TECHNICAL DATA

Fraunhofer

EZRT

DEVELOPMENT CENTER X-RAY TECHNOLOGY EZRT

Technical data of a typical sensor system:

Tire rotation frequency:	typ. 65 rps
Tire Speed:	up to 460 km/h
Synchronization:	rotary encoder provides accurate position reference
Measurement width/height:	customer specific *
Laser:	Class 3B

Measurement resolution

Height resolution:	0.05 mm *
Lateral resolution:	0.15 mm *
Circumferential resolution:	dependent on resolution of rotary encoder (max. 4096)

* All technical data can be adapted to meet specific customer requirements.

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**Development Center
X-ray Technology EZRT
a division of Fraunhofer Institute for
Integrated Circuits IIS
in cooperation with Fraunhofer IZFP**

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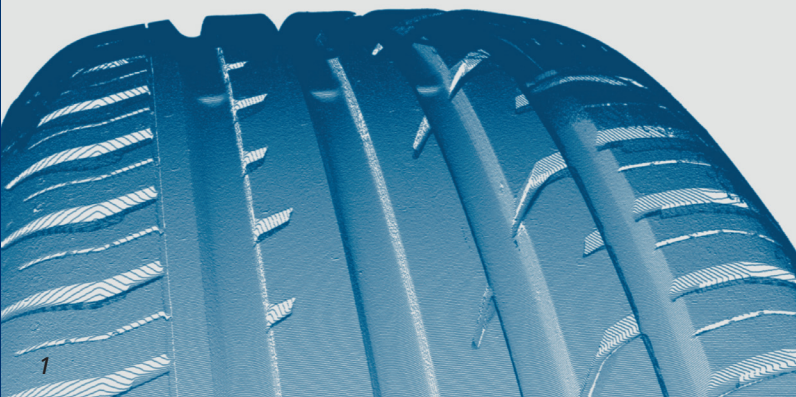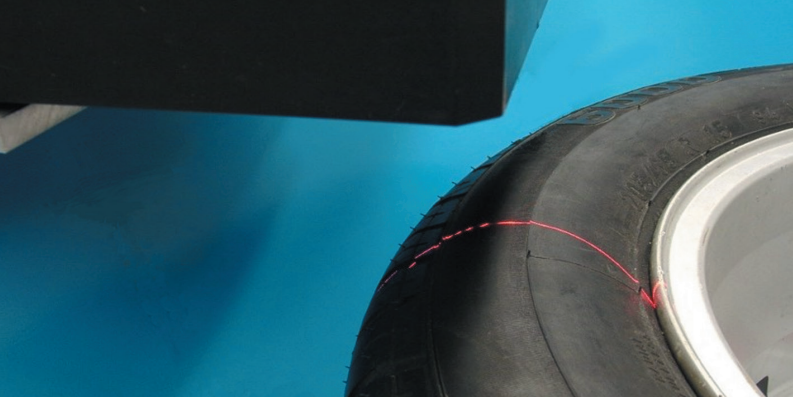Division director
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HIGH SPEED 3D
TIRE CONTOUR MEASUREMENT

MOTIVATION

Knowledge about the dynamic deformation of tires at extreme speeds is an important issue for tire development. Fraunhofer IIS has developed a dedicated laser sheet-of-light technology based 3D sensor and software system for fast 3D measurement of tire geometries at high speeds. This sensor system can capture the complete surface of a tire at surface velocities of up to 460 km/h.

The laser sheet-of-light technology can be combined with a mechanical precision handling system yielding the overall bead-to-bead contour of a tire of almost arbitrary dimensions. 3D reconstructed data, real-time 3D views and profile cuts of the tire can be analyzed.

OPERATING PRINCIPLE

The tire's surface is captured in its entirety at high speeds using bead-to-bead laser sheet-of-light measurement with a multi-sensor array. The number of sensors is scalable according to the specific customer's requirements.

SOFTWARE

The Windows-based software features include:

– Automatic fusion of sensor data into single calibrate tire surface contour
– Analysis of height profiles as well as raw measurement data
– Automatic measurement parameter configuration
– Automatic sensor adjustment procedure
– Generation and export of calibrated 3D data

1 Visualization of high resolution 3D measurement
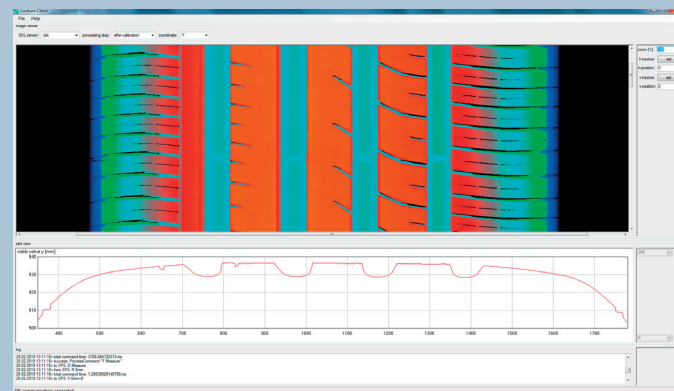
False color view of tire measurement data and height profile display
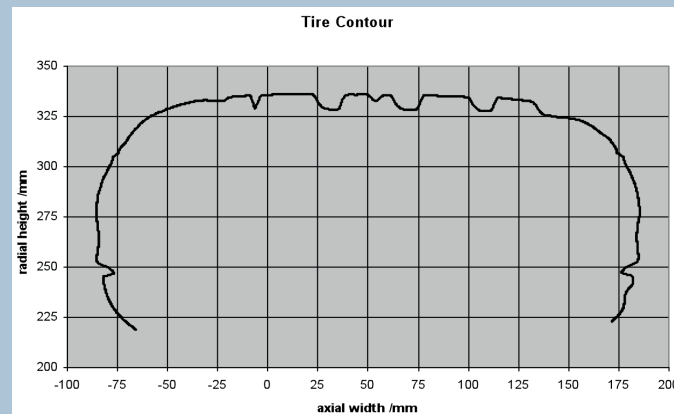
Bead-to-bead profile visualisation