

## RAILWAY SIGNALLING PRODUCTS

MPE have been involved in supplying high reliability, high stability capacitor products for use in railway signalling applications for more than 40 years. These capacitors have been used in different types of tuning circuit and impedance bonds & although some of the signalling technologies have now been superseded, many are still in use and spares are still being provided for refurbishment.

The key capacitor components are all manufactured in-house, giving MPE the capability to design & manufacture optimum cost-effective solutions to suit the specific application, and achieve the tight tolerances and stability required in these arduous applications, particularly where the vibration of trackside and between track mounting place tough environmental conditions on the capacitors.



### TRACK FEED SWITCHABLE CAPACITOR UNITS :

MPE manufacture two types of unit which service the rail network. An adjustable unit incorporates a range of five different capacitor values & a single unit of one capacitor value. The unit is in series with a power supply source that feeds the rails at one end of a track section. The other end feeds a relay, which in turn activates signalling equipment. The capacitor unit is adjustable so that the relay is energised appropriately when there is no train present. When a train is present on the track section it short circuits the rail, de-energising the relay which changes the signal

The all-dry plastic film winding version of the switchable capacitors was originally developed by MPE in conjunction with BR to replace older oil filled capacitor designs, which suffered from oil leaks under the severe vibration conditions and became the new standard for many years. Documented as British Rail standard - BR 1649

### AC & DC IMPEDANCE BOND CAPACITORS :

Used in train detection – track circuit based systems, the compact potted impedance bond capacitors were also an innovation developed by MPE to replace commercial capacitors which were traditionally mounted on printed circuit boards and fitted in enclosures between the tracks. However, the original pcb type designs quickly failed due to the vibration conditions imposed. The more robustly constructed MPE capacitors with bus bar terminal mountings provided a significant improvement in reliability when introduced to the British Rail Southern region and again became a new accepted standard.



### AC IMPEDANCE BOND CAPACITORS :

This series of high stability tuning capacitors were developed for use in the channel tunnel signalling equipment. The resonating capacitor is fitted to current impedance bond equipment to monitor train positions on the rail network.

A larger version of the above capacitors covering a different range of frequencies

### LOW IMPEDANCE DC TUNING CAPACITORS :

These highly reliable, high capacitance, low ESR capacitors are used to resonate with the inductance of the rails between the station & the train. The capacitors have braid connecting leads to offer minimum connection resistance. They can be manufactured in a range of capacitor dielectrics to match impedance with temperature variation.

