



ZF Reaches Further Milestones in its “Next Generation Mobility” Strategy

- **Integration pays off - ZF’s new Commercial Vehicles Solution division secures substantial customer orders for innovation technologies in its first six months.**
- **Transformation pays off - Demonstration and first customer orders of market-ready steer-by-wire system for passenger cars completes holistic ZF ‘by wire’ portfolio.**
- **Innovation pays off - ZF world premieres of next generation e-drive for trucks and AI-based digital fleet orchestration platform.**

Jeversen, Germany. Just six months after the launch of its new Commercial Vehicle Solutions (CVS) division, substantial orders for ZF’s latest technologies shows that customers are reacting positively to the new integrated portfolio. Fueled by this positive development, ZF is unveiling a selection of its latest innovations and technology advances at its testing facility in Jeversen, Germany, ahead of IAA Transportation. As the largest supplier to the commercial vehicle industry, this provides a strong proof point demonstrating the success of its extensive portfolio of integrated system solutions, which are enabling next level safety, efficiency and sustainability standards for truck-trailer combinations world-wide. Further advancing its "Next Generation Mobility" strategy, ZF is also leveraging the benefits of its unique ability to transfer technologies and competencies across vehicle segments in areas such as automation and electric drivetrains.

New Electric Steer-by-Wire System Completes By-Wire-Portfolio

Demonstrating its first passenger car steer-by-wire system, ZF has propelled its comprehensive ‘by-wire’ technology portfolio to the forefront of the industry. During an annual global technology event, ZF presented its advanced steer-by-wire technology for the front axle.

“ZF’s new all-electric steering system is at the cutting-edge of by-wire technology and our comprehensive portfolio uniquely and powerfully



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positions the Group to achieve fully automated by-wire vehicle control in a highly competitive environment," said Wolf-Henning Scheider, CEO of ZF Friedrichshafen AG.

"Our divisions work together in close partnership optimizing the benefits of mutual technology transfer. ZF's new steer-by-wire technology is an important precondition for advanced automation in passenger cars and, true to our 'develop once, deploy anywhere' guiding philosophy, will also be applied to commercial vehicle automation," added Scheider.

Steer-by-wire technology transmits driver commands to the steering system entirely through electrical signals, removing the mechanical link between the steering wheel and front axle. Going forward, by-wire technology is expected to play an increasingly pivotal role in all aspects of vehicle motion control - longitudinally, transversely and vertically.

Future-proofing the technology, the new generation software supporting the by-wire actuators can be updated over-the-air at any time. ZF has already secured several major customer orders for its new steer-by-wire system.

Next Generation eMobility for Commercial Vehicles

"The trend towards automated, connected and electrified vehicles represents a huge commitment in development costs for OEMs. With our wide range of integrated solutions, ZF offers customers the opportunity to be at the forefront of technology, while reducing their development efforts," said ZF Board Member Wilhelm Rehm, responsible for Commercial Vehicle Solutions, Industrial Technology and Materials Management.

Performing its world premiere, CeTrax 2 is ZF's integrated, modular electric driveline for heavy-duty commercial vehicles. The new system combines a favorable power-to-weight ratio and a highly integrated, compact design. This enables a high, sustained output of 360 kW and improved efficiency through powershift gear changes. It also features high-end technologies including a hairpin design for the stator, an



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innovative cooling system and a silicon carbide-based inverter, adapted from ZF's passenger car expertise. Series production with a global vehicle manufacturer will start next year.

Seamlessly combining smart technologies and control systems for both truck and trailer, ZF is uniquely well placed to take a holistic approach to sustainability. Equipping innovation trucks and semi-trailers with a suite of its latest safety and efficiency technologies, ZF is also demonstrating how its complete vehicle approach represents a significant step towards the industry aim of 'zero accidents' and next level efficiency.

ZF SCALAR – Orchestration Platform for Fleet Operators

Demonstrating the success of its software development, ZF is presenting the world premiere of SCALAR, a new digital solutions platform for commercial vehicle fleets that enables efficient Transport-as-a-Service (TaaS). It is a fully automated, AI-based planning, routing and dispatching solution. ZF SCALAR combines and connects technologies on board commercial vehicles and third-party systems with artificial intelligence. The platform will help fleet operators increase operational efficiency, sustainability, planning reliability, and cargo and passenger safety. ZF anticipates that SCALAR will become an indispensable partner for the freight and passenger transportation industry.

Automation - End-to-End Automated Solutions

Underlining its advance from components manufacturing to integrated automation solutions, ZF will also unveil how it is leveraging its Orchestration solution and its next generation ADOPT 2.0 (Autonomous Driving Open Platform Technology) automated chassis control solution combined with its expertise to provide full end-to-end yard automation solutions. ADOPT 2.0 focuses on low-speed yard automation applications up to 20 km/h. In addition, ZF will also showcase ADOPT 3.0, which enables hub-to-hub highway applications at speeds up to 80 km/h.



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Strong Position to Shape the Future of Mobility and Transportation

“ZF’s latest annual global technology showcase once again demonstrates how well positioned ZF is to meet challenges and maximize opportunities for the future. By increasing diversification, entering new markets, achieving greater technology penetration and pursuing our proven sustainability strategy, significant progress has been achieved by ZF at the very forefront of e-mobility, automation and connected, software-defined vehicles,” added ZF CEO, Wolf-Henning Scheider.

Captions:

- 1) Diversification and technology transfer: ZF advances its Next Generation Mobility strategy
- 2) Steer-by-wire completes comprehensive ZF “by-wire” portfolio for all dimensions of vehicle dynamics – unique in the market
- 3) ZF CeTrax 2: Next Generation eMobility for commercial vehicles
- 4) ZF SCALAR: fully automated and AI-based orchestration platform for fleet operators
- 5) ZF ADOPT: software platform for advanced chassis control of automated commercial vehicles
- 6) Wolf-Henning Scheider, Chairman of the Board of Management and CEO, ZF Group
- 7) Wilhelm Rehm, Member of the Board of Management, ZF Group, Responsible for Commercial Vehicle Solutions, Industrial Technology, Materials Management

Photos: 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 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.