



## **EcoLife Rail – Greater Profitability for Diesel Multiple Units (DMUs)**

- **More Torque for DMU Drives**
- **Fuel economy, longer service life, quieter operation**

**During development of ZF-EcoLife Rail, the focus was firmly directed at improving cost effectiveness and customer benefits - both being key requirements on the market for rail vehicle driveline technology. For example, the torque converter automatic transmission is ideally matched to suit the higher torque ratings of modern powerpacks in DMUs and is able to transmit up to 2500 newton meters. The technical basis is the ZF-EcoLife transmission for city buses, a product launched back in 2006. The Special Driveline Technology business unit at ZF has adapted the transmission for special-purpose applications in rail vehicles - in particular to suit DMU operation.**

The newly engineered 6-speed automatic transmission ZF-EcoLife Rail, which is designed for torques of up to 2500 newton meters, generates better acceleration values at lower engine speeds with a torque converter which has also been newly developed. Still working with the same installation space, a torsional damper has been integrated in the converter. It ensures smooth operation and savings during fuel-consuming starting processes. By means of a heat exchanger – in addition to the oil cooler integrated into the transmission – it contributes to the improved cooling power of the ZF-EcoLife Rail. Thanks to improved heat management, the oil change intervals and the service life are extended, the transmission is even more reliable, easier to maintain and service; and, therefore, it is also more economical in operation.

Lower transmission noise emissions were achieved consistently with this new development. The engine speed is kept to a minimum through the use of intelligent shift strategies for the prevailing operating requirements. The six mechanical forward gears, now standard, also perform effectively and efficiently. The



helical-cut gears in the transmission also help the unit to operate quietly.

Together with the gear set reversing transmission and Rail Drive Control System, the EcoLife Rail can be offered as a complete system which can be integrated in a rail driveline at minimal extra expense and effort.

Caption:

New dimension for rail vehicles: The new 6-speed automatic transmission by ZF, EcoLife Rail, transfers higher torques and, depending on the mode of operation, allows for up to five percent fuel savings.

Photo: ZF

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ZF is one of the world's leading automotive industry suppliers specializing in driveline and chassis technologies. With a workforce of 63,000 employees, the company operates 125 plants in 26 countries. To sustain its success with innovative products, ZF invests at least 5 percent of its annual revenues (about €700 million from an annual total of €12.5 billion in 2008) in research and development.

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