New Tread Wear Tester by ZF Test Systems helps reduce emissions

- **Minimizing particle emissions and microplastics**
- **New Tread Wear Mapping System for more flexibility**
- **Less emissions by indoor testing**
- **Powder Supply Unit simulates real road conditions**

Tires lose substance over time and release tiny particles, for example in the form of microplastics. This abrasion is a contributing cause of pollutions in the cities and one of the sources of microplastics in the environment. Using the ZF Tread Wear Tester enables tire manufacturer to test the tire abrasion and to optimize their tires, thus contributing to a cleaner environment.

Minimization of particle emissions and microplastics
The ZF Tread Wear Tester allows the simulation of real driving profiles on the test bench to classify the wear behavior of a tire at regular intervals. In this way, it helps tire manufacturers to improve designs to reduce abrasion and to minimize the resulting environmental pollution caused by particle emissions and microplastics. This test bench is therefore a further step towards ZF´s "Vision Zero" – a world without accidents and emissions.

24/7 availability
ZF´s new Tread Wear Tester can be operated 24 hours, seven days a week, regardless of weather conditions. The "Indoor Testing" also allows better and controlled simulation of the temperature, driving speed and road surface removing the driver's influence. It is also possible to have previously defined route profiles simulated. During the test cycle the tires are measured at regular intervals to determine the tire abrasion.

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Tread Wear Mapping System for more flexibility

ZF has developed a new measurement system that allows laser measurement in the high-frequency range. The ZF In-Line Tread Wear Mapping System measures the tire abrasion at the tread. The concept of the new system is based on a triangular laser measurement, which is installed behind the tire and measures the tire abrasion after a certain mileage. The measurement is fully automatic in the machine, i.e. the tire no longer needs to be removed from the machine and measured separately. During the measurement the tire is rotated at a low speed. The Triangulation-Laser-Measurement System measures the abrasion in lateral direction with continuous movement or in steps. The sensor can be radially aligned for the measurement of different tire sizes.

Less emissions by indoor testing

While outdoor tire wear test normally take place on the road with several vehicles and drivers for several days/week, shifting the test from outdoors to an indoor test bench allows to reduce both fine dust and a lot of CO2.

The abrasion produced on the test bench is directly extracted by a special device, measured and cleaned (Picture 2).

Powder Supply Unit for real road conditions

With this “Powder Supply Unit” installed the natural friction caused by pollutions on the road, such as dirt and dust between tire and road surface, is simulated close to reality. Furthermore, the test duration can be reduced by exact dosing of the powder.

The Powder Supply Unit is positioned above the tire and lets the powder trickle directly between drum and tire.

Performance data ZF Tread Wear Tester

The Tread Wear Tester enables the simulation of various driving modes, which are adaptable to customer-specific driving cycles by a flexible system. The maximum test speed for passenger car tires is 180 km/h and for bus and truck tires 160 km/h. The load adjustment, which refers to the pressure that is applied by the test bench to the tire is up to 25 kN for passenger car tires and up to 60 kN for bus and truck tires. The

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camber angle is +/- 8 degrees, the slip angle +/- 10 degrees. This allows the real simulation of cornering. The basis for this is a 6-component platform.
It is possible to replace the drum linings of the 3 meters large drum at anytime. These linings can be designed according to customer specifications as well as chosen from the existing ZF-portfolio. They are intended to be used for the close-to-reality simulation of various road surfaces.

Captions:
1) The new ZF Tread Wear Tester
2) Air extraction device of the ZF Tread Wear Tester

(Pictures: ZF)

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ZF Friedrichshafen AG
ZF is a global technology company andsupplies systems for passenger cars, commercial vehicles and industrial technology, enabling the next generation of mobility. With its comprehensive technology portfolio, the company offers integrated solutions for established vehicle manufacturers, mobilty providers and start-up companies in the fields of transportation and mobility. ZF continually enhances its systems in the areas of digital connectivity and automation in order to allow vehicles to see, think and act.
In 2018, ZF achieved sales of €36.9billion. The company has a global workforce of 149,000 with approximately 230 locations in 40 countries. ZF invests over six percent of its sales in research and development annually.

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