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PRESS RELEASE

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ZF Unveils Next Generation AxTrax 2 Electric Low-Floor Axle for City Buses

Reimagining technologies for more efficient, sustainable and safe public transit at APTA

- **APTA Expo 2023: ZF will showcase its latest electric portal axle AxTrax 2 LF specifically designed for low-floor city buses.**
- **AxTrax 2 LF offers an all-inclusive, compact and lightweight system with integrated electric wheel hub drives.**
- **Leveraging ZF Group's innovative electric drive platform, AxTrax 2 LF provides optimized performance and efficiency, while increasing design space for passengers and battery storage.**

ORLANDO, Florida. ZF will showcase its new AxTrax 2 Low-Floor (LF) electric axle for city buses for the first time publicly in North America at the 2023 American Public Transportation Association (APTA) Expo in Orlando, Florida. The new axle represents ZF's latest e-Mobility solution to support the commercial vehicle industry's transformation towards a more sustainable future. The series production of AxTrax 2 LF is set to commence in 2025.

"Adding AxTrax 2 LF to our comprehensive range of electric powertrains is a powerful expansion of our game-changing scalable and modular e-Drive kit," said Christian Feldhaus, Vice President of Commercial Vehicle Driveline Systems, Americas, ZF Group. "In addition to extending our bus technology portfolio, AxTrax 2 LF represents the latest step in ZF's support for commercial vehicle manufacturers towards the transition to zero emission technologies. Whether it is components or complete turn-key systems, ZF has a wide range of solutions to help electrify manufacturers' vehicle platforms worldwide."



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System approach: simplifying bus electrification

ZF's all-new AxTrax 2 LF is an axle-based, modular and integrated system, featuring a compact design to help maximize the available space for batteries and enhance manufacturer's design flexibility for the passenger compartment. It is designed and manufactured inhouse, and benefits from ZF's extensive e-powertrain expertise. As part of ZF's modular platform approach, the technology improves system performance and efficiency, and is designed for demanding bus applications. Having a similar installation space as its predecessor, AxTrax AVE, the new axle is fully compatible with ZF's air suspension and wheel-end solutions. On the software side, AxTrax 2 LF also benefits from ZF's extensive experience in producing advanced functions such as axle condition monitoring and cyber security.

Highly efficient and powerful, AxTrax 2 LF is available in two variants. These offer continuous power outputs of 260 kW and 360 kW and peak torque of 16,740 lb-ft and 27,500 lb-ft respectively. With the more powerful variant, it is possible to power articulated buses up to 64,000 lbs with one driven axle as a 6x2 configuration. Both models feature two integrated electric Permanent Magnet Synchronous (PMS) motors as well as two separate 800V silicon carbide (SiC) inverters.

Compared to its predecessor, AxTrax 2 LF offers up to 10% energy saving, and is well suited for the frequent stop-start nature and relatively low average speeds of city bus journeys. Its new oil cooling system adapts the oil flow rate to help maximize efficiency, optimizing operating temperature and lubrication.

Connected transit solutions on display

In order to help plan for safe and reliable passenger transport, ZF offers two tailor-made tools: the cloud-based condition monitoring system, connect@rail and the digital fleet management system, Bus Connect. With connect@rail, ZF offers comprehensive condition monitoring for rail vehicles and its infrastructure. The system supports rail operators in



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early maintenance planning and the predictive maintenance of trains and tracks. In this way, connect@rail reduces unscheduled interruptions during operation.

ZF Bus Connect, developed for city buses and coaches, can help users monitor every aspect of the vehicle in real time, including a live view of vehicle locations. This encompasses current energy or fuel consumption, the battery charge status, the condition of the vehicle parts, brake wear and other system messages. With this product, ZF helps enable public and private bus operators to improve the efficiency and performance of their fleets.

Join ZF at APTA Expo 2023

ZF will showcase some of its latest products at APTA Expo 2023 in booth #3189. This will include how ZF is empowering manufacturers as well as bus and coach fleets for the future with innovative electrification systems, automated depot applications and intelligent connectivity solutions. For more, visit: zf.com/cv/apta2023

ZF Press Briefing

ZF's press briefing will be held Oct. 9 at 3PM in booth #3189 at the Orange County Convention Center, Orlando and available virtually at: <https://youtube.com/live/iv5-cBLgt0s?feature=share>

Picture Caption:

At the 2023 APTA Expo in Orlando, ZF will present its latest eMobility technologies, including the regional premiere of its new all-electric AxTrax 2 LF electric portal axle specifically designed for low-floor buses. Images: ZF

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About ZF

ZF is a global technology company supplying systems for passenger cars, commercial vehicles and industrial technology, enabling the next generation of mobility. ZF allows vehicles to see, think and act. In the four technology domains of Vehicle Motion Control, Integrated Safety, Automated Driving, and Electric Mobility, ZF offers comprehensive product and software solutions for established vehicle manufacturers and newly emerging transport and mobility service providers. ZF electrifies a wide range of vehicle types. With its products, the company contributes to reducing emissions, protecting the climate and enhancing safe mobility. With some 165,000 employees worldwide, ZF reported sales of €43.8 billion in fiscal 2022. The company operates 168 production locations in 32 countries. For further press information and photos, please visit:

www.zf.com

About CVS Division

ZF's Commercial Vehicle Solutions (CVS) division is helping shape the future of commercial transportation ecosystems. Our mission is to be the preferred global technology partner to the commercial vehicle industry. Powerfully combining ZF's commercial vehicle systems expertise, extensive technology portfolio and global operations, the division serves the full commercial vehicle industry value chain. As the automotive industry progresses towards an increasingly autonomous, connected, and electrified (ACE) future, ZF's CVS division innovates, integrates and supplies components and advanced control systems that help make commercial vehicles and fleets operate more safely and sustainably. CVS unites ZF's former Commercial Vehicle Technology and Commercial Vehicle Control Systems divisions, the latter being formed following ZF's acquisition of WABCO in Spring 2020.