

# All-round solutions for professional machine testing



## DLG chassis dynamometer

Innovative testing equipment for agricultural machinery and heavy equipment

With support from




by decision of the German Bundestag

[www.DLG.org](http://www.DLG.org)





A green agricultural machine chassis is positioned on a chassis dynamometer. A large, dark, cylindrical roller is visible on the right side of the frame, used for testing heavy-duty wheeled vehicles. The scene is dimly lit, with a bright light source on the left creating a lens flare effect.

## International test competence for agricultural machinery and heavy duty vehicles

With a roller diameter of 2 meters, the chassis dynamometer offers you realistic and simple testing options for heavy duty wheeled vehicles.

The chassis dyno is particularly suitable for testing vehicles with high wheel torques at low driving speeds.

Due to the temperature control option, the vehicles can be tested in different temperature scenarios.

Driving conditions that are difficult to reproduce in driving tests on the road or off-road can be precisely set and repeated on the chassis dyno.



## Tests in accordance with your requirements

### Key features of the DLG chassis dynamometer

#### ■ Power measurements

- Determination of the power on the wheels under full load and in a driving speed range from 0 to 105 km/h forward and reverse
- Performance measurements:
  - Wheel power (up to 700 kW)
  - Power take-off power (up to 700 kW) using a separate load unit
  - Hydraulic power of up to 150 kW by using a separate load unit
- Simultaneous load at the driveline, power-take-off and the hydraulic system
- Either synchronous running of the rollers or the wheels
- Measurement of wheel slip, wheel speeds, various traction power distributions

#### ■ Consumption, emission rates and range measurements

- Fuel consumption
- Reagent/AdBlue consumption
- Exhaust emissions are measured by PEMS (Portable Emission Measurement System)
- Comparative measurements of performance and consumption using different fuels or lubricants at a consistent room temperature
- Range determination of electric and hybrid vehicles
- Power consumption tests on electric or hybrid vehicles

#### ■ Data collection and recording

- Temperature measurement: 8 standard channels, more channels on request
- Engine speed measurement: 4 standard channels
- CAN data recording: J1939, Isobus

#### ■ Simulation of various driving conditions

- Driving simulation, driving cycles, driving profiles according to customer specifications
- Coastdown tests, load adjustment
- Trailer load simulation
- Cooling package testing
- Acceptance tests of engines and gearboxes
- Simulation of uphill and downhill runs
- Endurance brake testing (to German road traffic regulations, UN-ECE regulations or EU directives)
- Simulation of load conditions, up to 10 tons pull-down per axle

## Technical specifications

- **Vehicle dimensions and weights**
  - Wheelbase: 2,050 – 6,000 mm
  - Max. vehicle width: 4,500 mm
  - Max. wheel load: 15 t
  - Max. total vehicle mass: 60 t
- **Driveline load unit**
  - Max. performance: 700 kW
  - Max. force: 135 kN/roll
  - Speed range:  $\pm 105$  km/h
  - Engine driven and generator driven
  - Roller diameter: 2,000 mm
  - Direct drive per roller
  - Supports tandem axles
- **Power take-off load unit**
  - Asynchronous motor
  - Max. output: 700 kW
  - Max. torque:  
(left/right hand rotation): 7,000 Nm
  - Engine driven and generator driven
- **Hydraulic load unit**
  - Load applied by a combination of hydraulic and asynchronous motors
  - Max. power applied: 150 kW
  - Max. flow: 500 l/min.
  - Max. pressure: 300 bar
- **Air conditioning**
  - Standard temperature:  $25 \pm 2$  °C
  - Supported temperature range: 15 - 45 °C
  - Face area: 3,000 x 3,000 mm
- **Measurement equipment**
  - Fuel consumption
  - AdBlue/reagent consumption
- **Maximum gate width:**
  - Overhead clearance: 4.90 m
  - Clearance width: 4.53 m
- **Maximum widths on rolling testbed:**
  - Width without frame insert: 5.00 m
  - Width over rollers/tyres: 3.90 m



## Perfect atmosphere for efficient work

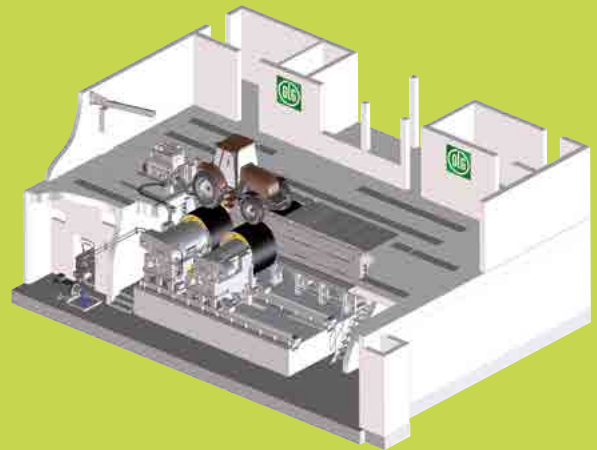
A large meeting and presentation room overlooking the chassis dynamometer offers plenty of possibilities for demonstrations, trainings and presentations while your machine is being tested.



## DLG-PowerMix 2.0 – the premium-class test standard for efficiency measurements

The DLG expert commission, which is formed by farmers, scientists, consultants and DLG engineers, developed 14 test cycles that simulate the loads that typically act on a tractor in daily work. While the tractor is going through these simulations on the chassis dynamometer, fuel and AdBlue consumption rates as well as the machine's power output and its efficiency are measured.

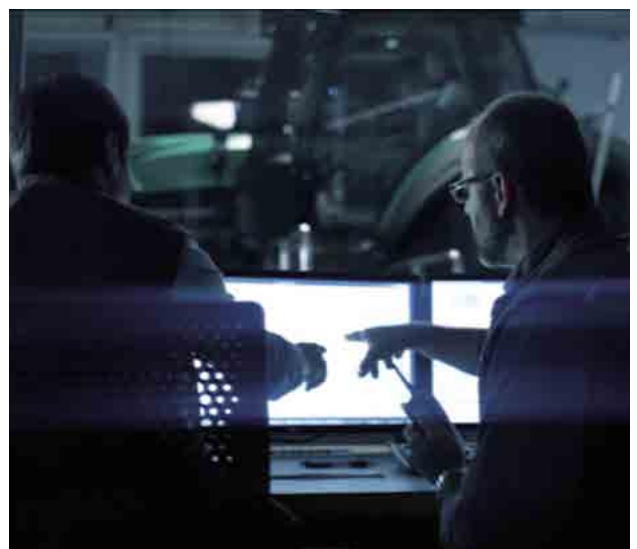
The individual test cycles reflect typical field and transport applications at partial and full load, simulating pure drawbar work relative to the machine's specific horsepower (e.g. ploughing or cultivating). They also simulate mixed work by applying dynamic load to the driveline, the pto and the hydraulic system. In addition, the PowerMix 2.0 test includes heavy and light transport work cycles, testing the tractor's efficiency on the road to obtain an overview of the tractor's efficiency in repeatable field and road applications and in standardized conditions.



## Your testing partner

The challenges for manufacturers of heavy duty vehicles and machines for onroad and offroad applications grow every day. Efficient time and cost management is critical for successful R&D and sales performance. The DLG chassis dynamometer in Gross-Umstadt near Frankfurt offers an optimum environment for your research and development testing. Manufacturers are invited to use the facility for comparing their prototypes and pre-production models with competitor models or optimising their machines to the targeted applications.

At the same time, our customers benefit from the great expertise of the DLG test engineers in dealing with any R&D issues. We implement R&D tasks in a flexible, rapid and market-driven approach, develop customised testing profiles, and provide professional and reliable compilations of the specific requirements of individual markets.



# DLG Test Center Technology and Farm Inputs

## We test for the farming world

DLG has been testing agricultural machinery and farm inputs for over 130 years. Today, we also provide further services in addition to these traditional services. Based on this long-standing experience, the DLG Test Center Technology and Farm Inputs is one of the most distinguished testing organisations in the world.

The DLG-developed test methods and test profiles are primarily applied in usability tests. Developed by an unbiased and independent test commission, they reflect typical applications of the product and are carried out by independent engineers. Apart from applying these DLG standards in its tests, the DLG Test Center also offers extensive testing services that apply national and international standards and regulations as a part of quality assessment programmes and customer-specific R&D requirements.

All testing services are carried out by the DLG TestService which is based in Groß-Umstadt near Frankfurt but also by agencies that test on behalf of the DLG Test Center Technology and Farm Inputs in order to provide a comprehensive test programme. All these DLG tests are carried out by applying and using state-of-the-art test techniques and facilities. The tractor and vehicle test lab is accredited to ISO 17025 standards and is designated as Technical Service by the Federal Motor Transport Authority (KBA) to conduct homologation and approval tests of vehicles and vehicle parts.

## Further DLG test services

In the agricultural field, the DLG usability tests of equipment used in arable, forage and livestock farming are often considered as a cornerstone by farmers on which they make their purchase decisions. Equipment that has passed a usability test is awarded the DLG APPROVED test seal. In addition, DLG carries out a wide variety of further tests of inputs and lubricants. A product that has passed the test is eligible for DLG QUALITY MARK.

We also offer the following additional testing services:

- OECD Tractor Code 2
- PTO Power, pulling power, lifting forces, hydraulic power
- Homologation / type-approvals (EU, UN ECE, StVZO)
- Vibration behavior of seats for tractors and construction machinery
- ROPS, FOPS, truck cabs
- Rear underrun protection devices of trucks and trailers
- Whole vehicle homologation, testing of braking and steering systems
- Drive-by noise measurement, noise at the driver's ear
- Camera monitor systems
- Driver assistance systems
- Functional safety and cyber security
- Trainings
- Conformity assessments

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