



Always on the safe side

ZF Test Systems for tires





ZF test systems for tires

An important role concerning the production of tires and wheels is attached to safety and quality, which are guaranteed by ZF Test Systems.

Tires and wheels are the most delicate and most severely stressed parts of a vehicle. Great importance is therefore attached to safety and quality here. Only consistent testing guarantees that nothing is left to chance and drivers remain safely in the track.

R&D and production test benches made by ZF offer all kinds of test procedures required by tire manufacturers to ensure a fast development and a certified quality assurance. Velocity and load tests, tests of noise level and comfort characteristics or measurements of response behavior under different operating conditions are just a few examples for where simulations of realistic situations are possible with ZF test systems.



Types of test rigs:

Characteristic, low speed uniformity balancing, high speed uniformity, high speed / endurance, tire noise, rolling resistance, tire tread wear, spring rate, fully automated test lines, customized solutions

We test:

Uniformity, runout, rolling resistance, dynamic and static characteristics, tire noise, static spring rate, dynamic spring rate, temperature behavior, endurance, according to your requirements

Rolling resistance tester for car tires

The machine measures torque (power), force and deceleration. It offers SAE and ISO tests on reference level with highest precision and a cross talk free sensor hub.

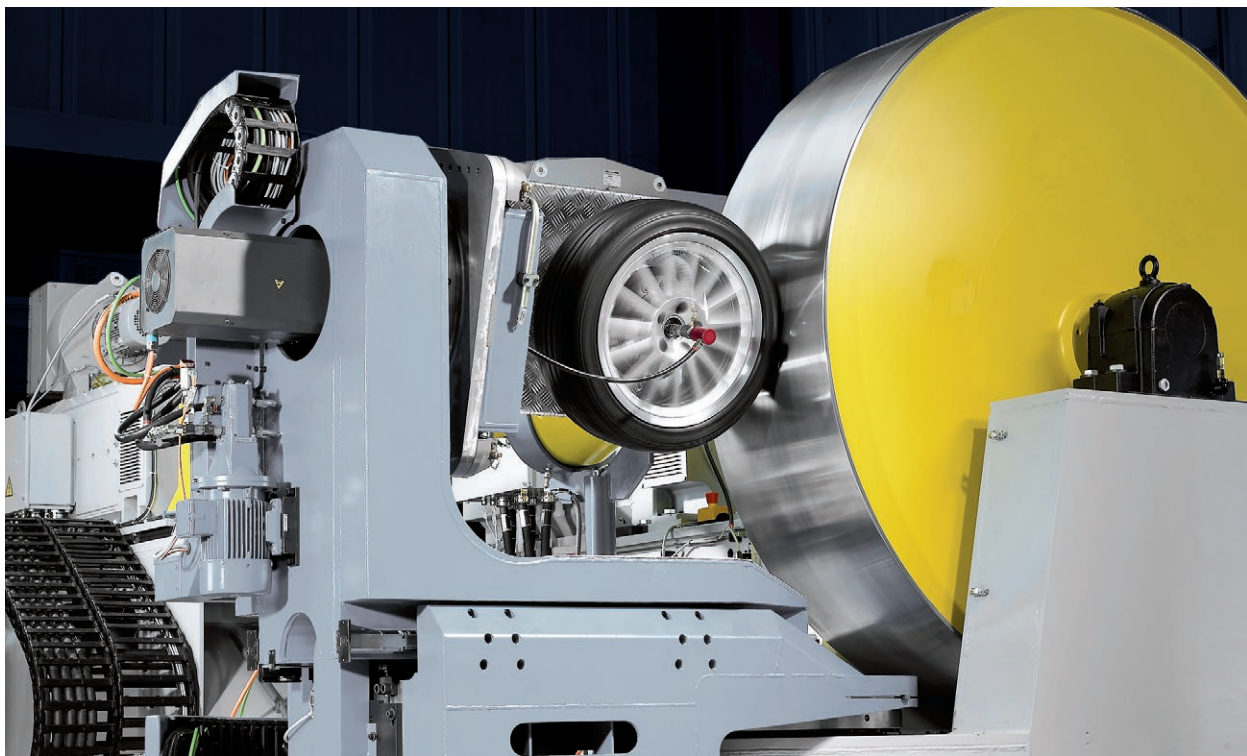
Tire characteristics: From low to high forces



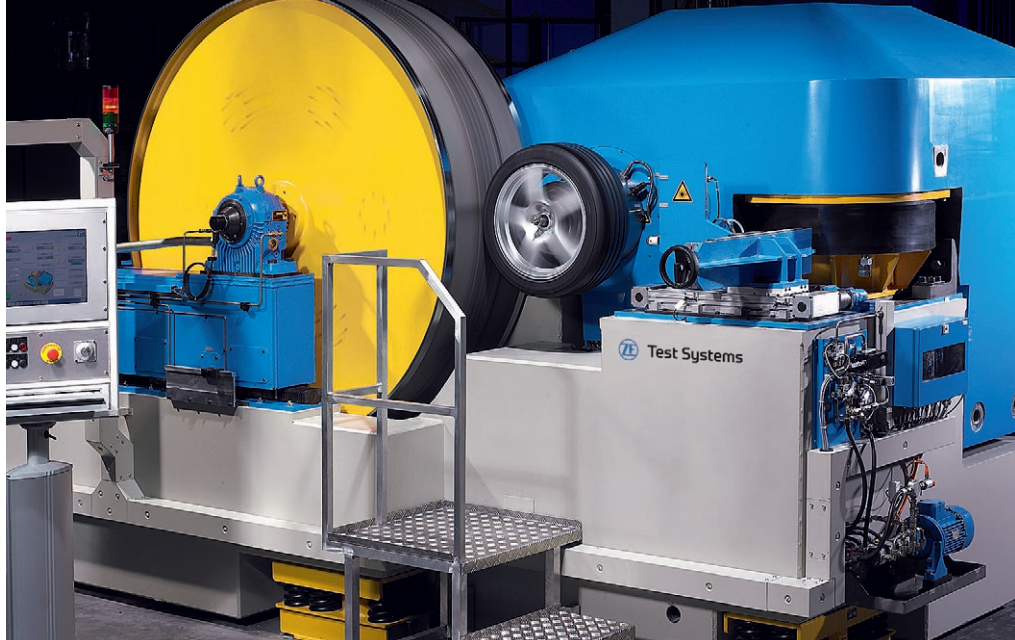
Modern tires must compete in a field of extremes: Good wet grip but creating low rolling resistance forces. Perfect handling behavior but they must show low wear and good tread abilities. ZF Test Systems help tire manufacturer and car makers to verify related conditions and tire values with highest precision and reproducibility. ZF Test Systems rolling resistance machines are used in European reference laboratories and have become well known for its hydrostatic wheel hub. The new force and moment tester can put dynamic drive file verification from the track into the laboratory which saves costs and avoids taking risk of driving on race tracks.

Force and moment tester

It is highly dynamic on all axles and allows a very fast positioning at high precision. It offers drive file simulation.



High speed uniformity machine
Offers a very wide measuring frequency range due to the highest natural machine frequency of 580 Hz. The uniformity measuring speed reaches up to 400 km/h.



Uniformity: From low to high speed

ZF offers for customer laboratories two very precise machines: The ZF low speed uniformity and the ZF high speed uniformity machine. The HSU types allow measuring high speed uniformity values up to 400 km/h with high resolution and with lowest influences from machine resonances which guarantees highest precision and best reproducibility of measuring results. The low speed uniformity machine offers more than just side wall failure detection and uniformity test with or without rim. The innovative automation system ZF Modas provides tailor made data handling and reliable and useful automation of ZF's test systems.

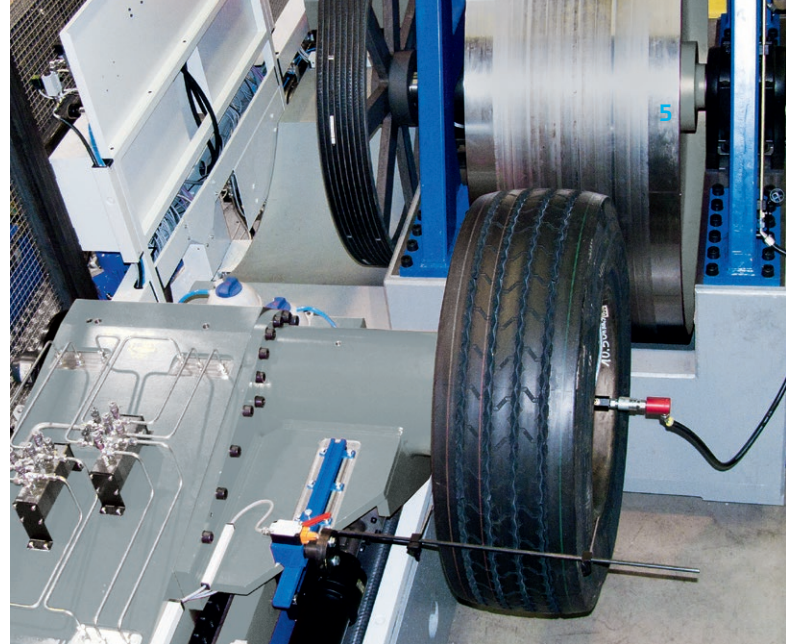


Laboratory low speed uniformity machine

Tests on tire and tire/wheel assembly. Uniformity and run out are based on the usual standard uniformity procedure.

Endurance tester

Robust and reliable ZF endurance testers are in operation for passenger car tires as well as for truck tires. They provide highest availability paired with precise and wearless mechanic components.

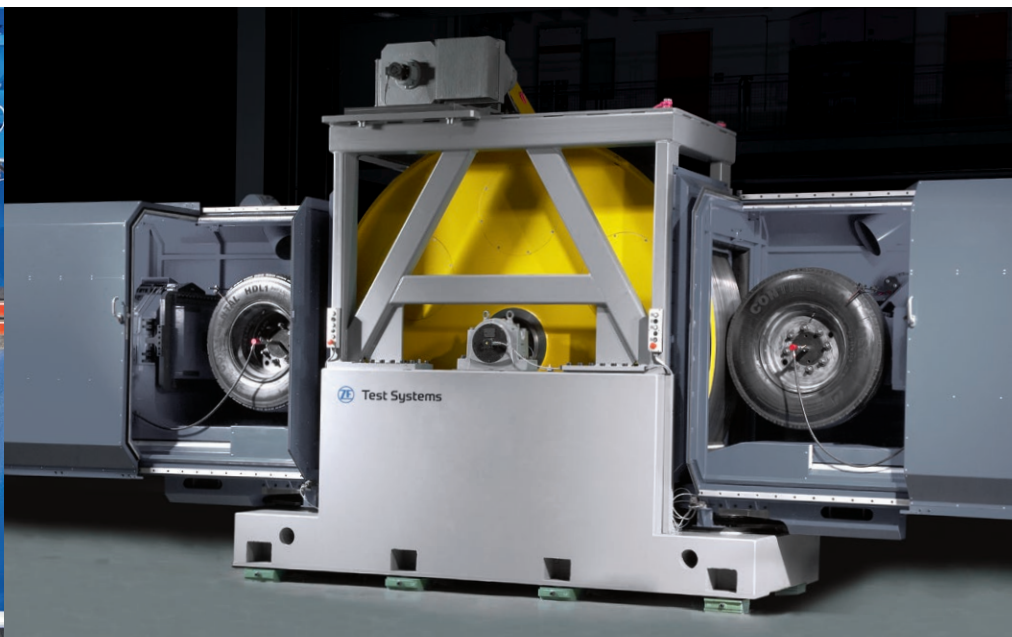
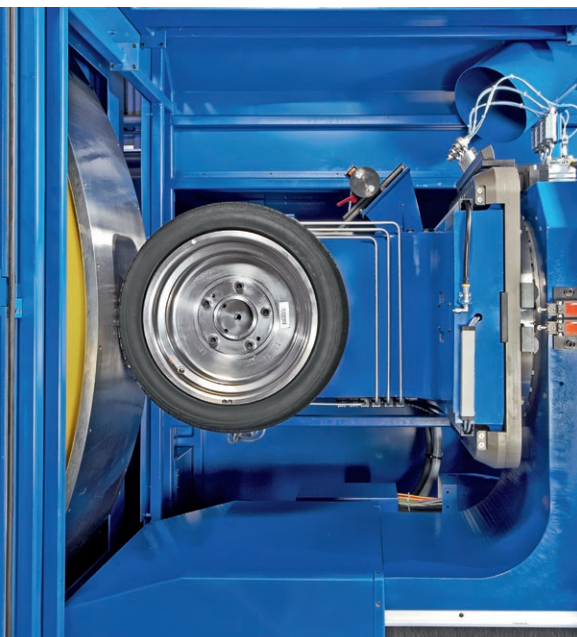


Basics: Durability and wear

Tread wear and endurance testers are basic test machines for tire manufactures. ZF offers those machines for sizes of modern passenger car tires as well as for truck tires as standard solutions. Last but not least: Even bigger tires – for example from construction equipment – fit on ZF test systems. Tires can be mounted easily, and the machines offer good access to the testing position. Furthermore, the new ZF Tread Wear Tester for passenger car as well as truck and bus tires is capable to simulate real vehicle tests in a lab environment by drive file operation through its high dynamic servo controlled axles.

Tread wear tester

The 2 station units can run with different drum surfaces. Load, camber, slip, lateral force, speed and driving force can be adjusted with high dynamic.



Quality control: For the tire production process

ZF has invented a unique machine to measure uniformity: The ZF LUB combines the measuring of uniformity and dynamic unbalancing in one machine, in one cycle, in one test position – adding only 3 seconds to a standard uniformity cycle. High speed uniformity testing machines are designed and built for high performance tires production lines to analyze also dynamic uniformity behavior as a quality feature. ZF's range of production test equipment goes up to large heavy-duty truck tires where dynamic balancing tests are done fully automated.



Low speed uniformity machine LUB

The "all in one solution" offering the measurement of low speed uniformity, dynamic unbalancing, and geometry, as well as side wall inspection.

High speed uniformity machine

This machine carries out production control of tires under real driving speed conditions up to 200 km/h.



Even more: From tire to vehicle

Ultimately, the tire is just a component between the road and the vehicle chassis. Therefore, it can be important to qualify all or at least larger parts of the suspension. Thus, interaction between the components can be taken into account and understood better. Besides the driving speed, dynamics can be generated either from the road surface or from targeted changes in load on the wheel. This applies to both NVH and durability aspects.

Rolling noise tester
for tires only or
complete vehicles.
Different road
surfaces can be
applied to the drum,
the change can be
done manually or
automatically.



Multi axial wheel tester

The state-of-the-art multi axial wheel tester (MARP) allows extremely realistic simulations of test piece characteristics. As a result, completely new areas in the dynamic response and in the qualification of measured values can be tested.



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