

Mobile Covid-19 testing lab bags Singapore defence tech prize



1 of 2 (From left) DSTA Senior Programme Manager (Building and Infrastructure) Alvin Wee, DSO FDL Founding Lab Director/Director (Combat Protection and Performance Programme) Dr Mahesh Uttamchandani and DSO Senior Member of Technical Staff, Dr Sylvie Kwok. ST PHOTO: ONG WEE JIN



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PUBLISHED OCT 26, 2021, 5:00 PM SGT



SINGAPORE - Early last year, when Covid-19 first hit Singapore, there was an urgent need to ramp up virus-testing capacity, which stood at 2,900 tests per day in 2019.

In about three months, a team from across the defence industry came together to develop a novel solution - a mobile laboratory for polymerase chain reaction (PCR) tests that can be deployed in the field and scaled up when required.

In May last year, the first forward deployment lab (FDL) was set up at the Changi Exhibition Centre, contributing to testing at migrant worker dormitories.

Another one was set up in August last year at the Army Museum in Joo Koon.

Today, four FDLs located on the rooftop of a carpark next to Changi Airport Terminal 4 have the capacity to conduct 10,000 tests a day.

As at Oct 1, the four FDLs have processed more than 160,000 Covid-19 samples. The FDL is currently the only field Covid-19 PCR testing lab licensed by the Ministry of Health.

The team behind the FDL was among the winners of the annual Defence Technology Prize, given to those who have made significant contributions to the defence capabilities of Singapore.

The team comprises staff from DSO National Laboratories, the Defence Science and Technology Agency and the Ministry of Defence (Mindef).

Speaking at the prize presentation ceremony on Tuesday (Oct 26), Defence Minister Ng Eng Hen said that Mindef and the Singapore Armed Forces (SAF) have responded effectively to the unexpected challenges thrown up in the past year.

"When Mindef and the SAF were called to assist in national efforts, I am proud of the way we did it - fully professional, task-oriented, clear goals and with key deliverables in mind and an attitude which says 'let's get to work,'" he said.

Other government agencies and Singaporeans recognise that the SAF has the ability to deal with complex issues like the coronavirus outbreak among migrant workers and the home recovery programme for Covid-19 patients, said Dr Ng.

"This confidence and capabilities that others recognise in us reflect well on our ability to prosecute difficult missions when called upon and it is part of our ethos of the SAF," he added.

Close to 300 testers were trained to operate the FDLs, and about half of them had no background in biology, said Associate Professor Mahesh Uttamchandani, 41, from DSO, who is the founding lab director.



Samples for testing are prepared in the sample preparation room at DSO National Laboratories' forward deployment laboratory. ST PHOTO: ONG WEE JIN

He believes that teamwork was key to the labs' success. "This is something that I'm most inspired by. What it took was a team from all walks of life, all backgrounds, to come together as volunteers in order to step up against Covid-19."

Another Defence Technology Prize recipient was the team that developed the A330 Multi-Role Tanker Transport aircraft hangar - the SAF's first net-positive-energy building - at Changi Air Base (East). This means the facility can generate more electricity than it consumes.

Ms Jolene Chung, 29, who is deputy head of building and infrastructure at DSTA and part of the project team, said the team went beyond operational requirements to deliver the sustainable initiatives for the hangar.

These include a solar energy harvesting system and the recycling of rainwater for non-potable uses such as irrigation of the hangar's green roof.

This year, the prizes were given to six teams and two individuals.

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Head of the Centre of Excellence for guided weapons at ST Engineering Han Meow Kwang, 60, was one of the individual prize winners.

His citation said he was "instrumental in building up Singapore's strategic capability in rocket motors", including for use in mine-clearing systems.

He said: "I hope that this award can inspire the younger generation of engineers and technologists to attain greater heights in their field of work, to contribute to the SAF's defence and technology effectiveness."

Ramping up Covid-19 testing capacity

The Ministry of Defence's forward deployment laboratories (FDLs) were set up last year to help meet the national need for Covid-19 testing.

KEY FEATURES

1 Located in shipping containers, allowing flexibility to scale up when needed



2



Use of automation reduces manpower requirements

3

Use of direct polymerase chain reaction Covid-19 tests reduces dependence on extraction reagents and human error



March 2020
Efforts to build FDLs started.

May 2020
DSO National Laboratories and the Defence Science and Technology Agency set up the first FDL at the Changi Exhibition Centre, contributing to testing at migrant worker dormitories.



October 2021

Now called automated FDLs, four of them are currently located at the rooftop of a carpark next to Changi Airport Terminal 4, to facilitate testing of airport workers and travellers when needed.



August 2020

A second FDL was set up at the Army Museum in Joo Koon.

BY THE NUMBERS

Four FDLs built so far, contributing up to **10,000 tests** a day.

More than **160,000 samples** tested as at Oct 1, 2021.

297 testers trained to operate at FDLs.

SOURCE: DSO NATIONAL LABORATORIES
PHOTOS: A*STAR, ONG WEE JIN, DESMOND FOO
STRAITS TIMES GRAPHICS