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ZF Electric Drive Solutions Simplify Transition to E-Mobility for Truck and Bus Manufacturers

- **System solutions from ZF simplify the transition to electric-powered city buses**
- **The AVE 130 electric portal axle and the CeTrax electric central drive are compatible with all city bus variants**
- **Existing platforms for delivery trucks can also be run electrically with the CeTrax central drive**
- **TraXon Hybrid covers truck applications and helps the environment**

Friedrichshafen. In order to make the transition to local zero-emission city buses and low-emission logistic transport trucks as easy and flexible as possible, ZF is providing commercial vehicle manufacturers with technology and systems expertise. For example, the company is offering its proven AVE 130 electric portal axle and the new CeTrax electric central drive for city buses, acting as a one-stop shop for all the components required. This means manufacturers can choose conventional low-floor and high-floor platforms as well as low-entry buses for electrically powered models, which makes the electrification of vehicle fleets more economical and convenient. In long-haul transport logistics, electric drives are no longer limited to being a fanciful idea; in fact, the hybrid version of the ZF TraXon commercial vehicle transmission exhausts previously unused power savings potential at maximum output.

Stricter emissions limits and the public debate on fine dust pollution are putting pressure not just on the passenger car manufacturers, but also on public transport operators, which are obligated to reduce emissions. This means bus manufacturers are investing resources on system integration and even more on development.

As a leading global technology company, ZF provides OEMs with expertise during this transition. Its new prototype bus impressively



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demonstrates what the company can offer. The 18-meter articulated bus is equipped with two of the proven AVE 130 electric portal axles, with a total of four motors providing powerful thrust. ZF offers this axle in a more complete package, which includes advanced inverters, drive control and full power electronics all fully integrated. The company thus guarantees optimal energy efficiency – and a larger range. For sufficient power, a standard articulated bus only needs one driven AVE 130 electric portal axle.

In principle, the installation space required for the AVE 130 is about the same as that of a conventional portal axle. For manufacturers, this means major cost savings because they do not have to develop their own chassis platforms for electric mobility solutions. The AVE 130 can be combined with most conventional power source, including batteries, supercaps, fuel cells or even overhead lines. It is also very suitable for serial hybrid and plug-in versions. This gives OEMs and public transport operators flexibility when selecting the power supply. Thanks to standardized high-volume components, its maintenance-friendliness rounds off the overall package for the future of the city bus, which ZF has created with its AVE 130 electric low-floor portal axle.

“Plug-and-Drive” with CeTrax

In addition to the proven AVE130, ZF offers the new electric CeTrax central drive as a system solution for low-floor and high-floor buses. CeTrax is built on a plug-and-drive approach, so it can be integrated into existing vehicle platforms without having to make major changes to the chassis, axles, statics or differential. ZF is therefore turning to manufacturers that plan to switch from existing conventional models to electrically powered models as part of their platform strategy. CeTrax is configured with a maximum output of up to 300 kW and a maximum torque of 4,400 Newton meters. It is intended above all for challenging bus applications and offers considerable weight advantages as well as outstanding efficiency. Since the delivery scope of the system package also covers drive control and inverters, manufacturers get an optimally fine-tuned total solution when it comes to performance, efficiency and service life. OEMs can also save time and money because ZF also



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handles the homologation and testing of the drive system. Apart from being used in buses, CeTrax is also suitable for the electrification of delivery trucks.

TraXon Hybrid: Parallel hybrid for long-haul transport logistics

The TraXon Hybrid, equipped with an electric motor positioned between the combustion engine and the transmission, allows hybrid functions in heavy commercial vehicles. One feature particularly attractive for many applications is that in generator mode, the hybrid module can also supply power to other units, such as during refrigerated transports. In addition to being installed in trucks, the TraXon Hybrid is also ideal for coaches, where the hybrid drive can offer the same advantages. Even with this innovative product, ZF offers its system solution with all the mentioned benefits.

Captions:

- 1) Full speed ahead: The prototype bus is equipped with two AVE 130 electric portal axes for a powerful drive.
- 2) Proven system expertise: ZF's AVE 130 electric portal axle as a system package with inverter, drive control and complete power electronics.
- 3) "Plug-and-Drive": The electric central drive CeTrax can be integrated into existing vehicle platforms.
- 4) Heavy commercial vehicles like trucks and coaches can easily be equipped with the TraXon Hybrid and feature all hybrid functions.

Photos: ZF

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ZF Friedrichshafen AG

ZF is a global leader in driveline and chassis technology as well as active and passive safety technology. The company has a global workforce of 146,000 with approximately 230 locations in some 40 countries. In 2017, ZF achieved sales of €36.4 billion. ZF is one of the largest automotive suppliers worldwide.

ZF allows vehicles to see, think and act. The company invests more than six percent of its sales in research and development annually – in particular for the development of efficient and electric drivelines and also in striving for a world without accidents. With its broad portfolio, ZF is advancing mobility and services in the automobile, truck and industrial technology sectors.

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