Mobile On-Site Test Prover

Itron has gained valuable expertise from its long history in the field of gas meters verification and calibration. Our knowledge and competence in gas meter testing, applied both in Itron worldwide production facilities and independent verification centres, provide our customers with a guarantee of maximum metering efficiency.

DESCRIPTION
To meet various customer needs, our Calibration Equipment Division (CED) has developed a comprehensive range of calibration and testing equipment. Our mobile or stationary test prover offer: bell prover, wet meter, piston prover, S-Flow rotary meter, turbine meter, sonic nozzle and combined technologies as reference meters.

Itron on-site meter test prover is widely used for a wide range of commercial and industrial meters. Our mobile test prover is transported by van, truck or trailer to specific sites to provide our commercial and industrial customers worldwide with immediate, highly accurate meter testing and validation services.

Itron mobile on-site test prover covers from small portable test prover UT G65 skid mounted to high-end fully automatic mobile calibration laboratory prover, UM G2500.
KEY FEATURES

» Mobile laboratory mounted over a vehicle platform with temperature control for testing medium and calibration area.

» Normal Working Condition
  • Outside temperature: -20°C to +50°C
  • Relative humidity: 20% to 95% RH

» Master/Pilot References

UM SERIES MOBILE TEST PROVER AND CALIBRATION LAB

The UM is a mobile test prover laboratory widely used for calibrating turbine, positive displacement and diaphragm meters which provides a traceable method based on an array of master meters. The equipment is designed for automatic calibration of Turbine from G65 up to G2500 and rotary pistons meters from G10 up to G650.

The working principle of the test prover is by comparing volume passing through MUT (Meter under test) against the volume passing through the master meter at MUT’s pressure and temperature conditions with error correction from the official certificates.

The verification of meters is control by computer program called CALWIN GAS which controls the procedures and operations to perform the verification of MUT. Once the tests are completed, the obtained results are automatically displayed and stored in the computer for future retrieval.

The tests on the MUT is made by attaching a scanning head or pulse emitter from the MUT or manually with a snap switch push button in case the MUT is not equipped with any pulse emitter of optical reflector.

According to the test flow rate, the corresponding master meter will be automatically selected by the software application. This software will automatically acquire all the test parameters (temperature, pressure ...) to make the corresponding corrections and obtain the final error of the MUT in comparison with the selected master meter.

A pneumatic clamping system is installed in the test prover to allow the installation of the meter to test. The clamping system is composed by a fix and a movable part that allows flexible adjustment of the clamping area to the different meter lengths and diameters with their corresponding couplings.

A centrifugal fan is also supplied with the test prover as the flow source. The rotation speed of the fan is controlled by the software in order to adapt it to the test flow rate.
**UT SERIES MOBILE TEST PROVER**

UT Series mobile test prover is a mobile test prover for verifying and calibrating TZ, RPD and diaphragm meter which provides a traceable method based on an array of master meters. The equipment is designed for automatic verification of TZ G65 up to G650 and from G10 up to G650 for rotary piston meters.

The verification of meters is controlled by computer program called CALWIN GAS which controls the procedures and operations to perform the verification of the meter under test (MUT). Once the tests are completed, the obtained results are automatically displayed and stored in the computer for future retrieval.

The tests on the MUT is made by attaching a scanning head or pulse emitter from the MUT or manually with a snap switch push button in case the MUT is not equipped with any pulse emitter of optical reflector.

According to the test flow rate, the software selects the corresponding master meter and the user will adjust the line before continuing the test. CALWIN GAS will acquire automatically all the test parameters (temperature, pressure...) to make the corresponding corrections and obtain the final error of the MUT in comparison with the selected master meter.

A centrifugal fan is also supplied with the test prover as the flow source. The rotation speed of the fan is controlled by the software in order to adapt it to the test flow rate.

In order to protect the master meters in the test prover, a 100µm flat gasket filter is installed between the inlet flange and collector flange. The filter could easily be removed for periodic maintenance.

**REFERENCE STANDARD METERS (PILOTS)**

**Turbine TZ as Reference Standard**

<table>
<thead>
<tr>
<th>G-Size Rating</th>
<th>G250/G400/G650/G1000/G1600/G2500</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow rate range</td>
<td>100 – 4000 m³/h (less than 10:1 effective dynamic rangeability)</td>
</tr>
<tr>
<td>Linearity</td>
<td>Better than 0.5% from 20%Qmax to Qmax</td>
</tr>
<tr>
<td></td>
<td>Better than 0.5% from Qmin to 20% Qmax</td>
</tr>
<tr>
<td>Measurement uncertainty</td>
<td>Better than 0.2% from Qmax to 20% Qmax</td>
</tr>
<tr>
<td></td>
<td>Better than 0.3% from 20% Qmax to Qmin</td>
</tr>
<tr>
<td>Repeatability</td>
<td>Less than 0.05%</td>
</tr>
</tbody>
</table>

**KEY FEATURES**

- UT Test prover is mounted on mobile skid platform for ease of transportation to the site.

- Master/Pilot References
  - Resonance Free Rotary S-flow meter
    - Up to 2 HF could be supplied for S1-flow DN50
    - Up to 3 HF could be supplied for S3-Flow DN150
  - Excellent metrological stability
  - Repeatability less than 0.05%
  - Uncertainty better than 0.25%

- Measurement uncertainty
  Better than 0.4%

- Meter Clamping
  Manual

- Filters
S1/S3 - Flow as Reference Standard

<table>
<thead>
<tr>
<th>G-Size Rating</th>
<th>G65/G100 DN50 or G160/G250/G400/G650 DN150</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow rate range</td>
<td>2 – 1000 m³/h</td>
</tr>
<tr>
<td>Linearity S1-flow</td>
<td>Better than 0.25% from 10 to 160 m³/h</td>
</tr>
<tr>
<td></td>
<td>Better than 0.5% from 5 to 160 m³/h</td>
</tr>
<tr>
<td></td>
<td>Better than 1% from 2 to 160m³/h</td>
</tr>
<tr>
<td>Linearity S3-flow</td>
<td>Better than 0.25% from 100 to 1000 m³/h</td>
</tr>
<tr>
<td></td>
<td>Better than 0.5% from 50 to 1000 m³/h</td>
</tr>
<tr>
<td></td>
<td>Better than 1% from 20 to 1000 m³/h</td>
</tr>
<tr>
<td>Measurement uncertainty</td>
<td></td>
</tr>
<tr>
<td>S1-Flow</td>
<td>Better than 0.2% from 5 to 160 m³/h</td>
</tr>
<tr>
<td></td>
<td>Better than 0.3% from Qmin to 5 m³/h</td>
</tr>
<tr>
<td>S3-Flow</td>
<td>Better than 0.2% from 100 to 1000 m³/h</td>
</tr>
<tr>
<td></td>
<td>Better than 0.3% from Qmin to 50 m³/h</td>
</tr>
<tr>
<td>Repeatability</td>
<td>Less than 0.05%</td>
</tr>
</tbody>
</table>

MEBW (European office of legal metrology) certification for all the reference standard meters with traceability to PTB.

Acquisition Signals

- MUT Scanning head
- HF Namur
- LF Reed
- Start/stop snap switch

Software

CALWIN GAS running on Windows latest OS. The program adjusts automatically the flow rate and executes programmed sequence. All the test data, customer information and test meter data will be stored into the laptop. This allows user to retrieve from the test program all the previous test results, meter history and client data using the meter under test identification.

For the ease of deployment and data security, the program allows users to have different access levels as administrator or operator. Different access level will limit the accessibility of the user to protect the integrity of the testing configuration and client data base.

Meters Under Test

- Turbine DN50, DN80, DN100, DN150, DN200 and DN300 (subject to the selected options).
- Rotative pistons DN40, DN50, DN80, DN100 and DN150.
- Diaphragm Optional. (Subject to selected options)

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