Singapore

SMRT, NTU develop new systems to detect train door faults, enhance rail reliability

SINGAPORE: A sensor system that can detect SMRT train door faults and alert engineers has been on trial since June this year – one of four projects that will be progressively implemented in phases to enhance rail reliability.

They are part of 13 projects in a joint research collaboration between transport operator SMRT and Nanyang Technological University (NTU), under the $500 million SMRT-NTU Smart Urban Rail Corridor Laboratory established in May 2016, with support from the National Research Foundation (NRF).

The lab was officially opened on Wednesday (Aug 24) by Minister for Finance and NRF chairman Heng Swee Keat. It focuses on two complementary research tracks – developing real-time monitoring systems and enhancing the reliability of existing rail assets. It pools together NTU researchers and SMRT staff.

Speaking at the launch, Mr Heng said: “This corporate laboratory aims to drive the effective translation of research into solutions that have direct relevance not just to SMRT, but to the global transport industry in anticipation of future needs.

“It looks to itself to technical issues that will affect transport systems of the future, and drives the R&D today to develop solutions.”

One of the projects being tested on a train on the North-South and East-West Lines is the Advanced Train Door Sensor System. When mounted on train doors, the sensors record the pressure, movement, speed and power systems. The sensors also come with algorithms that can predict imminent train door faults, and allow engineers to identify faults and reduce the time needed for troubleshooting.

More than half of all train delays are caused by door faults.

Another project is a cladding system that uses laser technology to repair defective rails along the tracks. The system can be mounted on wagons that carry out rail repair work in a less labour-intensive manner. It also reduces the time needed to carry out repairs in a single night compared to those in progress currently. The system is expected to be deployed for trial in 2022.

Within the next two years, systems that can detect doors that are out of alignment on the running rails, as well as ones that can inspect train axles, will be tested.

Mr Heng said the projects “will result in better management of train door faults, significant cuts in delays, faster and smoother track repairs, better-maintained trains and higher service levels”.

SMRT chief executive Neo Kiam Hong said the company is working to improve rail reliability and sustain the progress made. “At the same time, we will tap top-notch engineering resources in Singapore to solve problems that affect our train services, such as train door, track or power supply issues,” he added.

said NTU president Professor Subra Suresh: “Using latest sensor technology, radio frequency technology, 3D printing and many other tools, we have an opportunity to take cutting-edge research to solve immediate problems of interest to rail operators in Singapore – who are at the end-users of these technologies.”

The SMRT-NTU Smart Urban Rail Corridor Laboratory is one of 12 labs supported by the NRF, which facilitates the setting up of corporate labs via public-private partnerships.

Source: CNA (Aug 24)