



## **Economical Commercial Vehicle Technology by ZF**

- **ZF driveline solutions for all commercial vehicle classes stand for reliability, low maintenance, and fuel economy.**
- **New Intarder generation: more power and longer service life at less weight.**
- **Bus Rapid Transit system manages public transport flexibly and at low costs.**

**Economy is the key in the commercial vehicle industry. The market expects one main feature from innovations: cost benefits. ZF technology allows for efficient, economical, and reliable operation in all applications and vehicle classes. Products such as the automatic commercial vehicle transmission family AS Tronic, the automatic 6-speed powershift transmission EcoLife or the latest Intarder generation stand out by their good economy and reliability, low fuel consumption, and low maintenance efforts.**

Economy is more important than ever for forwarders and fleet operators. For this reason, the economic focus is no longer placed on major purchases only, such as commercial vehicles or warehouses. Also systems like the transmission have to pay off in the long run. "We have been taking these increasing requirements into consideration for years now", explains Mr. Vogel, member of the Board of Management and Group Executive of the Commercial Vehicle and Special Driveline Technology division. "Economical and efficient technology is what we are aiming at. Also when developing new products, one focus is placed from the very beginning on achieving as many savings during operation as possible".

### **Automatic transmissions**

The automatic commercial vehicle systems of the AS Tronic family have proven particularly economical. They transfer engine power optimally to the drive axles and keep the engine in an economical speed range which considerably reduces fuel consumption. Gears are engaged fully automatically without engagement jolts and load



change shocks – this preserves the clutch, the freight, and the entire driveline. Consumption-intensive incorrect operation is prevented by the electronic control unit. At the end of 2007, ZF celebrated the production anniversary of the 250,000th AS Tronic transmission for heavy trucks.

The EcoLife transmission by ZF has been perfectly adapted to special city bus requirements. As early as during the development of this automatic 6-speed powershift transmission with torque converter, reducing operating costs played a major role: Necessary maintenance work can be carried out at longer intervals, and service life has been increased significantly. Numerous innovations, in particular a hybrid version, will allow for further fuel savings in the future.

### **Manual transmissions**

Commercial vehicle manufacturers usually offer automatic transmission systems as optional equipment, as manual transmissions are still the standard. For this reason, ZF also offers a complete series here, which is continuously being advanced and covers a broad application range, from heavy to light trucks. The manual transmissions Ecosplit, Ecomid, and Ecolite work reliably and are almost maintenance-free. Additional advantages are manifold application possibilities, optimum power transmission, short shifting travels, very smooth running, and low curb weight. Fleet operators and drivers alike benefit from these features. In addition, the pneumatic shifting aid Servoshift contributes to high shifting comfort.

### **Intarder celebrates anniversary**

The latest transmission brake which ZF will present at the Auto Expo India 2010 achieves a 25 percent higher braking power than its predecessor. Moreover, it weighs less and is more environmentally friendly. ZF has produced more than 500,000 Intarder units in the past 16 years. The success of the transmission brake can also be explained by the manifold application possibilities: It has proven successful both in hazardous-material transport and in coaches, but also in heavy goods and crane traffic



or rail vehicles. Both manual and automatic commercial vehicle transmissions can be completed by the ZF-Intarder.

### **Fuel-efficient thanks to topographical information**

The shift strategy of automatic transmissions can be adjusted by ZF's TopoDyn shift strategy according to the respective routing requirements. Especially in the case of city bus routes, which are characterized by rare but clearly noticeable changes in topography, additional fuel savings can be achieved.

### **Bus Rapid Transit**

ZF not only supplies the technology for better economy in the commercial vehicle industry but also the corresponding traffic concept for public passenger transport: The so-called Bus Rapid Transit system is based on low-floor buses with ZF technology. It allows for quick entry and exit of passengers and, thus, shorter dwell times at bus stops and shorter bus round-trip times. Moreover, individual traffic is reduced. Further advantages – particularly in contrast to systems featuring platform bus stops: shorter implementation period, less space required at the bus stops, more flexibility and, in many cases, lower total costs.

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ZF is a leading worldwide automotive supplier for Driveline and Chassis Technology with approximately 60,000 employees at 125 production companies in 26 countries. In order to continue to be successful with innovative products, ZF annually invests five percent of its sales (2008: 697 million of EUR 12.5 billion) in Research and Development.

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