Full steam ahead for new Tuas mega port

Project proceeding as planned despite industry downturn

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Workers are still toiling away in the future Tuas port, with reclamations ongoing for two out of four phases of the development and more than half of caissons already instilled on the seafloor.

The caisson, which sits on a concrete caisson seabed, is a thin, high concrete waterfront structure – about the height of a 10-storey housing block. Using caissons to build the reef structure is faster than traditional method of piling.

In all, 13.5km of caisson will have to be constructed under Phase 1 of the Tuas project, which aims to grow the Singapore port, and comprises from other regional and global ports.

The new Tuas port – which will be the size of Hong Kong – towns will be opened progressively from 2021. When fully completed by 2024, it will be able to handle up to 20m containers–equivalent units of cargo a year, more than double what the port handled last year.

Work on the port, which will eventually house container operations at Pasir Panjang, Tuas, Payau and Tuas mega container terminals, is proceeding as planned despite the coronavirus downturn. Maritime and Port Authority of Singapore (MPA) chief executive Andrew Tan told The Straits Times: “As small and open country, any significant changes in the global economy would affect Singapore.”

Even Singapore has undergone changes, such as the opening of an international maritime centre, despite the coronavirus slowdown. He said: “PSA’s volumes are holding steady, vessel arrival tonnage has increased, more ships are being flagged under our registry and bunker volumes remain high.”

Through Challenger Times, more than 20,000 maritime professionals, including high-level executives from port authorities, industry leaders and maritime businesses, have participated in programmes throughout this week. As part of the L6M programme, members of the public can take a virtual tour of the Port Operations Control Centre which helps to secure Singapore’s waters, and also watch a drone that can simulate the chemical composition of marine biofouling.

Despite the current slowdown, many ships are being flagged under our registry and bunker volumes remain high. “As a small and open economy, any changes in the global economy will affect Singapore,” said Singapore Maritime Minister Andrew Tan. “As such, the Tuas project is proceeding as planned despite the coronavirus slowdown.”

A6 | TOP OF THE NEWS | THE STRAITSTIMES.COM.SG | MONDAY, APRIL 27, 2021

FUTURE PORT

The Tuas mega port, slated to open in phases from 2021, will incorporate smart and green technologies into its operations. Some of those will be tested at the HPA Lab. The Straits Times looks at the journey of a container through the port of the future.

Tracking arriving vessels

- Using available data on vessels entering the Singapore port, to use MPA and the HPA Lab to monitor vessels real-time by e-mail, or by alerts (standardised and deployed in future)
- Automatic loading/unloading operations
- Currently, the vessel’s master has to notify the MPA, the captain has to communicate with customs officers to clear vessels, and vessels have to wait for clearance to call the MPA

Drones

- Drones can be used to fulfil the vessel inspect
- They can also be sent in to inspect vessels for damage, among other checks

Solar energy

- The cranes and automated guided vehicles will be automated.
- Solar energy will be harvested and waste heat recovered from building cooling systems.

Just-In-Time Arrival System

- The crew of the vessel needs to contact the MPA to arrange for an arrival time. The MPA will provide the vessel with a slot, and the MPA will notify the customs officers
- In future, this will be done through a single government portal.

Falling platforms

- Currently, if a berth is not available, the vessel waits at anchorage in the sea
- In future, the information will be transmitted digitally
- A new Vessel Traffic Management System will use cloud computing, data analytics, smart algorithms, sensors and advanced communication systems to provide better coordination and vessel communication will be enhanced.

DREAD

- Quay cranes, yard crane and guided vehicles will be automated
- Automated loading/unloading operations
- In future, the information will be transmitted digitally
- A new Vessel Traffic Management System will use cloud computing, data analytics, smart algorithms, sensors and advanced communication systems to provide better coordination and vessel communication will be enhanced.

• Solar energy will be harvested and waste heat recovered from building cooling systems

FEASIBILITY STUDIES

- Vehicle traffic will be automated
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Green technology

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Comparing Automated Terminal Operations

Tuas Terminal

- Trans-shipment port that is many times larger than the ones in Europe.
- More complex to automate a system on a large scale than a destination port.

Capacity (million TEUs):

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Feasibility studies are being done on the construction of an elevated area 42m above ground – connecting port operations – to house warning, distribution and logistics operations, as well as possibly cafes, retail stores and other amenities.

2,300 out of 2,800 coral colonies

- an artificial coral nursery
- six biorock lighthouses
- in the vicinity of the proposed reclamation
- have been relocated to the Southern Islands

-$6 million

- Cost of the coral nursery project

$1 billion

- Approximate cost savings in reclamation fit material by re-using existing materials from land reclamation projects such as new infrastructure projects for reclamation of Tuas Phase 1