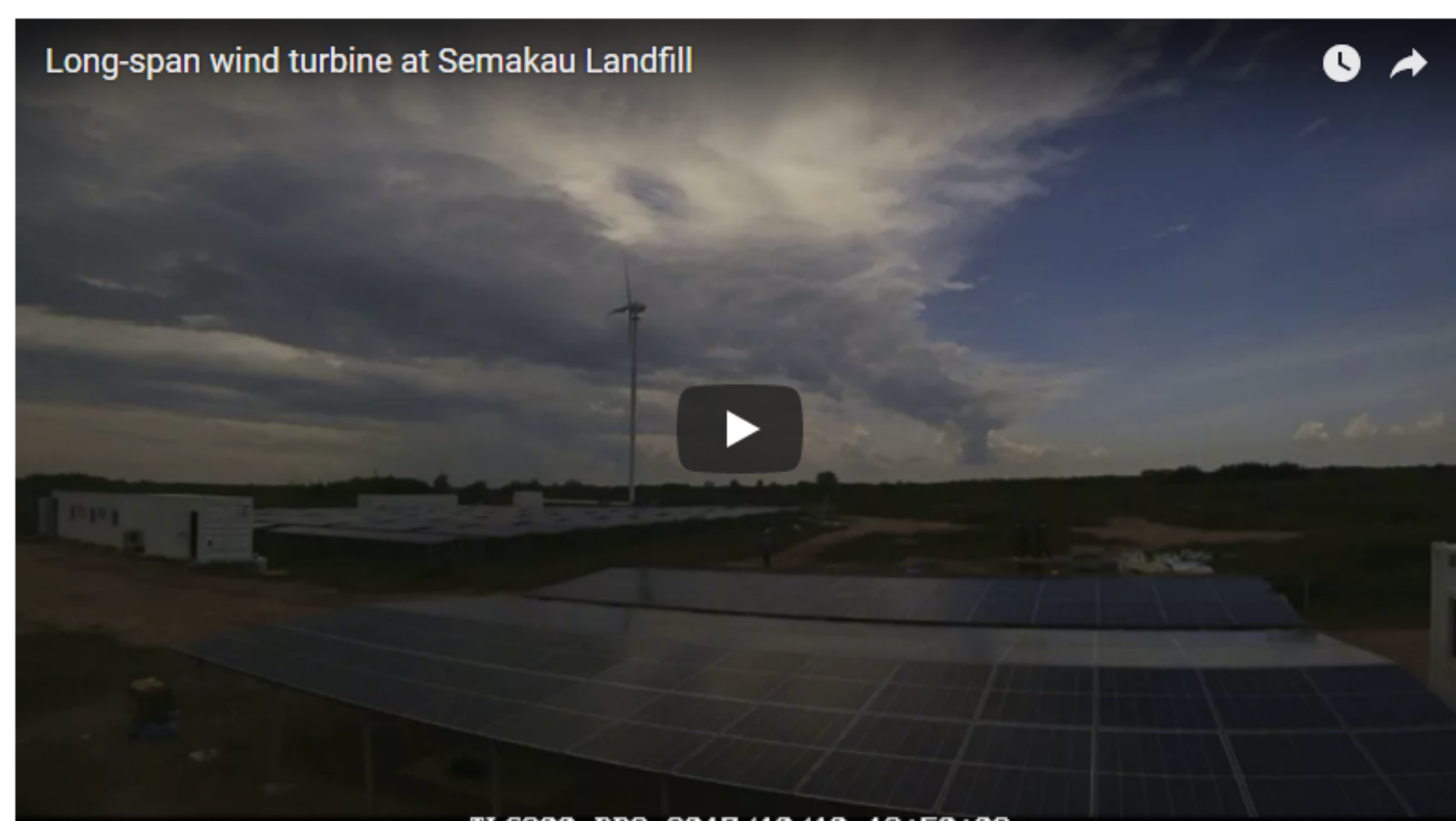


Although there is limited potential for wind turbines on the mainland, developing a mix of renewable energy sources is important because they each have their own advantages, said Prof Choo.

"When we look at renewable energy integration, we cannot rely entirely on photovoltaics because that will only work when the sun is out. Wind is different - you have wind at night as well... this allows us to have continuous power supply without having to increase the storage capacity, which is not that cheap today."

The turbine can generate power even with wind speeds as low as three metres per second, up to a maximum of 20 metres per second.

Several of the microgrids, which will eventually cover more than 64,000 sq m or about the size of nine football fields, will be built, and will produce enough energy each year to power 100 blocks of four-room HDB flats for the same period.

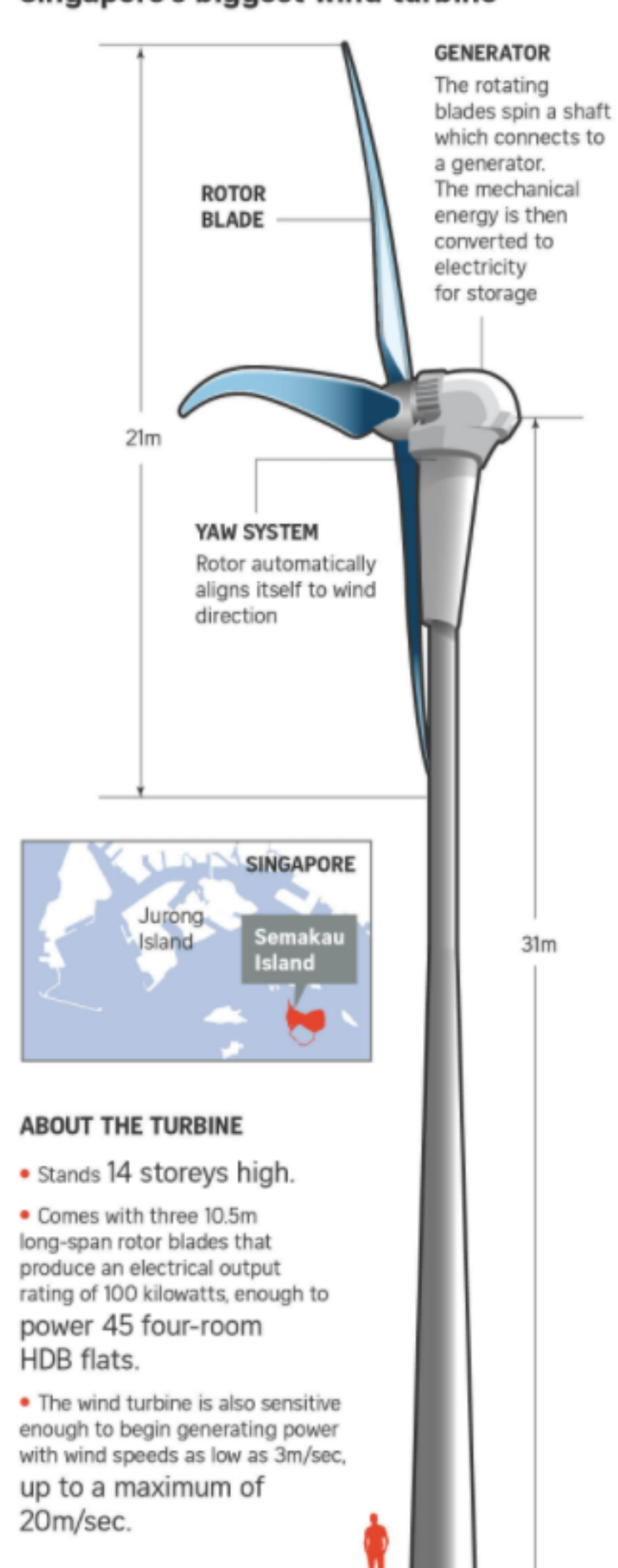


International interest in the project has been growing, with 12 new partners expected to sign agreements with Reids at the Singapore International Energy Week next week (Oct23-27) to develop and eventually deploy microgrids in the region.

This means more than 20 companies that would have come on board, including founding members Engie, General Electric Grid Solutions and Schneider Electric.

Mr Goh Chee Kiong, executive director for cleantech at the Economic Development Board, said: "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."

Singapore's biggest wind turbine



Source: NTU
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