

LEARNING FROM PAST MISTAKES

The Government is ordering new trains and carriages in a much-publicised move. But let's get the right rolling stock, says Henry Law, and learn from the mistakes of the past when it comes to seating, doors and suspension

It goes without saying that the specification for the new stock announced by the Government will require operational compatibility with existing fleets. One would also hope that it will build directly on the experience with the Electostar and Desiro fleets. After a sometimes painful learning curve, both types of train are now well-established and reliable.

Their systems and components are proven. Staff are familiar with them. Given the correct interior configuration, the Electostar – in particular in the class 376 version with sliding doors – has proved excellent for inner suburban services. This has been recognised by Transport for London in its choice of Electostars for the East London and North London line services.

On the other hand, to perpetuate the present designs in their entirety would be to miss an opportunity for improvement. To reduce energy consumption and improve performance, the weight should be brought down, possibly through the use of alternative forms of bodyshell construction and also by improved design of interior components, such as seats.

And while they are well suited for inner suburban routes, the Electostars, and to some extent, the class 450 Desiros, are less than ideal for the longer distance services where they replaced the class 421 slam doors, which were used up to 1972.

Electostars are narrower inside than the 20-metre mark 3 stock, especially at floor and cantrail levels. This results in cramped seating and luggage racks barely wide enough to hold an overcoat. And the problem is compounded by the skirting ducts, which leave passengers in



A Danish Øresundståg, which has a single doorway, but more space for passengers to step into.



A Class 450 Desiro.

window seats in the 2+3 versions with insufficient space to sit straight with both feet on the floor.

There are considerations when it comes to suspension, too. Electostars are distinctly bouncy, possibly due to insufficient inter-vehicular damping – they certainly run less steadily than the buckeye-coupled mark 1 stock that had the benefit of the effective damping provided by the gangway rubbing plates. Steadier riding would allow extra width. Articulation would be one way to solve this problem and perhaps ought to be explored for the other benefits it would bring, such as weight saving, with five-car articulated sets instead of conventional four-car units.

The design and position of doors should also be reviewed. Plug doors – those which are flush with the side of the vehicle when shut, but pop forward before opening – need to be carefully considered if they are to be used, as they are more complex than sliding doors and require a

half-step at the entrance. The step is both a hazard and a delaying feature, as passengers need to tread carefully. As for the location of doorways, the accepted industry view is that the 1/3:2/3 configuration – where vehicles have doorways about 1.5 metres wide, a third of the way from the end of each carriage – is best for station dwell-times. The comparison is always made with stock such as classes 158 and 442, which have a pinch-point between the vestibule and the seating area.

Given adequate circulation space adjacent to the entrance vestibule, there is no reason why end-door stock should be significantly worse. Indeed, the 26-metre Øresundståg vehicles, built by Adtranz about 10 years ago, running northwards from the Copenhagen conurbation on similar services to those south of London, have only a single doorway on each side, but there is a large area of clear floor space immediately inside so that passengers can quickly move away from the entrance when they board the train.

There are advantages in locating the doorways at the vehicle ends. Weight reductions might be made as, from a structural point of view, the 1/3:2/3 configuration is not an ideal place for large door apertures. There is more freedom in arranging the seating layout, as the passenger accommodation forms a single large area instead of three compartments. And environmental control is easier, reducing the load on the heating and ventilation system, especially as it is simple to fit internal doors between the vestibules and the passenger saloons.

Now that we once again have established designs, the opportunity for revision should be taken to evolve what are quite good designs into something very much better.