

Usability tests  
Compliance tests  
R&D tests

## DLG Test Center Technology and Farm Inputs

Tractors, machines & utility vehicles:  
Tests and services

# DLG: Machine Testing Excellence

## Tests and services for manufacturers of machines and machine components

Since the DLG was founded in 1885, agricultural machinery tests have always been the focus of its work. An expert, unbiased and independent testing institution of international recognition, the DLG Test Center Technology and Farm Inputs has continuously expanded the range of its services ever since. Today, we offer tests and services for manufacturers of tractors, machines and vehicles as well as for suppliers of components for mobile machines and commercial vehicles.

- Agricultural machinery (e.g. tractors, harvesters, forage harvesters)
- Forestry machinery (e.g. forestry tractors, forwarders, skidders, tractor-trailer combinations, harvesters)
- Construction machinery (e.g. excavators, wheel loaders, road pavers or graders, body tippers)
- Mining machinery and underground machinery (e.g. dumpers, loaders)
- Municipal machinery (e.g. garbage trucks, road cleaning machines, mowers or multi-purpose machines)
- Lift trucks (forklifts or mobile cranes)
- Machines for special applications (e.g. snowcats, track construction trains)

The tests are conducted to international standards and regulations as well as to DLG standards. The testing and measuring methods are developed by our engineers and by state-of-the-art, knowledge-based and practice-driven criteria. The testing technology that is used in DLG tests meets the highest quality standards and is verified by periodic accreditation routines.

### Usability tests

The DLG tests are appreciated by customers who consider them valuable information for making a purchase decision. Our test methods and test profiles are developed by an unbiased and independent commission and simulate in-field applications of the products.

### Compliance tests

As an Appointed Technical Service by the German Motor Transport Authority and National Test Institute by the OECD (Organisation for Economic Cooperation and Development), the DLG Test Center carries out large numbers of tests on vehicles and vehicle components based on national and international standards.

### R&D

The DLG Test Center offers an extensive range of quality assessment tests and services in the field of customer-specific R&D goals. These include third-party certification of products and the examination of components on behalf of vehicle manufacturers. The relevant test frameworks are jointly developed with the customer.

# DLG APPROVED: Quality in a nutshell

The DLG APPROVED mark is awarded to a product after it has successfully passed a full test or a test on individual criteria. The test methods are practice-driven and developed by unbiased and independent test commissions. They are based on the latest scientific findings, user requirements and the use of modern testing methods.

The quality marks and test reports present powerful tools for your marketing strategy. We help you promote your success with sales partners and farmers by offering a wide range of attractive cross-media and individual services to market your tested product.



## DLG APPROVED Full Test

The DLG APPROVED Full Test quality mark is awarded to products that have passed a DLG usability test on all aspects. The test result presents an unbiased assessment of all major features of a product:

- Functionality and quality of work
- Handling, ease of operation, service and maintenance
- Electronics and digitisation
- Work safety
- Environmental protection and sustainable resource management
- In-field performance



## DLG APPROVED on single, value-determining criteria

The DLG APPROVED quality mark for single, value-determining criteria is awarded to agritechnical products that have passed a less comprehensive DLG usability test. The purpose of this test is to highlight a product's specific innovations and key features.

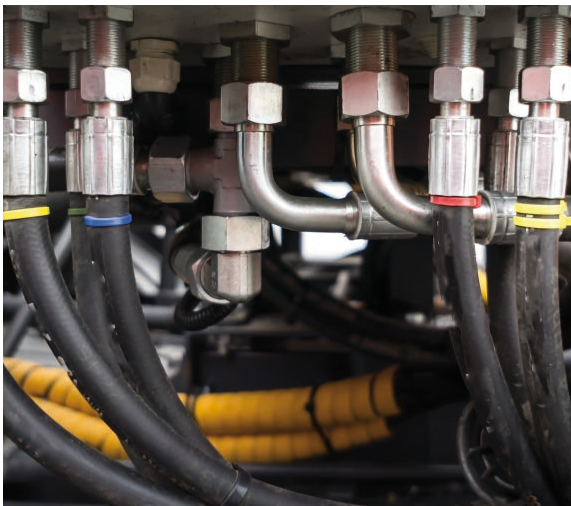
### DLG-PowerMix

The DLG-APPROVED PowerMix mark is awarded to tractors that have successfully passed a performance and consumption test to criteria that are laid down in the DLG-PowerMix standards.

These call for 14 load profiles that are typical for the day-to-day work of the machine and that form the basis for measuring fuel and AdBlue consumption as well as the overall machine performance and efficiency. The individual load profiles replicate typical field and transport applications both at half load and full load.

# Tests and services for tractors, machines & utility vehicles

The DLG tests tractors, construction machinery and commercial vehicles to international standards and to regulations that form part of approval tests as well as to DLG standards and also to customer-specific requirements.



## Power, efficiency, emissions

- OECD Tractor Code 2 performance measurements
- Fuel efficiency profiling for agricultural and forestry tractors (DLG-PowerMix Test)
- Drawbar power measurements
- PTO output measurements
- Fuel consumption measurements on stationary and mobile test benches
- Portable Emissions Measuring Systems (PEMS)
- Flow rate measurements on hydraulic couplers on mobile machinery
- Lifting force and breakaway torque measurements
- Hydraulic flow rate, pressure and performance measurements

## Electronics

- AEF ISOBUS Conformance Test
- Auto steer systems
- Camera monitor systems

## Functional Safety

- Personal qualification
- Conformity assessments

## Tensile strength tests

- Cab tests on mobile machines and trucks (ROPS, FOPS, OPS, TOPS) to OECD Tractor Codes, EU Regulations, ISO etc.
- Seat belt anchorages
- Underrun protection
- Lateral protection devices
- Towing devices
- Mechanical coupling devices
- Lashing and anchorage points
- PTO shaft shields
- Durability tests

### Noise level and vibration measurements

- Noise level measurements at operator's ear (e.g. OECD Tractor Code 5)
- Pass-by noise
- Sound measurements to Outdoor Directive
- Driver seat vibration measurements
- Operator comfort measurements to ISO 2631

### Usability tests

- Machines and machine components
- Auto steer systems
- Tyres
- Agricultural and forestry tractors
- ISOBUS field tests

### Material testing & environmental simulation

- Weather resistance
- Liquid compatibility
- Leak-proof materials
- Tensile strength tests

### Homologation: type-approval tests of vehicles and vehicle parts (Appointed Technical Service)

- Tractors
- Agricultural trailers
- Trailed implements
- Systems, separate technical units and components
- Underrun protection
- Mechanical couplings
- Light and light- signalling devices
- Passive safety



# State-of-the-art test rigs and measuring technology

The test engineers at the DLG Test Center select the equipment that is required to carry out a specific test, they program the data collection software, set up the test chains and monitor the entire process. Their extensive experience in transferring practical challenges to the test bench and in developing objective and reproducible methods make the DLG test engineers sought-after partners by vehicle and machine manufacturers and suppliers of components for mobile machines and commercial vehicles.



## The DLG chassis dynamometer: Measuring consumption and emission rates

The DLG Test Center offers multiple methods and technologies to measure the consumption and performance of a mobile machine or commercial vehicle. This is done on a chassis dynamometer that ranks among the most versatile chassis dynos in the world, measuring output, emissions and consumption rates on all kinds of mobile machines, commercial and utility vehicles and tractors. Meeting the highest standards regarding functionality, flexibility and precision, the technology of this dynamometer can measure extremely high-capacity machines. It uses four powered rolls that develop resistance at the wheels and a load testing unit that measures the mechanical PTO power. In addition, it offers the possibility to simulate hydraulic power take-off. Presenting a combination of a test stand and a DLG PowerMix test, the rolling testbed offers a method to verify the energy efficiency of a tractor. The PowerMix test method is accredited to ISO 17025 by the German accreditation office DAkkS.



All inputs and outputs measured can be recorded. The recordings comprise fuel input, actual wheel payload, pto and hydraulic output as well as exhaust emissions on vehicles of up to 700kW ( $\approx 1,000\text{hp}$ ). The testbed also measures the efficiency of electric drivelines on electric and hybrid vehicles.



### Truck cab test stand

Safety tests on cabs are carried out on an adaptable test stand that allows the testers to apply different standards.

For example, we can carry out tests on cabs for tractors and construction machinery to “static” test standards and truck cabs to “dynamic” standards by measuring the range of sway.

### DLG drawbar power measurements at the customer’s site

The DLG Test Center has a measuring truck, which is a very unique piece of equipment that is able to apply variable loads on a tractor and measure its performance at the same time. The equipment that is installed on the truck is able to apply variable loads on the wheel drives and simultaneously on the mechanical and hydraulic systems of the tractor.

This truck is suitable for measuring both wheeled and rail track vehicles and carries out these measurements also at the customer’s site. This is an attractive option for machines that are very difficult to transport to a test lab.



# DLG Test Center Technology and Farm Inputs

DLG has been testing and awarding certifications for farm equipment and inputs for over 130 years. Further services are also provided. The DLG Test Center is one of the leading testing organisations for the international agricultural industry. Apart from applying DLG standards in its tests, the DLG Test Center also offers extensive testing services to national and international standards and regulations as a part of quality assessment programmes and customer-specific R&D requirements. In addition to tractors, machines and vehicles, the range of products that is tested by DLG includes field equipment, livestock equipment as well as farm inputs and consumables.

All testing services are carried out by the DLG TestService in Groß-Umstadt near Frankfurt and, to satisfy further demands, by external agencies on behalf of the DLG Test Center Technology and Farm Inputs.

The DLG TestService is accredited and appointed to carry out comprehensive tests and certifications on tractors, machines, utility and commercial vehicles:

**Technical Service for vehicle type testing,  
appointed by the German Federal Motor  
Transport Authority**



**Test Station designated for  
all OECD Tractor Codes**



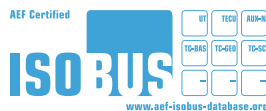
**Product Certification Body,  
accredited by DAkkS to ISO 17065**



**Test Lab, accredited by  
DAkkS to ISO 17025**



**ISOBUS Test Lab for AEF certifications**



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