

JOINT NEWS RELEASE

Sentosa and NTU launch Singapore's first tidal turbine system at Sentosa Boardwalk

Singapore, 6 November 2013 – Nanyang Technological University (NTU) has built Singapore's first tidal turbine system to test the viability of tapping tidal energy to generate electricity here. The system was launched today at the Sentosa Boardwalk.

The new tidal turbine test bed, set up in collaboration with the Sentosa Development Corporation (SDC), was designed, built and installed by NTU engineers from the Energy Research Institute at NTU (ERI@N).

Tidal energy is a completely new field in Singapore. Its key advantage as a renewable energy source is that tidal cycles are predictable, unlike conventional wind and solar energy, which are highly susceptible to weather fluctuations.

The NTU tidal turbine system consists of two low-flow turbines mounted on the test bed, optimised for local conditions. Compared to typical turbines, these specially designed prototypes are able to work at higher efficiency despite low water speeds, similar to those found in Singapore's waters.

This new test bed is expected to open up new research avenues for renewable energy, especially for resource-scarce countries such as Singapore. The research data gathered will allow NTU to develop more innovative turbine concepts to cater to Singapore's environment and beyond.

In the next year of operation, the tidal energy test bed will demonstrate how low-flow tidal energy can be harnessed efficiently, and made cheaper and more reliable. The energy produced by the test bed is used to also power the lights at the Sentosa Boardwalk Turbine Exhibit. Open to the public, the informative exhibition which is part of the Sentosa Sustainability Plan, will have information about tidal energy and showcases a miniature tidal turbine prototype.

Mr Mike Barclay, Chief Executive Officer of SDC, said: "Sentosa is deeply committed to promoting sustainable tourism. One key aspect of our commitment is to open up Sentosa as a test-bed for new green initiatives and technologies, particularly those that can be scaled up for wider adoption across Singapore. This collaboration with NTU has been an exciting project, as it has demonstrated the potential of tidal flow as an alternative energy source."

Professor Subodh Mhaisalkar, Executive Director of ERI@N, said investment in such emerging technologies is a demonstration of Singapore's commitment to explore renewable energy options, much like how the country has developed its renowned expertise in water technologies.

"Apart from proving that tidal energy is feasible in Singapore, the test bed will also provide important research data on how the turbine handles local low-flow currents and the tropical marine environment," Prof Mhaisalkar said. "More importantly, the data will allow us to improve our designs for future turbine systems, leading to new avenues of renewable energy in resource-scarce countries such as Singapore."

The two turbines installed at the test bed extracts energy from tidal currents to generate up to a thousand watts of energy per hour combined, which could power about 70 fluorescent light bulbs (15 watts per bulb) typically found in households.

The Sentosa Boardwalk is an ideal location for a tidal power test bed, as it has high tidal currents several locations near the Boardwalk, due to concrete pillars at the adjacent bridge which funnel water into a narrow channel and amplifies water speed.

This scalable test bed at Sentosa allows for the installation of multiple turbines and will be used by NTU to assess newer and more innovative turbine concepts.

The project is jointly funded by Singapore's Ministry of Trade and Industry, NTU and SDC.

ABOUT SENTOSA

Sentosa is Asia's leading leisure destination and Singapore's premier island resort getaway, located within 15 minutes from the central business and shopping districts. The island resort is managed by Sentosa Development Corporation, which works with various stakeholders in overseeing property investments, attractions development, operations of the various leisure offerings and management of the residential precinct on the island. The Corporation also manages the Southern Islands, and owns Mount Faber Leisure Group which runs Singapore's only cable car service.

The 500-hectare island resort is home to an exciting array of themed attractions, award-winning spa retreats, lush rainforests, golden sandy beaches, resort accommodations, world-renowned golf courses, a deep-water yachting marina and luxurious residences – making Sentosa a vibrant island resort for business and leisure. Making Sentosa its home, too, is Singapore's first integrated resort, Resorts World Sentosa, which operates South East Asia's first Universal Studios theme park.

Situated on the eastern end of Sentosa Island is Sentosa Cove, an exclusive residential enclave. By 2014, it will be bustling with some 2,000 homes, romantic quayside restaurants, retail and specialty shops. Offering Singapore's only truly oceanfront residences, Sentosa Cove is fast becoming the world's most desirable address.

The Island is also proud to be home to Sentosa Golf Club and its two acclaimed golf courses, The Serapong and The Tanjong. The Golf Club's legacy included hosting Asia's richest national open, the

annual Barclays Singapore Open on The Serapong from 2006 to 2012. The tournament saw star-studded line-ups featuring international players and golf professionals from Asia, Europe and the USA playing to nail-biting finishes. The Golf Club is also honoured to be the new home for the prestigious HSBC Women's Champions from 2013 to 2015. The spectacular tournament features many of the world's top women golfers vying for top honours at The Serapong.

Welcoming a growing number of local and international guests every year, Sentosa is an integral part of Singapore's goal to be a global destination to work, live and play.

ABOUT NANYANG TECHNOLOGICAL UNIVERSITY

A research-intensive public university, Nanyang Technological University (NTU) has 33,500 undergraduate and postgraduate students in the colleges of Engineering, Business, Science, Humanities, Arts, & Social Sciences, and its Interdisciplinary Graduate School. It has a new medical school, the Lee Kong Chian School of Medicine, set up jointly with Imperial College London.

NTU is also home to world-class autonomous institutes – the National Institute of Education, S Rajaratnam School of International Studies, Earth Observatory of Singapore, and Singapore Centre on Environmental Life Sciences Engineering – and various leading research centres such as the Nanyang Environment & Water Research Institute (NEWRI), Energy Research Institute @ NTU (ERI@N) and the Institute on Asian Consumer Insight (ACI).

A fast-growing university with an international outlook, NTU is putting its global stamp on Five Peaks of Excellence: Sustainable Earth, Future Healthcare, New Media, New Silk Road, and Innovation Asia.

Besides the main Yunnan Garden campus, NTU also has a satellite campus in Singapore's science and tech hub, one-north, and a third campus in Novena, Singapore's medical district.

For more information, visit www.ntu.edu.sg