Department for Transport

From the Minister of State
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David T. C. Davies MP
Chair of the Welsh Affairs Committee

30 JAN 2018

Dear David,

I am writing to provide a response to questions that were asked during the Welsh Affairs Committee hearing into the cancellation of rail electrification in South Wales, on 17 January.

The Committee had picked up from the media that the estimated 15 minute journey time saving from Cardiff to Paddington could only be achieved by removing intermediary station stops. I was clear that this was not the case and agreed to confirm this in writing is achieved. I can confirm this will be achieved without changing the existing, normal stopping patterns of trains. The new Intercity Express trains are able to accelerate more quickly to higher speeds on the faster electrified sections of track east of Cardiff and thus enjoy the benefits of those higher speeds for longer resulting in a journey time saving. The track alignment west of Cardiff has much lower running speeds such that electric running delivers no significant benefits.

The Committee also asked about trials involving the use of alternative fuels for rail. The Department has regular meetings with rolling stock manufacturers and owners to discuss the development of alternatively powered trains. It also watches the development of alternative power sources in road transport industries with interest as advancements there are likely to create improvements that can be transferred to the rail sector. Some schemes which may be of interest to the Committee are included with this letter.

A copy of this letter will be placed in the libraries of both Houses.

I hope this information is helpful.

Kind regards,

Jo

JO JOHNSON

Details of Alternatively Fuelled Train Schemes and Trials

Hydrogen
Alstom has produced a Hydrogen powered train (Coradia iLint). These trains are due to enter passenger service in Germany from early this year. Other manufacturers (Siemens, Hitachi) are also developing similar systems. These trains store Hydrogen on the train and draw power from Hydrogen Fuel Cells on board the vehicles.

Battery
A number of train manufacturers, including Bombardier (Derby) and Vivarail (Stratford-Upon-Avon), are developing vehicles capable of storing electrical energy in batteries on board the train. These batteries can be charged whilst running on track fitted with overhead wires or a 3rd rail or from on-board diesel engines. This energy is then used to power the train when running on non-electrified sections of track.

In 2015 the Department supported the trail of an Independently Powered Electric Multiple-Unit (IPEMU) battery-powered train in passenger service between Harwich International and Manningtree stations. This prototype train was developed to demonstrate the potential of a battery / electric hybrid EMU.

Super Capacitor
Alstom manufactures the Citadis trams which can be fitted with super capacitors capable of storing electrical energy on-board the train as it runs between sections of track with overhead wires.
Trackside super capacitors, capable of storing energy recovered from the train when it is braking (regenerative brake) have been tested on the Docklands Light Railway to boost the existing 3rd rail supply. Similar devices could be used elsewhere on the rail network to enhance the existing electrical supplies.

Flywheel
The Parry People Mover is a small single vehicle lightweight train that uses energy stored in a flywheel on-board the train to produce electricity that powers the vehicle. The vehicle also has a small diesel engine that is used to accelerate the flywheel up to speed.
These vehicles have been in service on the Stourbridge branch line (near Birmingham and Kidderminster) since 2009. Other flywheel trains and trams are being developed by Alstom as a development of the Citadis trams.

Hyperloop and Maglev
Both the Hyperloop and Maglev systems use electricity drawn from their national grids. Both are high users of energy but can achieve very high speeds by removing the friction between the track and the train and, in the case of Hyperloop, removing resistance from the air by operating in an evacuated (vacuum) tunnel. The Hyperloop system is being developed in the US (California) whilst Maglev systems are currently in use in China, Japan and South Korea.