RISSB
RAIL INDUSTRY SAFETY AND STANDARDS BOARD

FAST TRACK

THE NEWSLETTER OF THE HORIZONS PROGRAM | NOVEMBER 18

INSIDE THIS ISSUE – WHAT IS SHAPING THE RAIL INDUSTRY TODAY AND INTO THE FUTURE

Automatic Vehicle Inspection System (AVIS)

Bombardier has developed the AVIS System: Automatic Vehicle Inspection System, in order to optimise asset management, aimed at the maintenance of rail fleets throughout the world.

Through Condition Based Maintenance, the AVIS system combines two external measurements with data from on board the train. Firstly, it takes measurements on the profile of the wheel, pantographs, axels, pills and discs. It then conducts a large variety of gauges checks for damage and deformation on the wheels.

The Bombardier Orbita Software then combines and analyses the data to determine what repairs and maintenance tasks should be carried out. Through AVIS, Bombardier increases reliability, improves maintenance safety and reduces overall maintenance costs.

Advantages of AVIS include:

- Greater reliability through the early detection of rolling material wear
- Reduced damage to infrastructure (airlines and railways)
- Reduction of maintenance labour and vehicle downtime
- Material savings through an accurate evaluation of the remaining durability of the material

Drowsiness Detection Technology (DDT)

Studies have shown that fatigue can affect a person the same as being intoxicated. Between 17 to 19 hours without sleep, our performance is equivalent or worse than that of a person with a blood alcohol concentration (BAC) of 0.05, if a person continues with no sleep, your BAC can reach of 0.1[1], twice the legal driving limit.

Within the rail industry, our Train Drivers can be in road vehicles for long periods. As such when you take into consideration shift work and the nature of operations, fatigue becomes one of the highest risks facing our workforce.

The Drowsiness Detection Technology (DDT) system is one that was introduced to Pacific National, as part of its Fatigue Management Strategy, is the last line of defense if you fall asleep at the wheel.

The system is in every vehicle within the fleet, each car is fitted with the following:

- Infrared sensor - monitors you for drowsy behaviour when you are driving (e.g. heavy eyelids, slow blinks and drooping head)
- Speakers and rumble pack- If drowsy behaviour is identified, the system will trigger an audible alarm and chair vibration

For more information on the system, please visit https://www.seeingmachines.com/

Reference:
1- A M Williamson, Anne-Marie Feyer : Moderate sleep deprivation produces impairments in cognitive and motor performance equivalent to legally prescribed levels of alcohol intoxication : Occup Environ Med 2000;57:649–655: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1739867/pdf/v057p00649.pdf

Obstruction Detection System (ODS)

The Obstruction Detection System (ODS) ccompliments existing Grade Crossing Predictors (GCP's) by providing early warning of level crossing obstructions to reduce risk of collisions between trains and road traffic.

When an obstruction is detected by the ODS, an automated response to reduce the approaching train's movement authority to now be located prior to the level crossing is sent to the train's Automatic Train Protection (ATP) system.

The ODS was designed and implemented by Ansaldo-STS as part of the Rio Tinto AutoHaul® project.

Turnout Split Bearers

Renewal of Turnouts in Metropolitan networks is a complex undertaking, typically due to limited track closure durations. The traditional response to this situation is to prebuild turnouts and install them as a panel. The challenges associated with this traditional approach is that land and access is becoming difficult to obtain in urban environments, and prebuilding Turnouts offsite can be difficult to deliver due to their size and weight.

Recently, Turnouts in NSW have successfully been replaced with “Split Bearer” configurations. This modular approach allows Turnouts to be prebuilt and surveyed/adjusted offsite, divided into sections that conform to metropolitan road/rail widths, and delivered and reassembled onsite during track closedowns!

Hydrogen Powered Trains in Australia?

Below are some recent articles that discuss developments in the use of Hydrogen as a fuel source within the rail industry.

August 2018 – Breakthrough in hydrogen production in Australia
https://www.csiro.au/en/News/News-releases/2018/CSIRO-tech-accelerates-hydrogen-vehicle-future

September 2018 - Two hydrogen powered trains built by Alstom enters 100km route passenger service in Northern Germany
https://www.alstom.com/coradia-ilint-worlds-1st-hydrogen-powered-train

It may be possible in the future to convert DMU into HMU in Australia!

Thanks for reading

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