



Delivering Zero Emissions: ZF Presents Advanced New eMobility Solutions for Commercial Vehicles

- **ZF showcases its latest eMobility technologies supporting the commercial vehicle industry's transformation towards a more sustainable future**
- **The company presents its new integrated modular CeTrax 2 electric central drive for heavy-duty vehicles and eWorX, an electrified commercial vehicle Power Take-Off system harnessed to drive on-board work equipment**
- **Supporting electrification and autonomous driving, ZF also demonstrates its advanced new Electric Power Steering (EPS) system for trucks, coaches and city buses**

Friedrichshafen / Hannover (Germany). ZF's Commercial Vehicle Solutions (CVS) division has underlined its commitment to the fully electrified future of mobility by presenting its latest eMobility technologies ahead of IAA Transportation 2022. This includes ZF's new CeTrax 2 electric central drive – an integrated, modular e-driveline system for heavy-duty commercial vehicles. ZF has also presented its advanced new Electric Power Steering (EPS) system for trucks, coaches and city buses. The EPS has been prepared for steer-by-wire and up to Level 5 autonomous driving. eWorX, ZF's electrified commercial vehicle Power Take-Off (PTO) system for driving on-board work equipment, has also been presented offering emission-free city and urban operation.

"From electrified drivelines to electrified power take-off systems and electrically enabled actuation systems, ZF provides customers with smart turn-key solutions that significantly contribute to their vehicle electrification strategies as well as supporting architectures for conventionally designed vehicles," said Dr. Christian Brenneke, Senior Vice President of Product Engineering with ZF's Commercial Vehicle Solutions division.



PRESSE-INFORMATION
PRESS RELEASE

Page 2/5, September 9, 2022

“Providing a ‘one-stop-shop’ for commercial vehicle electrification, ZF’s broad product portfolio, combined with extensive Group-wide expertise, enables the delivery of cost-efficient products that are designed to lower the Total Cost of Ownership. ZF is well-positioned as the preferred development partner for leading truck, coach and bus brands worldwide,” Brenneke added.

Electrifying heavy-duty commercial vehicles

ZF has unveiled its new CeTrax 2 electric central drive – an integrated, modular e-drive system for heavy-duty commercial vehicles. Leveraging in-house developed components, it features two high performance oil-cooled e-motors as well as two integrated 800 Volt silicon carbide (SiC) inverters. CeTrax 2 uses an advanced three-speed gearbox able to perform powershifts.

With all components integrated within an innovative and compact single unit, CeTrax 2 allows manufacturers to offer both conventional ICE and electric drivelines on the same vehicle platform. In addition to enabling the quicker electrification of existing vehicle platforms, it enables high power and torque, light weight design (approx. 385 kg) and enhanced e-drive efficiency of up to 96 percent. With continuous power of 360 kW and peak torque of 24,700 Nm for vehicles up to 44 tons, CeTrax 2’s electric central drive is actioned with smooth and almost imperceptible gear changes due to its seamless powershifting. Building on ZF’s decades of transmission and electrification experience, the gear changes are calculated by the integrated ECU and automatically executed by the e-actuators. Series production of CeTrax 2 is set to commence with a major global truck manufacturer in 2023.

A Building Block for Electrification and Autonomous Driving

ZF’s new Electric Power Steering (EPS) provides a cornerstone technology for the commercial vehicle industry’s transformation towards electrification. Building on the Group’s extensive passenger car experience, the EPS is suitable for a broad range of medium and heavy-duty trucks as well as coaches and city buses. It also provides a building block for the next generation Advanced Driver Assistance Systems,



PRESSE-INFORMATION
PRESS RELEASE

Page 3/5, September 9, 2022

supporting the commercial vehicle industry's autonomous driving ambitions.

Replacing the hydraulic pump with an integrated e-motor makes the steering system independent of the vehicle's drivetrain and removes the need for hydraulic fluid. As a result, the system supports industry sustainability as well as making this technology a seamless fit for electric vehicle architectures. Enabling zero local emissions for battery electric and fuel cell vehicles, it also optimizes the driving experience with its quiet and smooth electric operation. Applicable to all powertrain concepts, the EPS seamlessly matches the requirements of electric vehicle architectures. Built to the highest Automotive Safety Integrity Level (ASIL D) and available in 24V and 48V variants and supporting outputs up to 8,000 Nm, the modular EPS has a scalable design, meeting diverse packaging requirements.

ZF's EPS is currently ready for steer-by-wire and, with a redundant architecture, can accommodate future autonomous driving functions up to Level 5. As an active steering system, EPS can integrate with ADAS to support safety functions including, for example, continuous lane keeping.

Silent, Zero-Emission Power Take-Off for Electric Trucks

Supporting the electric transformation of the commercial industry, eWorX, ZF's electrified Commercial Vehicle Power Take-Off (PTO) system has been harnessed to drive on-board work equipment. As a fully integrated system, eWorX offers significant value for vehicle and body manufacturers as a modular, standardized and intelligent system that combines all the functions required for the electrification of on-board equipment in a single compact unit.

Providing a known mechanical interface, eWorX supports vehicle body manufacturers by removing the need to deal with the drivetrain of an electrified vehicle while equipping it with work equipment.

Representing a major step in the electric transformation of commercial vehicles, the eWorX solution delivers zero local emissions and



PRESSE-INFORMATION
PRESS RELEASE

Page 4/5, September 9, 2022

significantly reduces noise levels which facilitates easier operation in cities and residential areas.

Captions:

- 1) Ahead of IAA Transportation 2022, ZF presents latest eMobility technologies: the new all-electric CeTrax 2 central drive (a), eWorX, ZF's Electric Power Take-Off (PTO) system (b) and the Electric Power Steering system EPS (c).
- 2) This summer, ZF used its Global Technology Day to show its eMobility solutions in action. The company had developed prototype vehicles equipped with CeTrax 2 (a), EPS (b) and eWorX.

Images: ZF

Join ZF at IAA Transportation 2022

ZF will showcase some of its latest products as well as live technology demonstrations at IAA Transportation 2022. This will include how ZF is empowering OEMs and fleets for the future with innovative electrification systems, automated depot applications and intelligent connectivity solutions.

ZF Press Conference

ZF will hold a press conference at the **Industry Forum in Hall 13, from 9.55am until 10.15am CET on Monday, 19 September 2022.**

Visit ZF in Hall 21 at Booth A90

Deutsche Messe Exhibition Grounds, 30521 Hanover, Germany

Press Day: September 19, 2022,

Public Days: September 20 - 25, 2018, 9 AM – 6 PM CET

For more information about ZF's participation at IAA Transportation 2022, please visit www.zf.com/IAA



PRESSE-INFORMATION
PRESS RELEASE

Page 5/5, September 9, 2022

Press contact:

Frank Discher, Head of News, Content & Media Desk, Commercial Vehicle Solutions. Phone: +49 7541 77-960770, e-mail: frank.discher@zf.com

Florian Laudan, Head of Communications, Commercial Vehicle Solutions
Phone: +49 151 20000276, e-mail: florian.laudan@zf.com

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 157,500 employees worldwide, ZF reported sales of €38.3 billion in fiscal 2021. The company operates 188 production locations in 31 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.