

JTC to trial robot for building inspection

if trial in 2017 is successful, there will be cost savings while ensuring inspection consistency and accuracy

By Soon Weilun
soonwl@sph.com.sg
@SoonWeilunBT

Singapore

EARLY next year, a *Wall-E* lookalike autonomous robot will be deployed in an almost-completed industrial project in Singapore's west to check for architectural defects.

And if the trial, undertaken by Singapore's industrial developer JTC, proves successful, it can take over some aspects of the job currently done by humans in the near future.

"Once we find out that everything (at the trial) turns out to be as planned, then the next step would be we'll try to cover more uses, and see if we can totally replace this aspect of the inspection of spaces with robots," said Koh Chwee, director of JTC's technical services division, at a press briefing on Wednesday, showcasing the robot's capabilities.

This 70-kg, 1.8-metre robot that resembles the eponymous robot from Disney's animated movie *Wall-E*, will be used in JTC Space @ Gul to pick up building defects such as cracks and uneven surfaces. This will be its first real-world deployment.

Named QuicaBot, short for Quality Inspection and Assessment Robot, and armed with its high-tech cameras and laser scanners, it can help detect if walls meet at right

angles or floors are even. Currently, human inspectors have to use tools such as set squares and spirit levels to carry out these checks.

A two-hour charge of QuicaBot's battery can give it 36 hours of working time.

It will pair up with a human inspector during the inspection, who can control it via a laptop. Otherwise, it can function autonomously.

It will upload three-dimensional

data of scans of the building and upload the data into a database, which will then be measured against regulatory standards.

This way, it is expected to deliver cost savings in this phase of a building's construction, while ensuring consistency and accuracy in inspection.

For example, if it takes two human inspectors a day to complete an inspection, JTC estimates that a human inspector and robot pair will take only half a day, said Mr Koh.

If the trial proves successful, JTC will consider reaching out to the Build-

ing and Construction Authority to see if the robot can help meet regulatory requirements.

Commercial production may soon follow, with end-2017 estimated as the earliest possible date, said Mr Koh. JTC will also consider extending the robot's use to other kinds of buildings such as commercial and residential.

The robot can also be used overseas. Its algorithms can be tweaked so that it can work within the parameters of overseas regulators, said the project's principal investigator Erdal Kayacan, who is also assistant pro-

fessor from NTU's School of Mechanical and Aerospace Engineering.

QuicaBot is the culmination of a year's work for scientists from Nanyang Technological University (NTU).

It was also co-developed by JTC and local startup CtrlWorks. The National Research Foundation also supported the project under a funding initiative.

At the current phase, the cost of the robot is about the annual salary of a human inspector, said Chen I-Ming, director of the NTU Robotic Research Centre, at the briefing.



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