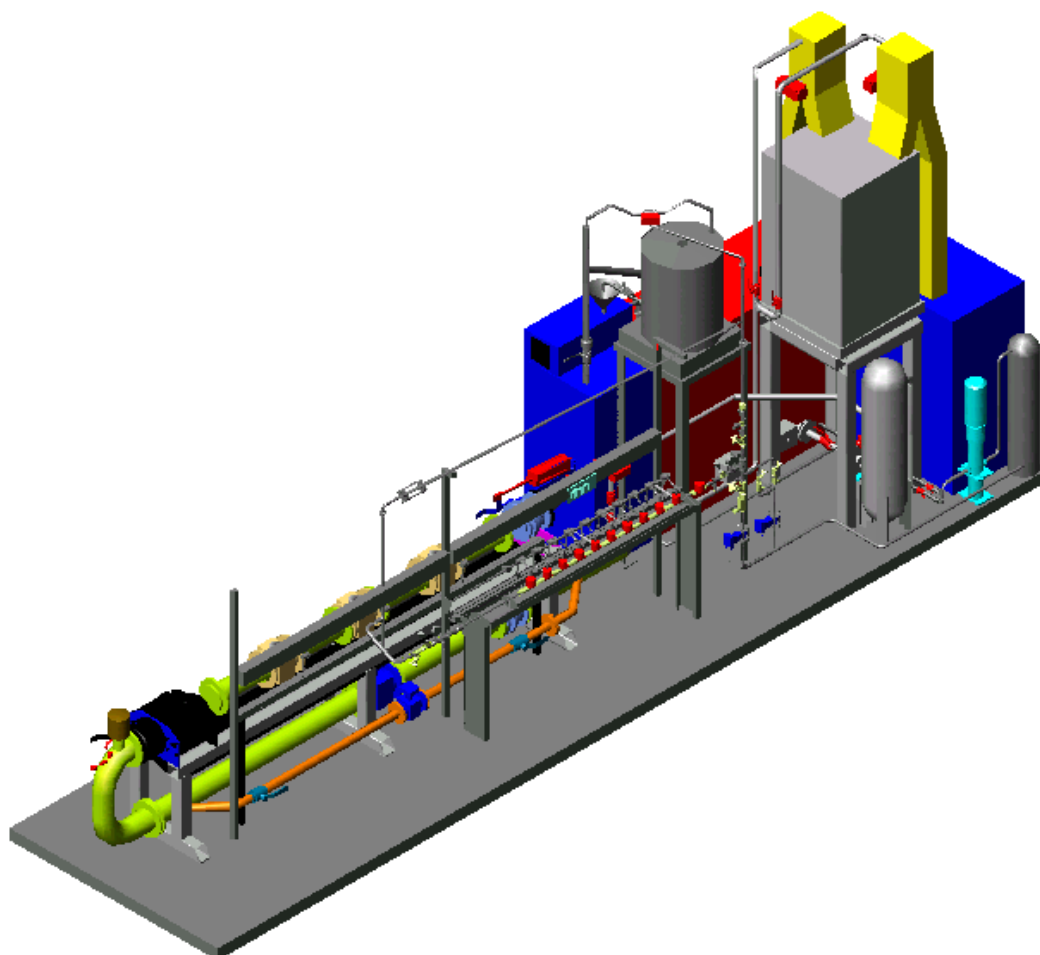


TESTING BENCHES

for watermeters



Testing benches are designed by Tepso Ltd. for using in calibration laboratories and also in watermeter production during the watermeters initial verification.

These testing benches are successfully used in Estonian, Latvian and Russian firms in the production and calibration of watermeters, particularly for *Minol Messtechnik GmbH* watermeters.

Present development of testing best is specially projected for export and there are compactly combined two testing benches from TEPSO Ltd. production:

- EP-20 for sizes of watermeters DN15, DN20 (cold and hot water)
- EP-100 for sizes of watermeters DN25, DN32, DN40, DN50, DN65, DN80, DN100 (cold and hot water)

Design features of the testing bench are:

- the application of contemporary technical solutions
- a high measurement accuracy
- universality
- a high productivity
- an automatic control by computer.

Our own TEPSO Ltd. Calibration Laboratory of Watermeters and Heatmeters is the first laboratory in Estonia, which has been accredited according to ISO/IEC 17025:1999 demands. It ensues that every produced or calibrated watermeter corresponds to all demands of normative documents concerning watermeters.

The main basic component parts of the testing bench are:

- Storage tank of cold water, 350 litres, for measuring line DN15, DN20
- Storage tank of cold water, 1200 litres, for measuring line DN25...DN100
- Storage tank of hot water, 1200 litres, for measuring lines DN15, DN20 and DN25...DN100
- Heating system for storage tank of hot water (max +75 °C)
- Cooling system for storage tank of cold water 350 litres (for example +18.0±0.5 °C)
- Measuring line for the installation of controlled watermeters DN15, DN20 with all installation clamps for tested watermeters
- Measuring line for the installation of controlled watermeters DN25...DN100 with all installation clamps for tested watermeters
- Two water flow stabilizers

- Two pumps WILO
- Two frequency inverters SIEMENS for the control of the speed of the pumps (water flow) in measuring lines
- Magnetic valves BÜRKERT for choice (Q_n , Q_t and Q_{min}) of the water flow
- Bypasses and valves for the water flow turning away from the measuring line
- Diverters for turning the water flow to the weights or for turning away from the weights
- Three local water cleaning systems in every storage tanks
- Two weighing systems (max 150 kg, max 600 kg) METTLER TOLEDO as the reference standards of the testing bench. The weights must be calibrated by the regional Standards Organization of Mongolia to insure traceability of the measuring process (mass, volume).
- Four electromagnetic master flowmeters KROHNE for the initial adjusting of the water flow and for the using in a quick calibration and an adjustment of watermeters in production process. Master flowmeters as the working standards of the testing bench, must be calibrated every day against reference standard (weights).
- Automatic distribution box (wall-mounted) for microprocessor blocks providing connection between the computers and the system of management and measurement of the testing bench
- Power distribution box (wall-mounted)
- Automatic microprocessor blocks providing connection between the computer and the system of management and measurement of the whole testing bench
- Optical pulse readout systems SUNX for the quick testing of watermeters. During this process the testing disk of the counter of the watermeter under control is used.
- *Hall* sensor pulse readout systems for reading water volume pulses directly from hydraulic assembly of the watermeter under control (without counter system).
- Adjusting keys for the adjustment of watermeters
- Air compressor for the air system of pneumatic valves
- Two computers with local network and installed software STEND (the base of software is DELPHI 5). UPS power supply.
- Printer

