

Press Release

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Lower Fuel Consumption with Voith DIWARail Transmissions: Voith Modernizes Class 158 Vehicles

London/Heidenheim: Voith fitted a British Class 158 DMU with two DIWARail transmissions for an in-service trial in the UK. The hydro-mechanical transmissions have been proving their advantages, efficiency and reliability since June 2015, reducing the fuel consumption by up to 16 percent compared to the currently installed transmissions.

The trial in Wales has been commissioned as a collaborative venture between Voith, Angel Trains and Arriva Trains Wales. It aims on evaluating the advantages of the new transmissions for fitment on UK DMU fleets. This project paves the way for the introduction of modern and more efficient transmissions in all classes of DMU, both for new build and modernization projects. The Voith DIWARail transmission builds on the hugely successful Voith T211 transmission which has been the mainstay transmission for the UK diesel fleets since the 1980s.

Voith provided a turnkey installation, covering design, manufacture, project management, installation and commissioning. Besides its DIWARail transmission, the drive technology specialist also delivered a control system, all brackets and guards, Voith one million mile cardan shafts and a new hydraulic torsional vibration damper (Hydrodamp).

The primary business driver for the trial is fuel consumption savings due to a more efficient transmission. The result – a reduction of maximum fuel consumption by up to 16 percent using the DIWARail transmission. Depending upon the duty cycle of the particular route, this figure could be increased further.

In addition to reducing fuel consumption, which is accompanied by a drop in all engine emissions, the DIWARail transmission offers even more value added for the user including a weight saving of 216 kg compared to the currently installed transmission. The transmission also features the proven

and robust integrated reversing mechanism which is unmatched in the industry and unique to Voith. Compared with alternative solutions, this mechanism increases availability and reduces maintenance costs.

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The installed Voith Hydrodamp moves the critical natural frequencies below the operating speed in the driveline and hydraulically dampens torque peaks. This protects all connected system components against harmful vibrations and thus increases their lifetime and availability.

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Voith fitted the components in parallel in just 13 days. The train was released for its first mainline run on the following day, giving a total project fitment time of just 14 days for return to passenger earning service. A significant contributory factor to the rapid return of the vehicle to revenue earning service was the flexible and strenuous efforts from the ATW staff on the ATW depot at Cardiff Canton to enable the train to be completed 10 days ahead of schedule.

Designs are also being developed for other UK DMU modernisation projects where the Voith DIWARail transmission can be used in conjunction with new or existing diesel engines. Voith is the only supplier who can offer a complete integrated driveline from a single source. The scope of supply can also be extended to include replacement final drives, RailPack drive packages and cooling units.

Angel Trains, the UK's largest rolling stock leasing company, has collaborated with Voith to bring the trial to fruition.

Voith Turbo, a Group Division of Voith GmbH, is a specialist for intelligent drive solutions. Customers from highly diverse industries such as oil and gas, energy, mining and mechanical engineering, ship technology, rail and commercial vehicles rely on advanced technologies from Voith Turbo.

Voith sets standards in the markets for energy, oil & gas, paper, raw materials, transport & automotive. Founded in 1867, Voith employs more than 20,000 people, generates €4.3 billion in sales, operates in over 60 countries around the world and is one of the biggest family owned companies in Europe.*

* Excluding the discontinued Group Division Voith Industrial Services.



Class 158 DMU with Voith DIWARail transmission.



Voith DIWARail transmission with support frame for easy installation.



The Voith Hydrodamp protects the driveline from vibrations and dampens torque peaks.

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