



# Railweight weighs into passenger counting for Santiago Metro

Three additional Railweight APC4000 automatic passenger-counting systems are being installed to help South America's most extensive metro system optimise its service. With seven systems already installed on busy sections of the Metro de Santiago, the system has a proven repeatable accuracy and provides data in real time about passenger usage to minimise operating costs and maximise comfort.

Metro de Santiago in Chile is a network of five lines connecting 92 stations. Since February 2007 passengers could use the Metro for the same price as a bus and now more than 2.3 million people use it daily.

With the price of electrical power increasing, it is important to manage the service at an optimum level, at the same time aiming to reduce maintenance costs per kilometre travelled.

This, however, must be balanced against comfort, so the Metro aims to manage passenger density at less than six people per square metre. To achieve this, Metro de Santiago needs real time data about the number of passengers actually travelling on the system.

The Railweight system works by weighing and identifying individual carriages to calculate the number of passengers on board. An initial survey of actual passengers was carried out to calculate the average passenger weight and this is also used by the system in its calculations.

Each weighing zone consists of a number of Railweight's Weighline transducers mounted in the track, a TSR400 high speed dynamic train weighing processor and an RFID reader. RFID tags identify the carriages as they pass over the systems. These weighing zones are connected to the APC4000 server which processes the information and provides the statistical information to the operations controllers.

By knowing the weight of each empty carriage as well as specific seating and standing room, the system calculates how many passengers are onboard as the train passes over the weighing zone.



## TECHNICAL

### Each passenger counting system consists of:

- TSR 4000 dynamic train weighing processor
- Typically six pairs of weighline transducers per measurement zone
- AVI / RFID reader
- Either one AVI / RFID tag per carriage or two tags per train depending on train type
- PC and printer
- APC 4000 software

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Says Paul Hines, general manager of Railweight: "Counting passengers by ticketing or turnstiles has its drawbacks because there is no control over where passengers actually go or which train they choose to take after they have bought a ticket or passed through a turnstile. Also it does not take into account fare dodgers. Our system shows how many people are actually on board each carriage at a particular point and time."

Using the system, Metro de Santiago can monitor usage to change the number of carriages or trains that are running or alter their frequencies to accurately meet demand.

Says Hines: "The system has proved its ongoing reliability for Metro de Santiago. It is a cost effective solution that provides accurate real time data. It is also relatively simple and fast to install causing minimum disruption to the service."

Before employing the Railweight system, Metro de Santiago would conduct polls at the exits of the main stations to ask passengers about their journeys. These proved expensive, took time to analyse and also only provided data for one week. They would take no account of seasonal differences.

**Benefits:**

- Provides real time data of passenger usage so the Metro can optimise operating efficiency
- Passenger comfort – passenger density less than 6 per square metre in a carriage
- Minimises running costs – electrical power usage
- Minimises maintenance costs
- Simple and fast installation to minimise disruption