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Test Benches

Calibration and verification of water meters

SENSUS
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Xylem test benches – delivering accuracy, quality and reliability to water meter testing.

Xylem test benches are in operation in over 22 countries worldwide having earned and excellent reputation for their high quality, consistency and ongoing reliability.

Our modular design approach provides maximum flexibility, both during design and operation. It enables the customer to specify their own particular requirements during the specification process, which are then incorporated into an optimal custom-made solution by Xylem's testbench design experts.

Each test bench is designed for the initial calibration and ongoing verification of the complete range of residential, domestic and C&I meters developed by Xylem. They can also provide optimal testing of water meters from other manufacturers, in large quantities across a user-defined measuring range.

The measurement parameters and preparation procedure for each test are defined and controlled by the customer's own calibration engineers. Once configured the testing process is very simple to undertake, delivering high accuracy measurements in the minimum possible time.



Key benefits

- Conforms to standards but with flexibility to meet your enhanced tests
- Easy maintenance minimises downtime
- Enables maintenance contracts to be ratified

Product Features:

All water meter technologies supported

Including mechanical, ultrasonic or electromagnetic.

- Water meter size : DN 10 - DN 300
- Measurement range:
  min. flow 1 litre/h
  max. flow 1600 litres/h

Fully automatic, or semi-automatic test rigs

- Automatic mode: data is automatically collected via inputs (pulse or frequency) or from optical sensors, or with cameras with digital conversion.
- Semi-automatic mode: readings are typed manually via keyboard/keypad into the computer

Water used as the test medium

- Water temperature range: 5 - 95 °C
- Water sources:
  closed circuit system via a storage tank or connection to an external water supply

Testing methods

Weighing/static weighing, master meter method, volumetric using reference vessels

- Flying start and stop with pulse and time compensation or
- Standing start and stop

Additional testing possible

Dependent on the capabilities of the meter under test, the following additional checks are possible:

pulse inputs, frequency inputs, manual reading, optical sensors, process cameras, analogue current or voltage outputs.

Computer controlled

The entire test process is controlled by the test program running on a PC.
All control signals are sent from the PC to electronic modules located in a rugged control box.

Multiple testing procedures supported

Q1
Q3
Q4

Supports standard testing at 3 flowrates, and extended testing e.g. 14 flowrates or more. The flow is automatically adjusted via variable pumps, adjusting valves, bypass valves and an accurate frequency controller.

Inherent material construction

STAINLESS STEEL 304

All parts in contact with water are made from stainless steel, brass or composite materials. The stainless steel parts, e.g. the weighing tank and piping system, are made from high-quality stainless AISI 304 (AISI 316L) steel.

Flexibility

Water Water meters can be tested automatically under various pressures and temperature conditions.

High quality components

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The important components of the test bench, including the test tables, diverters, control board PTB, program TBF, pumps and pipe assemblies are produced by Xylem brands. The test bench also incorporates sensitive weighing scales, flowmeters and variable speed controllers to ensure accurate feedback and control.
As an option, the Spektron UV disinfection system, a cost effective and reliable solution for drinking water, can be part of the test bench.

Services

Experts are available to support customers throughout the accredidation process, by sharing the knowledge and practical experience gained operating our own fully accredited ISO 17025 test facility.

Easy maintenance

Every important hydraulic component is attached with precision-made threaded connections to enable easy dismounting. Every component can be easily removed from the pipe assembly for easy maintenance.

Standards

The test benches are suitable for water meters designed to comply with the MID 2014/32 EU and standard ISO 4064, and meet requirements of OIML-R 49 and ISO 4064.

The measuring process is designed to achieve a measurement accuracy in the range 0.04 to 0.15 % of the true value.

Components of the measurement system which influence the measurement reading, such as scales, flow meters, thermometers and pressure gauges, are calibrated and assessed to national standards using units of measurement that conform to the International System of Units (SI).

All algorithms and calculations in the calibration program used to determine conventional true value, error calculations and corrections for density, buoyancy expansion, compressibility, temperature difference correction for the balance flow meter and other associated calculations, are developed and tested in conformance to international standards.

The Sensus Quality Assurance System is approved to ISO 9001.configured the testing process is very simple to undertake, delivering high accuracy measurements in the minimum possible time.



The test bench for the mechanical and static meters DN15 - DN50

- Fully automatic
- 2 testing lines
- Max.20 meters (DN15 and DN20) tested
- Cold water and hot water up to 60°C

The test bench for iPERL and the others static meters DN15 - DN40

- Fully automatic
- 2 testing lines
- Max.40 meters (DN15 and DN20) tested
- Cold water up to 25°C



Components

In accordance with Xylem's commitment to excellence, the test benches feature innovative solutions with continuously evolving components so that customers can always receive the most modern, reliable and energy-efficient equipment.

e-NSC End Suction Pump Series

Built with the highest level of flexibility and modularity

Guarantees power and efficiency to your applications

- Hydraulic and motor efficiency exceeding the European Ecodesign requirements
- Improved hydraulic coverage and performance
- Operation-related optimization of load management, thanks to versions equipped with hydrovar® X





Stainless steel vertical multi-stage pumps type e-SV

Extra efficient – the e-SV™'s hydraulics, combined with a high - efficiency motor (IE3) deliver maximum efficiency.

Easy to maintain–the e-SV™'s design allows removal of the mechanical seal without having to remove the motor, reducing repair time by up to 50%. A standard DIN mechanical seal, wearing components, service tools and standard IEC motors enable faster and easier maintenance and servicing.

Energy saving-pumps are among the largest users of industrial energy. The e-SV™'s lower energy requirement reduces Co2 emissions and an impact on the environment.

Lowara BLOCK BG(M) self-priming household water supplies

Close-coupled self-priming centrifugal pumps with builtin ejector system, designed to remain primed even in the presence of water-dissolved gases.

The extensive use of pressed stainless steel ensures a high-performance, durable and lightweight pump.

The use of rolled stainless steel results in high performance and a pump with a long service life.





References

Sensus has produced qualified test benches for water, flow meters and heat meters for more than 30 years.

The sensitive scales incorporated in the test bench, utilise Electromagnetic Force Compensation (EFC) which is produces excellent reproducibility and accuracy at high-resolution.

The system includes an integrated calibration weight, which can be initiated via simple key press.
The calibration weight is so accurate that it automatically compensates for the individual gravitational force at different places on the Earth.

Over 160 Xylem meter test benches are operational in 22 countries around the World.

Significant installations include:

Dubai, UAE - the size of the testing water meters up to DN 300

Manama, Bahrain - the size of the testing water meters up to DN 50

Berlin, Germany - the size of the testing water meters up to DN 200

Munich, Germany - the size of the testing water meters up to DN150

Petersburg, Russia - the size of the testing water meters up to DN 200

Moscow, Russia - the size of the testing water meters up to DN 300

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