

\$107m facility tests vessels in real-world conditions



A mini vessel (left) being used to track movement of the waves, and the towing carriage (right) of the ocean basin facility. Tcoms said that the basin's capacity to generate waves and undercurrents allows it to mimic conditions in shallow, intermediate and deep waters. ST PHOTOS: NG SOR LUAN

S'pore's first artificial ocean basin generates waves, undercurrents to help maritime R&D

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It is a giant pool seven years in the making, measuring 60m by 48m – the length being equivalent to five 40-seat buses parked end to end – and about 12m deep.

A pit near the centre of the water floor can move up and down, creating depths of up to 50m. At the flick of a switch, roiling waves are created in the basin or calmed.

Across the water surface, mini-vessels undulate with the waves, their every movement tracked and translated into complex data.

The pool is Singapore's first artificial ocean basin, a \$107 million facility which can support further research in marine and offshore engineering, sea transport, the prediction of storm surges, and coastal protection.

Officially opened yesterday at the Tcoms building in the National University of Singapore (NUS), it puts Tcoms – and Singapore – in the same league as other advanced maritime research agencies with their own ocean basins in Denmark, Norway, Australia and Britain.

Tcoms is short for the Technology Centre for Offshore and Marine Singapore, a national research and development centre that pairs NUS with the Agency for Science, Technology and Research.

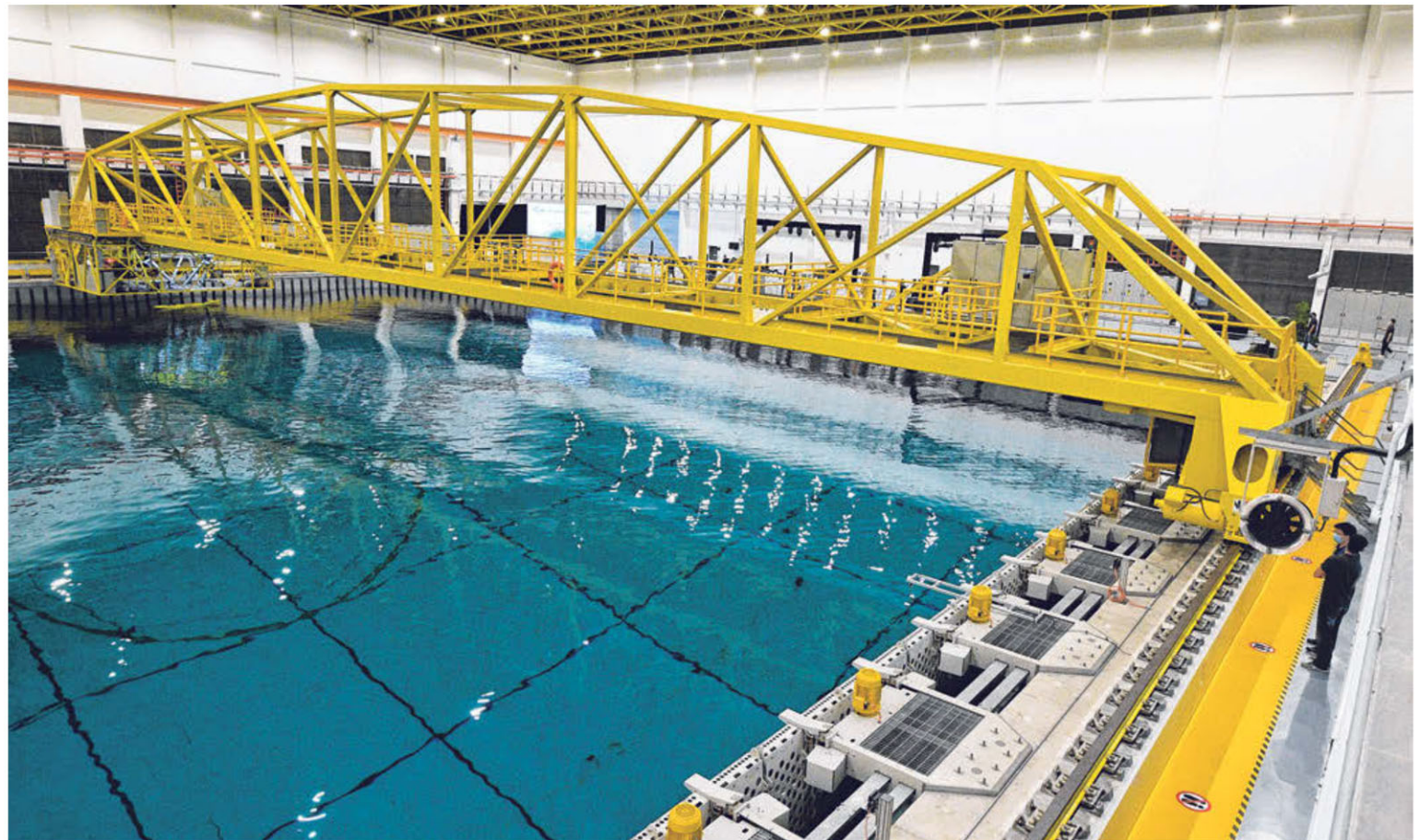
Yesterday, Tcoms said that the basin's capacity to generate waves and undercurrents allows it to mimic conditions in shallow, intermediate and deep waters.

This allows industry and academic players in the maritime industry to test new technologies in conditions as close to the real world as possible.

For instance, vessels can be subjected to harsh conditions so their resilience can be calculated, while multiple autonomous vessels can be tested on the waters to assess how they react to one another when there are waves.

Professor Chan Eng Soon, chief executive of Tcoms, said the basin gives physical form to numerical modelling that maritime companies previously relied on, making tests of new technology faster and more accurate.

Students will also be allowed to use the basin for research and tests.



The giant pool at the Tcoms building in NUS measures 60m by 48m and is about 12m deep. A pit near the centre of the water floor can move up and down, creating depths of up to 50m.

Tcoms' ocean basin has already attracted many industry players.

Finnish company Wartsilla, which builds maritime equipment, has already worked with Tcoms to create a twin of a tugboat that can be tested on the basin, after getting real-world data from other tugboats out at sea.

Wartsilla's ecosystem development director Chris Chung said: "We can use different types of scenarios like big waves, strong currents – then subject this model to that type of environment, which you don't necessarily do in the real world."

"This allows us to do it both safely and in an economical sort of way."

He added that the ocean basin complements the digital simulations that industry players have been using.

"Before you get to a very accurate digital model, it's physical testing and understanding real world physics that is still very important. The basin's state-of-the-art sensors help us understand (data) that you can bring into the computer model."

The development comes amid an uncertain time for the marine and offshore engineering sector, which played a major part in Singapore's maturing into a developed economy but now faces a manpower shortage.

At its peak, it employed upwards of 23,000 workers in 2016, but the numbers have since fallen to about half of that.

The basin is expected to accelerate the process of automation that can help the sector cope with the reduced number of workers.

Senior Minister and Coordinating Minister for National Security Teo Chee Hean, guest of honour at the opening, said Singapore intends to continue playing a key role in ocean engineering and marine and offshore engineering, and will keep investing in growth areas.

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