

Endurance Test Benches



Special features:

- **Incorporates many years of experience of standard and development test benches**
- **Assessment of test sample performance over an appropriate operating life**
- **Testing of complete systems or individual components**
- **Emphasis placed on robust and durable measuring and drive technology**
- **Can be set up for various fuels**
- **Safety and monitoring systems, explosion-proof design for specific fuel types**
- **Temperature control possible in wide ranges**
- **Flexible test bench control using MOEHWALD Prisma NT software**
- **Compact design**
- **Simple to use**
- **High reliability**

General:

In addition to function and component test benches Moehwald also supplies test benches for carrying out endurance tests. These endurance test benches are normally used for subsequent assessments of test specimens (measurable defects) after an appropriate operating life. These test benches can, of course, also be equipped with suitable measuring devices for the continuous collection of the relevant data. The requirements for robustness of the measuring and drive technology are many times higher than those for other test benches.

Moehwald has already designed and supplied several endurance test benches mainly for diesel applications.

An endurance test lasting over several days, weeks or months of operation requires a high degree of robustness and durability, above all for the measuring systems. Furthermore, there are also similar requirements applicable to the safety and monitoring systems. In addressing these aspects we are able to draw on our years of experience with numerous test benches.

The challenges include very high temperatures, which by themselves would make an explosion-proof design necessary for operating with normal diesel fuels.

However, we can provide you with good advice on a wide range of measuring systems suitable for continuous long-term applications.

Setup:

We use different drive concepts for our endurance test benches, depending on the particular application.

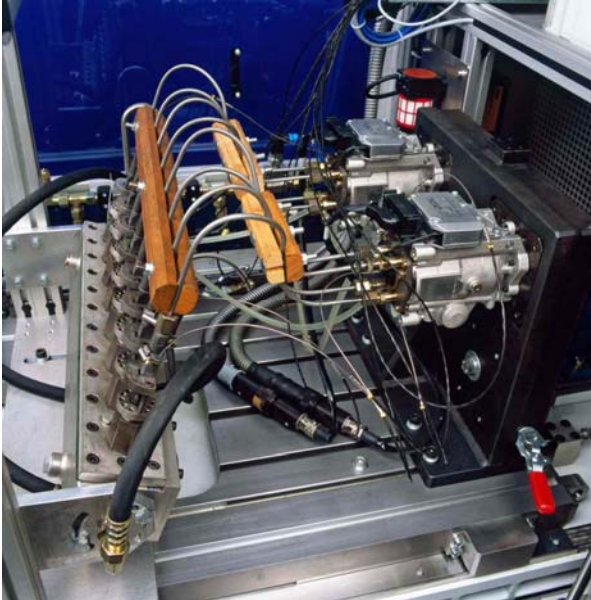
- Normal standard basic benches
- Complete vehicle engines without conrods and pistons, which are driven by electric motors.
- Special development benches

The test benches often have to be very flexibly equipped and incorporate multiple clamping fixture to accommodate the many different test samples.

Versions:

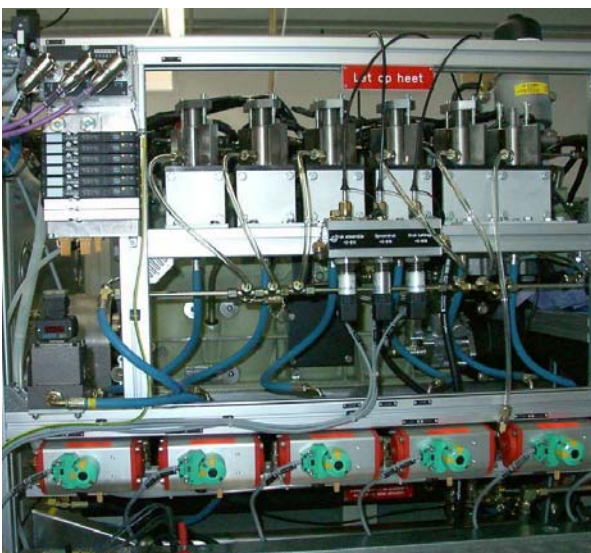
To provide you a quick overview of the test benches developed to date, we have given a few examples below along with their main advantages. On the basis of our experience and know-how, we can also offer you endurance test benches customised to your specification.

Endurance test benches for diesel injection systems up to 37 kW drive output:
(e.g. common rail systems, distribution pump systems etc.):



- Powerful, robust endurance test benches with 37 kW drive output
- Modular, extendible on two clamping fixtures with independent fuel and lubricant supply for both test samples
- Fuel conditioning between 20 – 90°C with appropriate safety features for explosion protection (ATEX approval for diesel)
- Adapter plates allow flexible test and system configurations (can also be prepared outside the test bench)
- Flexible test bench software - Prisma NT
- Full parameterisation of driving curves /cycles
- Measuring system extendible using modules

Endurance systems on standard drive test benches:
(with a drive output of up to 40 kW and a peak torque of up to 930 Nm)



- Uses a MOEHWALD standard test bench with a direct drive and integrated fuel and lubrication supplies.
- Provides highly accurate and dynamic speed control
- Large bench bed, which gives plenty of mounting options
 - Can accept and drive a complete commercial vehicle engine
 - Cylinder head with UIP system
 - Cam box with single cylinder pumps or pump line injection systems
- Can take continuous injection quantity measurements using Coriolis mass flow meters
- Operation with engine control device (control, media supply and communication with the appropriate ECU)
- Simulation of driving programmes and external sensors
- Measuring system extendible using modules

Endurance runs for pre-production testing of electronic unit pump:
(EUP-systems tested in the original engines for various customers)



- Modified commercial vehicle engine without conrods and pistons mounted on a strong welded frame with drive motor and fuel tank
- Driven by variable speed 30 kW electric motor
- Manual operation or fully automatic running with parameterisation of driving programmes
- Control parameters: fuel and coolant temperature, engine speed, load, selection of cycles and durations
- Optional high pressure measurements possible
- The test bench is used for the long-term assessment of pump line injection pumps

Endurance test benches for glow plugs:



- Endurance test bench for metal and ceramic glow plugs
- Test bench designed for 16 test samples divided into 4 groups each with 4 glow plug test mounts (exchange parts for various types of components)
- Each test mount group can be independently controlled (voltage control, data collection, cooling, ...)
- Every test mount is supplied with 0-10V/ 0-100A from a separate electric power unit
- Continuous and pulsed control possible
- Measured data:
 - Glow plug voltage
 - Power consumption
 - Glow plug resistance
 - Temperature data collected using infrared radiation thermometer

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