

## A REVIEW OF LONGITUDINAL LOAD DESIGN CASES FOR RAILWAY PASSENGER VEHICLES

The advent of higher speeds, new construction materials and fabrication techniques has, over recent years, led to an increasing need to specify realistic design load cases for railway rolling stock. The largely empirical design rules currently in use are, in general, related to specific methods of design and construction, and doubts exist over whether they are applicable to new concepts.

This report seeks to compare some selected published standards for longitudinal load design requirements of passenger vehicles, and examine their background and relevance with respect to the needs of the design engineer.

The following points have emerged:

- The UIC design load requirements often quoted were derived solely in relation to main line coaches.
- No sound case was presented by the B7 committee justifying the particular load levels recommended.
- Vehicles capable of withstanding the recommended loads have exhibited serious weaknesses in the event of accidents.
- Changes in design and manufacturing methods have added to the original limitations of UIC load cases, particularly if attempts are made to extrapolate them to other types of vehicle and to new concepts.
- The logic of designing to specific loads rather than to meet realistic situations should be questioned.
- The design policy for dealing with accident situations needs defining.