

## TEST RIG TECHNOLOGY

# The new Elster-Instromet high-pressure test rig in Mainz-Kastel

As from spring 2006, Elster-Instromet will be able to do high-pressure tests up to a maximum pressure of 25 bar at our site in Mainz-Kastel.

The know-how that Elster-Instromet has accumulated throughout the world in the field of low-pressure test rigs has now served as the basis for using the technology at high pressures. The decision was made to set up a ring test rig which is operated with air and has the following specifications:

<b>Test medium:</b>	Air (dry)
<b>Pressure range:</b>	Atmospheric up to 25 bar
<b>Flow range:</b>	5 – 1600 m <sup>3</sup> /h
<b>Test meter sizes:</b>	DN 50 up to DN 200
<b>Pressure rates:</b>	PN 10 up to ANSI 600
<b>Master meters:</b>	Turbine meter TRZ G 1000 DN 200 Turbine meter TRZ G 250 DN 100 Rotary meter IRM-1 DUO

When we started planning the details of the test rig, it soon became clear that the two main components, the high-pressure fan and the heat exchanger, would be biggest challenge. We did, however, manage to get over this hurdle and find the right solutions and then, in the course of 2005, we started setting up the high-pressure test rig at the Elster-Instromet factory in Mainz-Kastel. The rig is in a closed, acclimatised room and offers ideal metrological conditions in terms of temperature and pressure stability.

The high-pressure test rig is made up of three master meter paths, which have two turbine meters, a G 1000 and a G 250, as well as an IRM-1 DUO rotary meter and a path for the meter under test.

The master meters used in the rig were calibrated on the high-pressure test rig 'Pigsar', which provides the officially-defined benchmark for high-pressure natural gas in Germany.

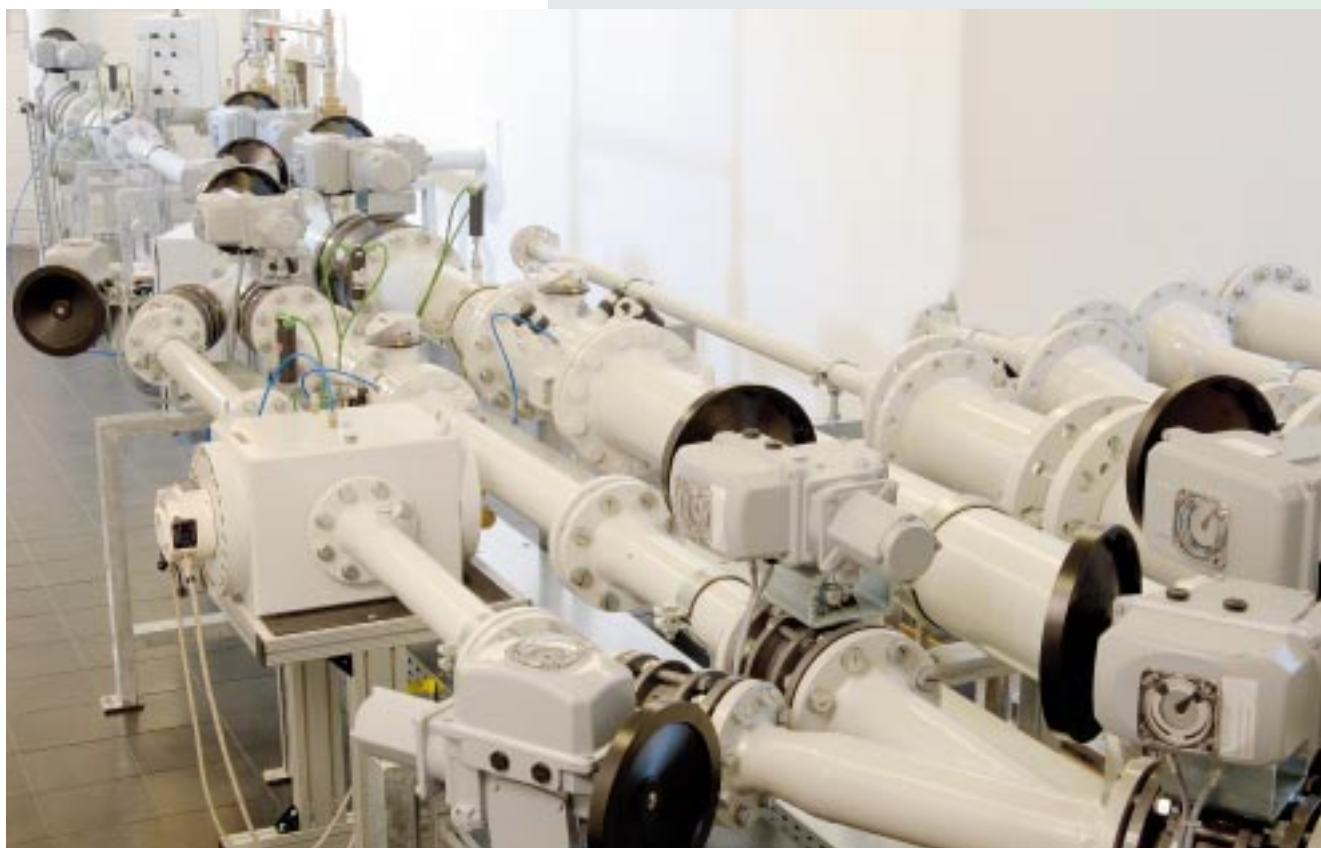


Fig. 1: New high-pressure test rig in Mainz-Kastel

The air flows from a separate high-pressure compressor through a safety device into the test rig until the test pressure has been reached and then the shut-off valves are closed.

Following this, the flow rates are set via a frequency-regulated high-pressure fan and the metering error can then be determined.

The rig is controlled entirely via an electronic Bus system. Besides the control functions, the Bus system also includes the precision metering functions with regard to pressure, temperature, time and pulses. The actual pressure measurement is carried out with the help of absolute and differential pressure sensors and all metrological data is stored at the end of a test in a database.

The following shows the most important technical details:

- For an actual flow rate of 1600 m<sup>3</sup>/h and a pressure of 25 bar the fan needs to have a power output of over 100kW. This means that the air in the test rig is heated up by approximately 9°C and, therefore, has to be cooled down again in the heat exchanger that follows down the line (necessary cooling power 66KW) so that there are no temperature fluctuations at the test and master meters.

The test rig is currently being run in and we expect to have the official approval from the calibration authorities by spring 2006.

When this has been achieved, we will have fulfilled all of the conditions in order to carry out the high-pressure tests in Mainz-Kastel.

As a result, we will be more flexible and will be able to react more quickly to customer requests



Fig. 2: Turbine meter tested under pressure



Fig. 3: Machine room with the high-pressure fan

concerning delivery times. A further advantage is the closed circuit – on the one hand, it is possible to set any pressure within the pressure range, and on the other hand, the rig is not susceptible to any seasonal fluctuations.

Elster-Instromet customers now have the chance to order a gas meter together with a high-pressure test and certificate all from under one roof.

Is that not an offer you can't refuse? Why not take a look at our high-pressure test rig – and we'll test your meters for you.

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