

## FLYWHEEL ENERGY STORAGE FOR RAILWAY VEHICLES – A FEASIBILITY STUDY

The report investigated the scope for energy savings on railways by using flywheel energy storage on vehicles. In particular it focussed on the scope for regeneration of braking energy both for electric and diesel trains.

The report was based on current developments that had made flywheels an option worth considering, such as high strength steels and composite materials.

Apart from direct energy saving, the potential for power smoothing was also considered. This would involve energy storage from the peaks into the off peak periods to avoid high costs associated with excessive demand. This allows the power source at the generating station, or on the train itself to be reduced in size.

Two firms of consultants carried out investigations into practical forms of flywheel. Noel Penny Turbines completed a feasibility study for an underfloor mounted flywheel device. Cambridge Consultants Ltd investigated mechanical energy storage in general with particular emphasis on flywheels.

The Electrical Systems Section of British Railways Board Research and Development Division worked together with Professor Eastham of Aberdeen University to study a possible electrical transmission for the flywheel

The report analysed regenerative flywheel braking and flywheel hybrid drive systems (to achieve power smoothing) on British Railways vehicles. It also prepared a design based on current technology, the implications of future technology and the potential benefits from both technical and economic viewpoints.