How does Automatic Train Protection work?

TRACKSIDE

ON-BOARD

Trackside Balises
Balises (small electronic transponders) are being installed in the track between the rails in fixed locations across the Sydney Trains electrified network. The balise transmits lineside speed and signalling information to the train as it travels over the top. An antenna under the train picks up messages from the balise and passes them on to the ATP on-board computer which is then used to monitor and restrict the speed of the train.

Signalling and Mechanical Equipment
ATP works alongside existing lineside signalling infrastructure and mechanical train stops.

Lineside Electronic Units (LEU)
The LEU is an interface between the signalling equipment and the trackside balises, converting signal route information to the on-board computer via a balise to apply appropriate speed and braking supervision of the train.

Driver Information
The ATP system monitors train speed and alerts the driver with visual and audible alarms if the train exceeds the permitted line speed. If the driver doesn't respond to the alerts, the system will apply the brake to slow the train down or apply an emergency brake which will automatically and safely bring the train to a stop.

Train Driver
The driver is still responsible for the operation of the train; ATP provides additional safety benefits through speed supervision.

On-board Computer
The driver will stay informed via a display in the driver's cab. Wheel sensors, accelerometers and radars are being installed on train sets to continually calculate train speed, distance to target and braking application.

Transport for NSW is improving safety across the electrified network by delivering new Automatic Train Protection technology