



NEXT.assembly

# x-road curve

## The multi-function test stand

### NEW, REVOLUTIONARY, UNIQUE

Autonomous driving will fundamentally change road traffic. The test stands for the revolution in the end of line area are already available.

To achieve a considerable increase in efficiency during production, future vehicles will move autonomously and will be tested without any operator input needed.

In addition to the static calibration, dynamic function tests as for example the driving behaviour in typical traffic situations are to be performed in the future.

With the innovative multi-function test stand x-road curve, autonomous vehicles will be tested dynamically. The x-road curve offers unprecedented possibilities with the testing of semi-autonomous or autonomous driving vehicles and sets trendsetting impulses.

### CUSTOMER BENEFITS



[Testing of semi-autonomous/autonomous driving vehicles](#)

[Future-oriented functional test with steering angle](#)

[Testing of vehicles in the end-of-line as well as in the R & D area](#)

[Vehicle testing without operator](#)

[Retrofitting of existing test stands with the functionality "steering"](#)

[Driverless roll test](#)

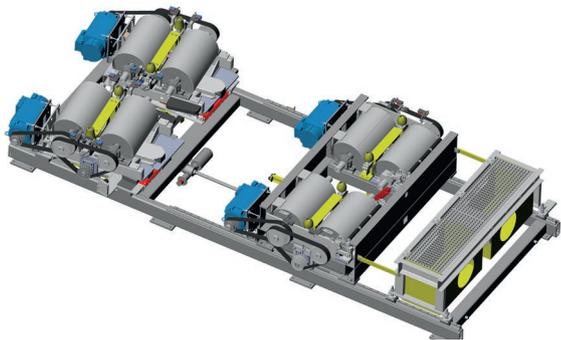
[Testing of evasive maneuvers](#)

# Technical data

## x-road curve

### PRODUCT

On conventional roll test stands, vehicles can only drive straight ahead. In order to avoid a sidedrift of the vehicle and to not create the risk of it being ejected from the test stand, the driver has to constantly ensure that the vehicle remains in the centre of the test stand. Thanks to the revolutionary test stand concept of x-road curve, it is possible to keep the vehicle in the centre of the test stand fully automatically - thus enabling a driverless vehicle testing - and to automatically carry out steering function tests. In order to enable this to be carried out, the front axle of a conventional roll test stand has been modified in such a way that the rotatable front wheel



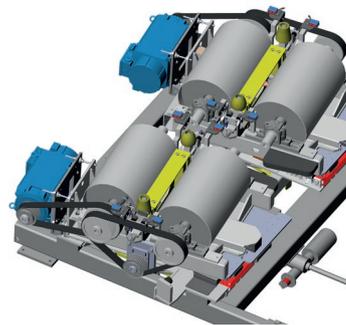
Layout x-road curve

### A UNIQUE TEST STAND CONCEPT

- Two separate roller units, each rotating around the vertical axis, to support the vehicle wheels of the front axle
- Two roller units to support the vehicle wheels of the rear axle
- Four vector-controlled drives for motor-driven and generator-based operation
- Contactless measurement system to detect the angle position of the vehicle wheels as well as the vehicle position
- The automation software x-line for system control, motor management and interface handling

support units (double rollers) can move according to the steering angle of the vehicle's front wheels. The movement and position of the rollers is detected and adapted via a contactless measurement system using a highly dynamic control system. Therefore, the moving vehicle stays in the centre of the function test stand, independent of the steering wheel position, and various function tests of semi-autonomous and autonomous driving vehicles can be performed.

Finally, the scope of the x-road curve is completed through integration of a simulation environment for integrated vehicle test via typical driving situations.



Ratatable roller unit in detail

### UNPRECEDENTED OPPORTUNITIES

#### Roll, brake, ABS testing

- General dynamic function testing
- Testing of brake systems
- Testing of sensor

#### Driverless testing

- Driverless testing of vehicles on roll and brake test stands without risking the vehicle being ejected out of the test stand
- Controlling of driving direction and vehicle position via the steering function of the test stand

#### Testing vehicles that drive semi-autonomous/ autonomous with a simulation environment

- Function testing with steering angle
- Comparison of required and actual driving direction

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### TECHNICAL DATA X-ROAD CURVE

Testing speed	130 km/h with steering possibility
Testing speed	170 km/h without steering possibility
Max. steering angle	+/- 10° at the front axle
Typical traction force	3700 N / 6000 N dependent on the drive technology

Subject to change. The information in this brochure solely contains general descriptions and performance features, which may vary in specific cases of application. The desired performance features are only binding if they have been agreed upon explicitly at the conclusion of the contract. © Dürr 2022