



## **ZF-EcoLife: All-Rounder for Public Passenger Transport**

- **A volume production standard: ZF offers 6-speed automatic transmissions for commercial vehicles with the new TopoDyn Life control software**
- **Higher torque, higher service life, lower consumption.**
- **Soon, also made available as a hybrid version**

**Higher performance with better economy at the same time – EcoLife, the commercial vehicle transmission by ZF meets this requirement. The 6-speed automatic transmission, which is used in city buses, suburban buses, coaches, as well as special and rail vehicles, has also been optimally adapted to higher torques. It transfers up to 2,000 NM and, as a volume production standard, is equipped with the new topography-dependent TopoDyn Life transmission control software that continuously registers and processes data relating to the topography and all other driving resistances. Soon, the ZF EcoLife will also be available as a hybrid variant. This is how ZF meets the requirements of current and future emissions standards as well as the demand for further CO<sub>2</sub>reductions and fuel savings.**

When developing the 6-speed automatic transmission EcoLife, priority was given to customer benefits and economy. Compared with conventional powershift transmissions, the ZF EcoLife transmits 25 percent more torque and has been designed for a considerably longer service life. Depending on the operation, fuel savings of approximately five percent are expected. The newly developed and highly efficient cooling system easily copes with the up to 15 percent higher operating temperatures of modern engines. The suitable oil which also tolerates higher temperatures was also developed by ZF.

### **New converter and better cooling concept**

The 6-speed automatic transmission ZF EcoLife, which is designed for torques of up to 2,000 Newton meters, generates better



acceleration values at lower engine speeds thanks to the new torque converter by ZF Sachs. A torsional damper is integrated in the torque converter and does not add to installation dimensions. It allows for fuel savings during the fuel-intensive starting processes by closing the lock-up clutch faster. The significantly stronger, integrated, and considerably more powerful Citybus retarder provides support not only during the braking process. Equipped with a heat exchanger it contributes to the improved cooling concept of the EcoLife, together with the oil cooler which is integrated in the transmission. Thus, the new transmission can work even at oil sump temperatures of up to 120 degrees Celsius, which is particularly important with regard to the modern Euro 5 standard diesel engines. Thanks to the improved heat economy, oil change intervals and service life are also extended, the transmission becomes even more reliable and easy to maintain – and this is not the only reason why it is more favorable to operate.

Among the top targets consistently pursued when developing this recent innovation was also lower vehicle noise generation for passengers and pedestrians. In addition to a new, low-noise helical gearing inside the transmission, engine speeds are kept at a minimum thanks to more intelligent shift strategies, adapted to the respective operating requirements. Also the six mechanical forward gears make an efficient and effective contribution. This is something which ZF Ecomat, the predecessor model, has already proven impressively in a practical application.

As a standard, the ZF EcoLife transmissions have now also been programmed with the new topography-dependent TopoDyn Life control software. The continuously variable TopoDyn Life shift program ensures that the optimal transmission operating mode is applied to every single point of the route. This process is enabled by means of individual shift points that are calculated in line with the respective route profile and the driving resistances.

During the development of the ZF EcoLife transmission, ZF engineers also paid attention to system optimization. For example, the electronic control unit - with a new design and considerably



increased performance - is now located laterally on the transmission. The advantage of this location is the temperature level that remains constantly low thanks to the engine cooling system right beside it. Complex cable harnesses are avoided, and it is easier to install thanks to fewer interfaces. This means significantly improved handling for vehicle manufacturers and customer service.

### **Hybrid variant**

ZF is currently developing a hybrid version of the EcoLife transmission. Instead of the torque converter, a hybrid module will be integrated into the converter housing. This electric motor provides additional power of up to 120 kW. The hybrid variant of the EcoLife by means of which all hybrid functions can be realized – from the automatic stop/start function, boosting, and recuperating to electric starting and purely electric driving – does not require more installation space than the conventional EcoLife transmission. ZF is currently working on a close-to-production prototype. Also a major part of system integration, particularly hybrid drive control and energy management, is done at ZF.

With the product name and the hybrid drive capability of the EcoLife, ZF emphasizes its claim of combining ecological and economic objectives. Since 2007, EcoLife is installed together with TopoDyn in the B9TL by Volvo. As of mid-2009, the new 6-speed automatic transmission with the new TopoDyn Life will be applied in the Citaro and CapaCity (Evobus) models, the Enviro 400 (Dennis), and in low-floor buses by the manufacturer MAN.

### Caption:

New dimension: The 6-speed automatic transmission ZF EcoLife transfers higher torques with lower fuel consumption. ZF is currently developing the hybrid version of the new automatic transmission for commercial vehicles.

Photo: ZF



Presseinformation  
Press Information

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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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