



Reliability is Climbing, Costs are Falling: ZF's Digital Condition Monitoring System Opens up New Opportunities for Transport Operators

- **Digitalization solution simplifies maintenance planning, prepares trains for comprehensive condition monitoring**
- **ZF uses a cloud-to-cloud solution to monitor the most important components of the driveline and infrastructure online**
- **After successful pilot tests, the Smart Typeplate from ZF will go into volume production starting in the first quarter of 2019**

Berlin/Friedrichshafen. After successful testing in pilot projects and applications, ZF's Smart Typeplate has demonstrated how commuter rail services can benefit from condition monitoring. The intelligent typeplate functions as a digital information carrier to simplify maintenance planning for rail vehicles and prepares them for comprehensive condition monitoring. This makes rail traffic safer, more reliable and more efficient. Visitors to the ZF booth at the InnoTrans 2018 trade show will have the opportunity to learn about the Smart Typeplate functions in an interactive display.

Predictive maintenance planning shortens or prevents shutdown and outage times for rail vehicles. It benefits public transit operators by lowering their operating costs and improving reliability for passengers. With its new digitalization solution, the Smart Typeplate, ZF is also simplifying efficient fleet management. This innovative product consists of a chip that ZF has integrated into the typeplate of a transmission. The chip contains the name, material and identification number as well as the technical details. It also records the actual operating hours. This information is stored either locally or decentrally in a cloud. The operator can view this information when the rail vehicle drives into the maintenance depot and record repairs recently carried out. This makes it easier to see which trains actually require maintenance. ZF has been testing the intelligent typeplate in cooperation with the Freiburger Verkehrs AG since September 2017. Considered a success, the Smart



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Typeplate is now scheduled to go into volume production starting in the first quarter of 2019.

A view of everything: The “connect@rail” condition monitoring system

The Smart Typeplate is just one innovative solution that ZF has developed as part of its overall goal of comprehensive condition monitoring for rail vehicles and infrastructure. The intelligent condition monitoring system connect@rail demonstrates how integrated sensors and advanced data analysis tools can further improve efficiency, reliability and safety in rail transport. Various sensors record vibrations, oil quality and temperature behavior in transmissions. On top of that, one sensor attached to the unsprung axle drive or bogie measures amplitudes and bumps in the track system. This enables operators to monitor the status of the tracks and to identify potential hazardous spots early on. These system functions are also supplemented by external information and certain environmental parameters.

A platform developed by ZF then reliably transfers the collected data and information to the ZF Cloud. Operators can view the analysis and recommended courses of action based on the above data from the ZF Cloud using a computer or mobile device. Also, they can optimally schedule maintenance dates and respond to the most diverse situations individually and flexibly. This guarantees that the entire fleet is operating smoothly and as cost-efficiently as possible.

New type of cooperation

The new transmission functions and services are based on a digital platform that is open to many users. A standardized interface and the encrypted data traffic via VPN or Internet enable open “cloud-to-cloud” solutions. ZF can also assess the status of the axle bearings and thus monitor all important components in the driveline. This simplifies not only the monitoring of the entire rail system, but also the opportunity to work together with partners.



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Caption:

Smart Typeplate, the digital typeplate from ZF simplifies predictive maintenance planning for rail vehicles.

Image: 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.

In the Industrial Technology Division, ZF pools its activities for off-road applications. These include the development and production of transmissions and axles for agricultural and construction machinery along with driveline technology for forklift trucks, rail and special vehicles. The division is also responsible for the worldwide business of marine propulsion systems, aviation technology as well as the development and production of gearboxes for wind turbines and industrial applications. Test systems for all kinds of applications in driveline and chassis technology are also included in the division's portfolio.

For further press information and photos, please visit: www.zf.com