

# All-round solution for professional truck technology testing



## DLG chassis dynamometer

Innovative testing equipment for commercial and heavy duty vehicles

# International leader in testing tractors and vehicle components

The DLG chassis dynamometer is the world's most powerful one that is freely available for testing agricultural machinery and commercial vehicles. Offering the highest level of functionality, flexibility and precision, this chassis dynamometer features high-end measurement technology.

Recording energy inputs and outputs on a vehicle, the tests measure fuel consumption, actual traction, pto and hydraulic output as well as exhaust emissions on up to 700 kw ( $\approx$  1,000 hp) vehicles. The dynamometer also enables measuring the entire electric consumption on electric and hybrid vehicles.





## The DLG chassis dynamometer

### Key features

#### ■ Output and drawbar power measurements

- Determination of drawbar pull and power under full load and in a driving speed range from 0 until 105 km/h forward and reverse
- Performance measurements:
  - Drawbar power (up to 700 kW)
  - Power take-off power (up to 700 kW) using a separate load unit
  - Hydraulic output of up to 150 kW by using a separate load unit
- Simultaneous load at the driveline, the power-take-off, and the hydraulic system
- Either synchronous running of the rollers or the wheels
- Influence of the ballasting concept on the driveline efficiency (e.g. traction force distribution, wheel slip)

#### ■ Consumption and emission rates 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

#### ■ Simulation of various driving conditions

- Driving simulation, driving cycles, driving profiles according to customer specifications
- Coastdown tests, load adjustment
- Trailer load simulation
- Cooling modulation testing
- Acceptance tests of retrofitted engines and gearboxes
- Simulation of uphill and downhill runs
- Testing of the retarder (Type II, type IIa according to UN ECE-R 13)
- Simulation of load conditions, up to 10t 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 weight: 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
  - Air flow velocity: 10 or 20 km/h
  - Face area: 3,000 x 3,000 mm
- **Measurement equipment**
  - Fuel consumption
  - AdBlue/reagent consumption
  - Gaseous exhaust emission incl. mass flow
- **Data collection and recording**
  - Temperature measurement: 8 channels, more channels on request
  - Speed measurement: 4 channels, more channels on request
  - CAN data recording: J1939, Isobus

## Perfect atmosphere for efficient work

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



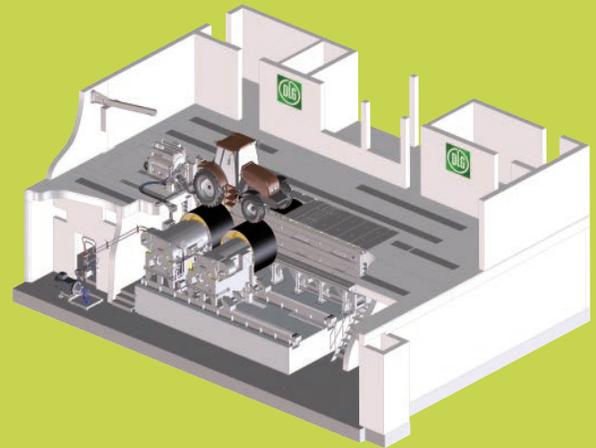
## DLG-PowerMix 2.0 – the premium-class test routine for efficiency measurements

The DLG test 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 part 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.

With support from



by decision of the German Bundestag



Video available at [www.dlg.org/de/landwirtschaft/tests](http://www.dlg.org/de/landwirtschaft/tests)

## Your testing partner

The challenges for manufacturers of heavy duty vehicles and machines for onroad and offroad applications grow every day. An efficient time and cost management is critical for a 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 issue. 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.



## The DLG Test Center Technology and Farm Inputs: Testing for farmers

The DLG has been testing agricultural machinery and farm inputs for over 130 years. The DLG Test Center Technology and Farm Inputs is one of the leading testing organisations in its sector worldwide. The DLG-developed test standards are developed by an unbiased and independent test commission. Complying with international standards, the DLG Test Center uses state-of-the-art techniques and facilities.

The DLG Test Center is accredited to ISO 17025 and is designated by the Federal Motor Transport Authority (KBA) for the homologation and type approval of vehicles and vehicle parts.

### Further DLG test services

- Designated technical service by the KBA
- DAKKS accredited test laboratory according EN ISO/IEC 17025
- National German test station for testing according OECD tractor codes 2 until 10
- Strength and safety testing (e.g. cabs based on UN ECE-R 29, safety-belt anchorage based on UN ECE R-14, rear underrun protection based on UN ECE-R 58)
- Fatigue life testing
- Material resistance (e.g. tensile strength, abrasive resistance, chemical lab)
- Tarpaulins and protective skirts testing based on ISO 17103
- Engine, power take-off, hydraulic and gross vehicle power output measurement and determination of the energy efficiency (e.g. based on UN ECE-R 120)
- Dynamic tractive power simulation, drawbar power and fuel consumption measurement with a load truck
- Seat vibration measurement on a hydro-pulse test bed or on a test track according ISO 5008
- Vehicle type approval and homologation
- Camera monitor system testing based on UN ECE-R 46
- Automated guidance system testing
- AEF ISOBUS conformance testing
- Vehicle exhaust emission measurement with a Portable Emission Measurement System (PEMS)
- Noise measurement (noise level at operator's ear, pass-by noise)
- Power take-off shaft guard testing and certification

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

**Contact:** [Tech@DLG.org](mailto:Tech@DLG.org)



**DLG TestService GmbH**

**Location Groß-Umstadt**

Max-Eyth-Weg 1 · 64823 Groß-Umstadt

Tel. +49 69 24788-600 · Fax +49 69 24788-690

[Tech@DLG.org](mailto:Tech@DLG.org) · [www.DLG.org](http://www.DLG.org)