Using technology to battle Covid-19

The cleaning of surfaces is set to become simpler and more efficient with technology, namely, XDBot, a disinfection robot that uses electrostatically charged sprays, and Sunburst UV Bot, which uses ultraviolet-C rays.

XDBot

Controls
- Remotely controlled
- Semi-autonomous

Sprayer assembly
Electrostatically charged nozzle can spray at objects on the floor or at up to 3m high

Stereo cameras
Camera on sprayer assembly enables precise locating of target surface. Forward-looking stereo camera enables navigation

Robot arm
With six degrees of freedom, it can mimic human movement to reach awkward spots

Lidar (light detection and ranging) sensors
These promote operator situation awareness during remote deployment

Chassis
- Rechargeable battery
- 8.5-litre disinfectant tank
- Control systems for navigation and arm movement

SIDE VIEW   FRONT VIEW

Speed
0.25m per second

Charge time
6 hours

Operation time
4-5 hours

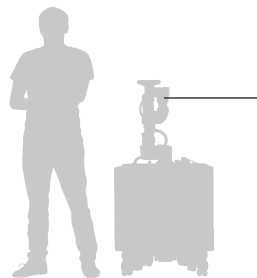### SPRAYING CAPABILITY

Range of spray
1.2m to 2m

Spray diameter
0.3m at 1.2m away from the nozzle

Time needed for disinfection
At one minute for every 5 sq m, the robot can cover 1,200 sq m in 4 hours

Can discharge disinfectant droplets as small as 40 microns (one micron is one millionth of a metre)

Robot arm
Extends to a height of 1.5m above the floor

Length 1.1m
Width 0.7m
Height 0.8m
Weight 145kg

Area equivalent to about 11 five-room HDB flats
(at 110 sq m per flat)

Sunburst UV Bot

The robot uses ultraviolet-C rays to disinfect surfaces and navigates using Lidar technology and vision

Controls
The robot can be programmed to operate autonomously or be remotely controlled

Lidar
Sensor to avoid collision

UV module
1,000W

Fleet management system
This can operate a fleet of autonomous mobile robots

Concept image only

Control panel   **Bumper sensor**

Charge time
2 hours

Operation time (UV mode)
2-3 hours

Payload
100kg

Speed 1.5m per second

Length 0.7m **Width** 0.5m
Height 0.38m (minus UV module)
Height with UV module 2.08m (public areas), 1.7m (smaller spaces/rooms)

Time needed for disinfection
10 minutes for every 15 sq m
3 hours for every 270 sq m

UV mode of operation
The robot moves to a designated checkpoint in a room, stops and zaps for a period, then moves to the next point and stops and zaps