



HYDROTECHNIK
SENSOR TECHNOLOGY

HYDROTECHNIK SENSORS: KEEPING UP WITH AN EVER-CHANGING WORLD



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Panta rhei, the famous concept we attribute to the Greek philosopher Heraclitus describes the philosophy to success in the modern world of production – everything flows, everything is constantly changing. The driving force behind the Fourth Industrial Revolution as we know it is quality and precision, something that can only be obtained if conditions are constantly being monitored. Hydrotechnik understands the importance of regularly

conducting tests in an environment that is in a continual state of flux. This is the driving force behind Hydrotechnik's development of high-quality, reliable sensors.

To optimise system performance, engineers & technicians who set up, troubleshoot and conduct maintenance on facilities and machines need high quality system performance data. Without base point data, they are unable to take the right measures or meet their clients' expectations. Specialists in every field of work benefit from Hydrotechnik's know-how, whether they work in research and development, as development and application engineers, or in the machine service field. Hydrotechnik's high precision sensors are the benchmark in the production world. The sensors are designed for use in fluid pressure systems, particularly hydraulic systems and can also be implemented in many other areas. Hydrotechnik's sensors are robust, accurate and long lasting, which makes them ideal for permanent installations and ensures a solid price vs performance ratio.

Together with Hydrotechnik's diagnostic test equipment, the intelligent sensor detection system (ISDS) ensures that testing is done quickly and efficiently and within the test parameters.

Our internal DAkkS-accredited calibration laboratory ensures that our sensors are always guaranteed when it comes to precision and quality.

HYDROTECHNIK SENSORS: SOLUTIONS FOR FLUID POWER SYSTEMS

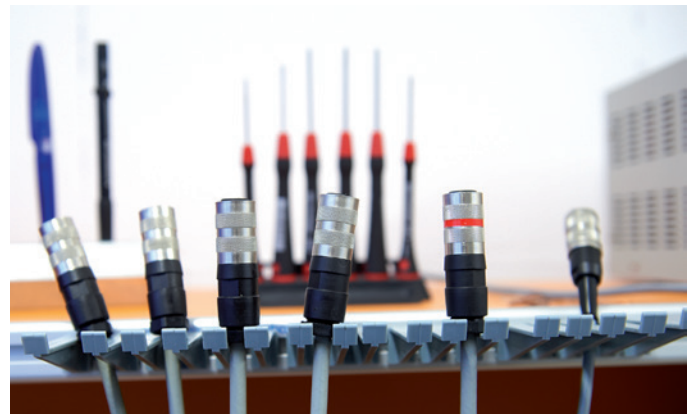
The fundamental data needed from your fluid power system is pressure, flow and temperature. Hydrotechnik have the sensors you need to do the job. Hydrotechnik also has sensors for other relevant measurements including force, torque, rotational speed, position, and vibration, everything you need for properly diagnosing and monitoring any industrial fluid power system. This brochure covers our complete line of sensor products and their area of application.

Our core values when it comes to product development:

- Safety (imperative when working with pressurized systems)
- Reliability (especially when operating conditions are rough)
- Ease-of-use (easy installation and error-free operation)
- Precision

Our products are especially designed for:

- Permanent installations
- Temporary control measures when high-pressure systems are being developed, put into operation and serviced)



Our products cover the key measurements for fluid systems:

- Pressure
- Flow
- Temperature

Our product portfolio is complete with sensors for:

- Force
- Torque
- Rotational speed
- Position
- Vibration

We calibrate all sensors - our own and others:

- We have our own calibration laboratory
- We are DAkkS-certified
- We provide a DAkkS or factory calibration certificate

PRESSURE SENSORS

PR SERIES

Pressure is central to fluid power technology. Proper pressure measurements provide the baseline for making system adjustments, and are also crucial to the diagnosis of the entire fluid power system. Hydrotechnik offers a broad range of piezoresistive pressure sensors.



A comprehensive standard product portfolio with a short delivery time

- Round plug (M12 x 1, M16 x 0.75), valve plug or open cable end
- Standard pressure range:
 - 1 to 6 bar
 - 0 to 60 bar
 - 0 to 250 bar
 - 0 to 400 bar
 - 0 to 600 bar
 - 0 to 1,000 bar
- Signal output 4 to 20 mA or CAN
- System connection conforms to ISO 228 – G ¼
- Precision class 0.5%
- Inexpensive, even in small quantities

PR400 SERIES

The PR400 series is perfect for analyzing fluid power systems:

- A high measurement rate of 10 kHz ensures that peak pressure points are precisely detected and assessed
- The PR400 series closes the gap between standard piezoresistive industry sensors and highly dynamic piezoelectric laboratory sensors
- excellent price vs performance ratio



Virtually an unlimited combination of products are available to meet customer's needs

(with a minimum order)

- A wide variety of plugs
- Sensors that measure pressure from 10 mbar to 4,000 bar
- Any power and voltage output according to customer specifications or CAN
- Any standard system connections
- Greater electromagnetic compatibility
- Various models and specialty models
- Various grades of accuracy



FLOW SENSORS



Calculating flow is an integral part of the diagnosis and condition monitoring process in fluid power systems. Hydrotechnik offers four product families to measure flow, whether you're measuring machines or production systems, whether your installation is permanent or mobile. Each product family offers specific advantages and product properties.

QT TURBINE SENSORS

- Produce accurate, reproducible readings
- Viscosity compensation is optional
- High pressure
- Fast response time
- Turndown flow ranges exceeds 1:30
- Can measure pressure and temperature
- Can be used in a wide range of process fluids, from water to oil
- Bidirectional calibration
- Can be implemented in a permanent installation and for service and maintenance
- Various output signals (impulse, electrical or CAN)
- Low differential pressure
- Light and compact
- Cost effective



QG GEAR WHEEL SENSORS

- Flow measurement is virtually independent of viscosity
- Produce highly accurate, reproducible readings
- High pressure
- Special calibration ensures a high rate of precision
- Fast response time
- Turndown flow range up to 1:1000



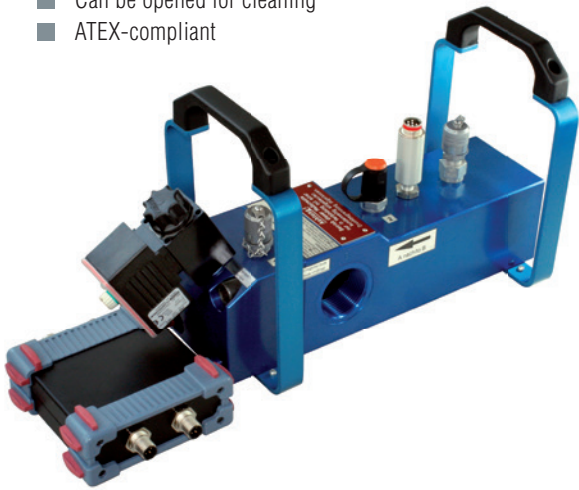
- Can be used in a wide range of process fluids, from lubricating, non aggressive fluids to oil
- Used mostly in permanent hydraulic systems
- Can be mounted onto pipes, plates or distribution blocks
- Various output signals



TEMPERATURE SENSORS

QO OVAL GEAR WHEEL SENSORS

- Flow measurement is virtually independent of viscosity
- Produces highly accurate, reproducible readings
- Moderate compressive strength
- Fast response time
- Can be used in a wide range of process fluids, from aggressive watery fluids to oil
- Used mostly in permanent systems
- Various output signals
- Can be opened for cleaning
- ATEX-compliant



QL LOAD VALVES

- Load valves with turbine volume flow sensors are used to simulate high-load conditions, i.e. to record pump load
- A volume flow sensor, a load valve and pressure/temperature test point are combined into one unit
- The load valve can be used both for mobile systems or as a troubleshooting tool in permanent installations



Hydrotechnik offers a patented solution for interim temperature measurements in closed systems. You can screw the temperature sensor into the pressurized system without running the risk of leakage when you use the temperature sensor with a MINIMESS® p/T test point.

- The probe is located in the inside the fluid stream
- Flooding the thermal well with the fluid to be measure ensures optimal thermal coupling.



TP Series sensors capture both pressure and temperature.

Comprehensive product portfolio of standard-threaded sensors

- Measure temperatures ranging from -25°C to 125°C and -50°C to 200°C
- Have system connections that conform to ISO 222 G ¼, M10 x 1, ¼" NPTF
- Probe length: 20 mm to 400 mm
- Output signal: 4 to 20 mA
- Guarantee a higher burst pressure and stability when there are sudden changes in pressure



Also in our portfolio

- Manual sensors with needle tip or plate-shaped probes
- Magnetic surface-mounted sensors

Specialized solutions

- Implementation of customized special solutions
- Wide selection of signal outputs and temperature ranges
- Wide selection of system connections or attachments



OTHER SENSORS AND ADD-ONS

Hydrotechnik products cover all relevant physical measures required to diagnose and monitor fluid power systems.

Force sensors

- FO 110 is a shearing force sensor that operates on the maximum bending principle. Can be used both in a laboratory and industrial setting.
- FO 210 is a tensile force sensor for simple and universal connections. Can be used on elevators, cranes, gondolas, and cables supporting masts, towers or platforms.
- FO 310 is a force sensor that operates on the compressive force principle. Can measure values up to 100 kN.

Torque sensors

- High-resolution and extremely accurate
- Rotating torque sensor with a friction ring and a continuous rotational speed of 1,500 to 2,000 U/min
- Not sensitive to extreme environments
- High dynamic range

Rotational speed sensors

- RS 110 evaluates light impulses
- RS 210 is an inductive senso

Position sensors

- Precisely identifies position
- Operate on the wire resistance principle
- Compact construction
- Can be used on cranes and hydraulic presses

Vibration sensors

- Capacitative acceleration sensor
- Collect data in extreme, low inertia conditions
- Magnetic surface mount
- Uses frequency to gather vibration data
- Can be connected to all Hydrotechnik test points

ISDS AND CALIBRATION

Reliable, precise and fast: ISDS

The intelligent sensor detection system (ISDS) ensures that all Hydrotechnik sensors and measurement devices work in harmony.

- Our measurement devices automatically configure to the signal, unit of measure and data range of any connected devices
- Accuracy of pressure and volume flow sensors is improved through the automatic use of background linearisation tables
- The turbine volume flow sensors will expand the measurement range of data you can collect.

ISDS is Hydrotechnik's user-friendly solution for temporary measurements.



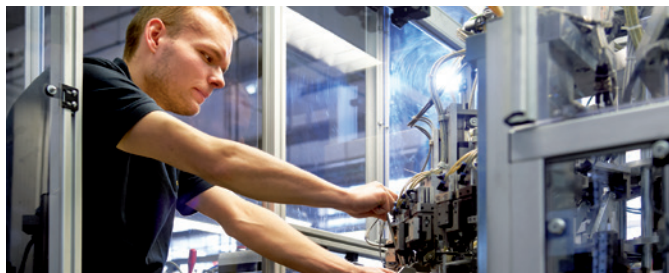
Calibration

Hydrotechnik's calibration laboratory is used to calibrate pressure and volume flow variables. The laboratory is accredited in conformance with DAKkS D-K-15045-01-00. We guarantee the quality and dependability of our sensors by delivering every volume flow sensor with a DAKkS or factory calibration certificate.

Contact us for service

Be sure to contact Hydrotechnik when your sensors need to be calibrated, whether they were made by us or another company. We are flexible and can calibrate your sensor regardless of the viscosity, levels of accuracy and ranges of measure.

We recommend recalibrating your sensors every two years to ensure that your measurements are accurate.



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