

Covid-19 breathalysers could be used on large scale in S'pore soon

Clara Chong

Mass deployment of Covid-19 breathalysers that produce results on the spot may soon happen here.

This will facilitate safe travel arrangements and screenings at large-scale events.

The Straits Times has learnt that local medical technology firm Silver Factory Technology is working with the National Centre for Infectious Diseases (NCID), Changi Airport and security firm Certis to develop its breathalysers.

Silver Factory's breathalyser, TracieX, has been shown to be almost as accurate as polymerase chain reaction (PCR) tests, while taking a fraction of the time – at two minutes – to turn in results.

Compared with PCR tests – the gold standard for testing – the disposable breathalyser's sensitivity rate so far has been over 95 per cent, and its specificity, more than 99 per cent. Sensitivity refers to a test's ability to identify those infected as positive, while specificity refers to a test's ability to correctly identify those not infected as negative.

It is also cheaper, costing around US\$20 (S\$27) each currently.

Trials have already started at the NCID, Changi Airport Terminal 1 and Certis, with a total of more than 400 individuals tested to date, Silver Factory said.

In an unblinded trial at Changi that began last month, arriving passengers were selected randomly and asked to volunteer for the trial by providing a breath sample.

The test site was set up with the help of NCID, which evaluated its biosafety protocols and monitored and analysed the data collected.

"Breathalyser tests are less invasive, more cost-effective and can deliver results in two minutes or less,

[BOOST PRODUCTION continued on A2](#)

Firm aims to ramp up production of breathalysers

FROM A1

which, if proven reliable, will make the airport experience for passengers a smoother one and give reopening efforts a boost," said Changi Airport Group's senior vice-president of passenger experience Albert Lim.

Silver Factory, founded in January last year as a spin-off from Nanyang Technological University, aims to produce at least 200,000 breathalysers a month from June, potentially ramping up production to two million a month. The product's cost price is expected to fall once large-scale production begins.

Sensor chips will be produced in Silver Factory's upcoming 300 sq m pilot plant in Tuas – roughly the size of three five-room Housing Board flats – while home-grown manufacturing company Dou Yee Technologies will assemble the devices.

Further studies are also set to begin soon at Changi Airport, NCID and some hospitals in Malaysia, Silver Factory said.

At least 1,000 participants will be recruited in Singapore in all for both the current and upcoming studies, with this number potentially extending to 2,000, said Dr Shawn Vasoo, head of the Infectious Disease Research Laboratory and clinical director of NCID.

Associate Professor Ling Xing Yi, one of the co-founders of Silver Factory, told ST that trials will be expanded to Malaysia due to the low number of Covid-19 cases here.

Silver Factory aims to apply for regulatory approval from the Health Sciences Authority (HSA) by June.

Once approved, Certis will also use these breathalysers in its current Covid-19 testing operations, Mr Joseph Tan, the security firm's senior managing director and head of technology services, told ST.

The breathalyser "delivers results in just two minutes with a high degree of accuracy and is able to do crowd screening... for aviation and cruise operations, government checkpoints, immigration clearance and at healthcare and medical facilities", Mr Tan added.

Certis will have exclusive rights to market this breathalyser in its key markets of Singapore, Australia, Hong Kong, Macau and Qatar.

Another start-up, Breathonix, is running trials of its own breathalyser at three sites – Changi Air-

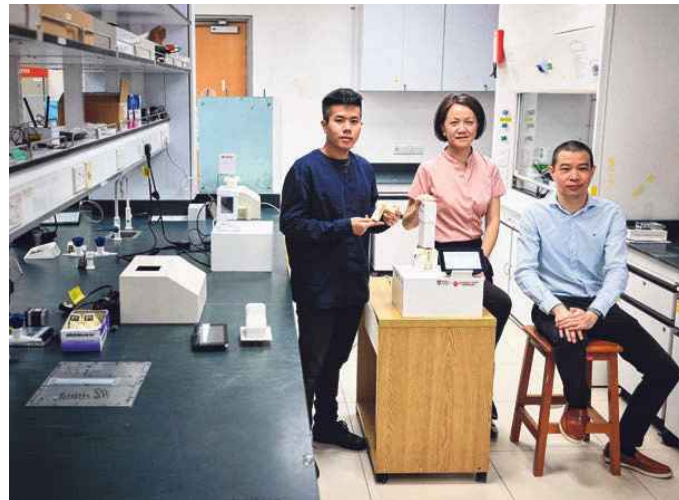
port, NCID and in Dubai – with over 3,000 people tested in total.

It aims to get HSA approval by the first half of this year.

"This trial will help Breathonix better understand and improve the actual deployment workflow for our breath test station," said its chief executive Jia Zhunan.

chongcij@sph.com.sg

Below, from left: Silver Factory co-founders Phang-Quang Gia Chuong, Ling Xing Yi and Phang In Yee with the company's Covid-19 breathalyser. Silver Factory's breathalyser, TracieX, has been shown to be almost as accurate as polymerase chain reaction tests, while taking a fraction of the time – at two minutes – to turn in results. ST PHOTO: JASON QUAH



Detecting Covid-19 in a single breath

Breathalysers developed by medtech start-up Silver Factory Technology employ vibrational spectroscopy to identify Covid-19 infections. This technology identifies the molecular fingerprint of volatile organic compounds present in the exhaled breath of individuals who have Covid-19. **Clara Chong** looks at how this works.

Exhaled breath contains thousands of **volatile organic compounds**.

Different diseases, viruses or bacteria will alter the composition of these compounds.

Viruses like Sars-CoV-2, which causes the Covid-19 disease, will cause an infected person to exhale a **distinct composition of compounds**. These compounds will be detected by the breathalyser.

HOW IT WORKS

1

An individual breathes into a breathalyser, equipped with infection-control features, for **around 10 seconds**.



2 The breathalyser is disinfected and inserted into a portable reader and the analysis is completed **within two minutes**.



3 This reader identifies the distinct compounds that are unique to Covid-19.

4 Statistical analysis is then done by the reader to identify individuals with Covid-19, and a readout is generated.

5 The breathalyser is disposable and will then be safely discarded.

ABOUT THE BREATHALYSER

- Benchmarked against polymerase chain reaction tests – considered to be the gold standard for testing – Silver Factory's breathalyser has a
- sensitivity of **over 95 per cent**
- specificity of **over 99 per cent**

- Large-scale manufacturing of the breathalysers will **start in June**.

Source: SILVER FACTORY TECHNOLOGY ST PHOTOS: JASON QUAH STRAITS TIMES GRAPHICS

BOOST REOPENING EFFORTS

Breathalyser tests are less invasive, more cost-effective and can deliver results in two minutes or less, which, if proven reliable, will make the airport experience for passengers a smoother one and give reopening efforts a boost.



MR ALBERT LIM, senior vice-president of passenger experience at the Changi Airport Group.