

Application Bench for High Pressure Gasoline Injection Systems

GI 3000



Special features:

- **Highly flexible test bench systems**
- **For use in the gasoline technology field for complete gasoline direct injection systems and for testing individual components**
- **Available as a modular system (small individual test benches) or as a complete system**
- **Very flexible and easily retrofitted**
- **Explosion-proof design**
- **Test bed control using MOEHWALD Prisma NT software**
- **Simple to use**
- **Compact design**
- **Control electronics on 19 " sub-rack system in positive pressure encapsulated cabinets**
- **High reliability**
- **Suitable for use in development/application and in the production environment**

General

This highly flexible test bench system is suitable for testing in development/application on complete high pressure gasoline injection systems or on individual components. The engine manufacturer can use it for investigating the dynamics of his injection systems.

With these test benches, we can draw on established knowledge and experience from projects with OEM suppliers and with Bosch.

The test bench performs so well because of our experience and the innovation of our customers.

The test benches/modules listed here illustrate examples of our development work and can be extended or modified to suit the customer's wishes.

Construction

Moehwald has two different series of test benches available:

- the **modular system**, which consists of small individual test benches that are all controlled by one test bench computer.
- the **complete test bench**, which can be fitted out with a wide range of test bench equipment.

General features of both systems:

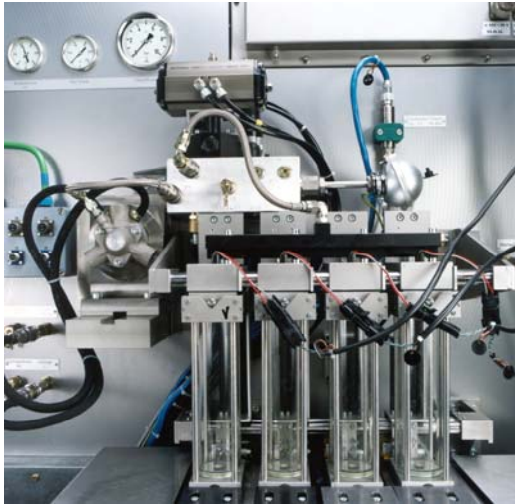
- Designed to be explosion-proof for Zone 1 (EEx-II 2G)
- Aluminium extrusion frame with fluid collection troughs and lower area completely clad with stainless steel plate or sound insulation
- Fuel conditioning integrated into the lower frame
- Test room protected with transparent panels in upper frame
- Positive pressure encapsulated operating cabinet with computer, various measuring instruments and controls.
- Control cabinet, which is not explosion-proof and therefore must be set up outside the explosion-proof area.
- Software:
 - Prisma NT – test bench control software
- Various engine control devices can be incorporated
- Optional medium conditioning
The temperature of the medium can be set within a wide range of temperatures (-20°C to +80°C) using an additional temperature control unit installed outside the explosion-proof area.

Modular systems:

Modular systems allow some modules for various tasks to be available at the same time and therefore offer increased capacity.

Examples of modules in practice

- **Measuring modules for pump testing and/or system or injector testing.** These modules can be used for very accurate measurement of flows, pressures, temperatures, torques etc.



- **Measuring with weighing scales:**
 - Valves spray into glass containers, which are lowered on to weighing scales.
 - A special seal prevents the escape of the fuel-air mixture.
 - Automatic emptying after measurement

- **Measuring with turbines:**
 - Continuous measurement using PLU measuring turbines with temperature compensation
 - With density sensor. The values can be displayed gravimetrically.



- **Washing module**
 - The principle of construction is similar to the measuring module
 - Works at low pressure
 - Cleans the injection valves

- **Spray pattern module**
 - Hydraulic medium supply and the electrical control of the spray pattern module is provided through the measuring module.
 - Evaluation of the spray pattern by the transmitted light or laser processes

Modules can be modified or new modules developed to meet the customer's specific requirements.

Complete test bench:

In comparison to the modular system, the complete test bench is a compact design. This means it has a considerably reduced footprint.



- The complete vehicle system can be built-in, including pipework
- Engine control unit is situated near the injection system
- Metering of individual injectors can be by quantity indicator
- Pump testing (flow, torque)
- Mass flow meter for pump supply, control quantities, combined return
- Freely configurable sensors for pressure, temperature, electricity etc. can be incorporated
- Can be designed for particular test procedures

Technical data:

Testing medium	n-heptane, diesel
Supply pressure	system dependent (up to 300 bar)
Tank temperature	20°C
Low pressure supply	0.5 – 10 bar, max. 25 l/min
Test medium temperature at the system inlet	-20°C to +80°C (by means of additional temperature control unit and heat exchanger)
Limiting operating speed	up to 6000 injections/min

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