The FREIGHTMISER® system comprises software that prepares journey data, and an on-board computer for generating and displaying driving advice.

**Features**

- FREIGHTMISER’s main function is to advise how to achieve, from a given current location and with a specific destination arrival time, an efficient usage of fuel while still maintaining the schedule.

- FREIGHTMISER’s control and speed profiles are automatically adjusted so that the train arrives at the next target location at the specified arrival time, not just at the earliest time, while also keeping fuel consumption to a minimum.

- FREIGHTMISER has a simple train interface and does not require extensive onboard or trackside hardware. Detailed information about the train is not required to operate FREIGHTMISER.

- FREIGHTMISER minimises energy consumption using a control strategy based on Optimal Control Theory. The Signalling & Control Group at the University of South Australia developed the optimal control algorithms.

**Benefits**

- Fuel and energy costs reduced by up to 20%.

- On-time arrivals improved by 10%.

- Reduction in braking of 30% leading to reduced wear.

- Smoother train handling due to increased coasting (by up to 30%) and reduced powering.
Methodology

For each type of trip, the optimisation software is used to compute the speed profiles for six different total journey times. Each profile is designed to minimise fuel consumption for the given journey time.

As the time allowed for the journey decreases, the minimum possible fuel consumption increases, providing drivers with the best possible strategy to reduce fuel consumption.

Use of pre-computed speed profiles

FREIGHTMISER is able to work with pre-computed profiles because, in practice, if the control mode is changed too early or too late, switching amongst the different pre-computed profiles will automatically adjust future control strategies to compensate.

Display of various pre-computed speed profiles over a given alignment and the associated speed limits. Different control modes are represented by the variation in the speed profile colours.