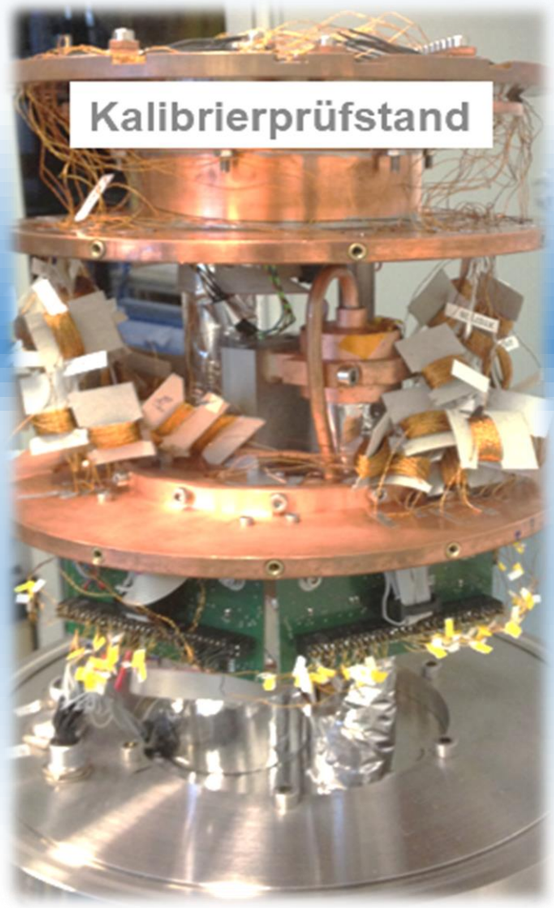
ILK Dresden



Customized cryosystems

- Cryostats (metal, glass/carbon fiber reinforced resin)
- Cooling and liquefaction systems
- Cryogenic actuators, sensors and pumps
- Energy storing systems (H_2, CH_4, …)
- LNG technology
- Sensor calibration
- Customized electronics
- Individual software and visualization
- Engineering, calculation and simulation
- Heat to Power
- Thermal cycle and material tests (λ, α, c, P, …)
- Cryobiology – Life Sciences

Calibration of temperature sensors

Contact

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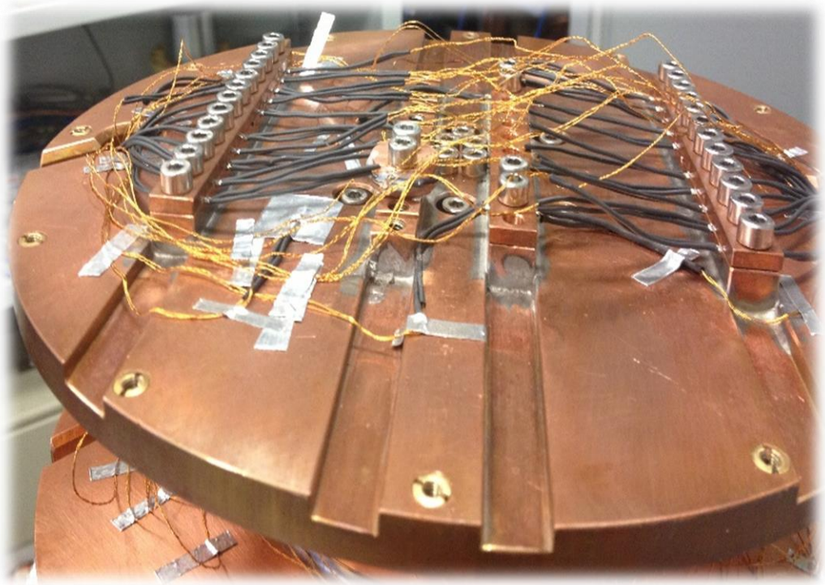
Certificate in accordance
with the requirements of the
Pressure Equipment Directive
DGRL 97/23/EG, Modul A1
for cryostats
Ident-No. CE 0525

TÜV SÜD ISO 9001

ILK Dresden

Calibration of temperature sensors

The new calibration stand for the temperature range down to 1.5 K at ILK enables the measurement of up to 40 sensors at one run.



Calibration plate mounted at a two-stage pulse-tube cryocooler with a large number of sensors. Different types of sensors can be measured due to variable supporting elements.

Special features of this calibration facility

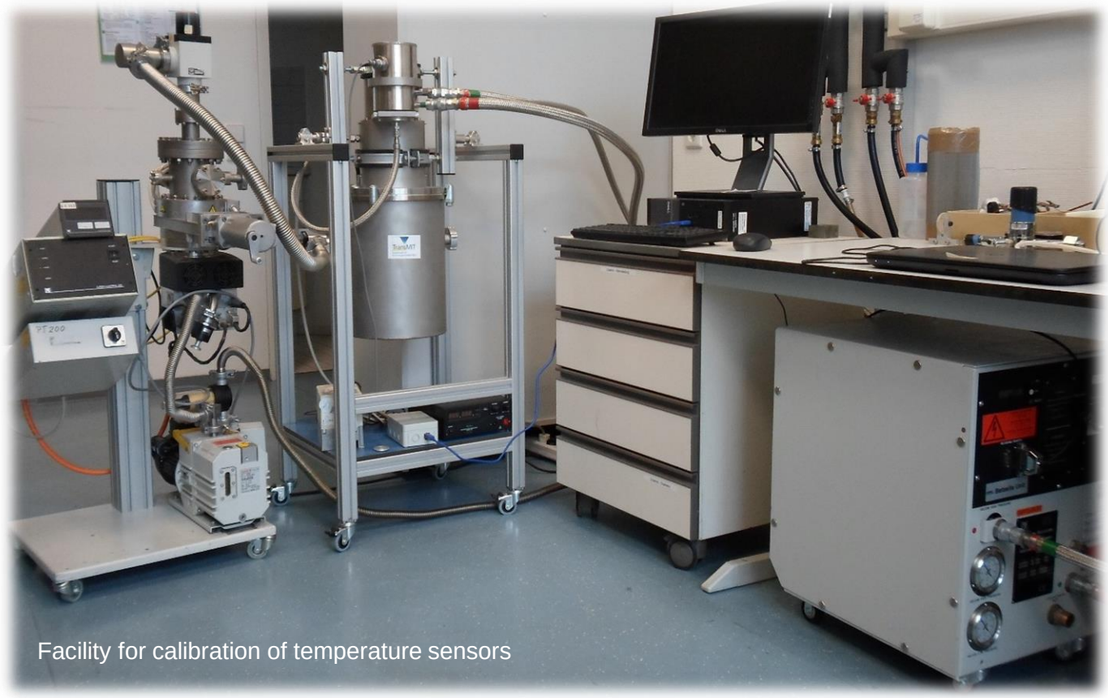
- Reduction of temperature oscillations of the cryocooler by thermal damping by a factor of approx. 100 ➔ no electronic correction is required
- High-precision and fast electronic read-out (special ILK Dresden device with a cold multiplexer)

Typical calibration uncertainty

4.0 K … 10 K → maximum uncertainty ± 5 mK

10 K … 100 K → maximum uncertainty ± 20 mK

100 K … 325 K → maximum uncertainty ± 50 mK



Facility for calibration of temperature sensors

Main features of all calibration measurements

- All types of temperature sensors and their characteristics can be calibrated (metallic, semiconducting, …)

  e.g. Platinum, Rhodium-Iron, Germanium resistors, various diodes, thermocouples, …
- Customized sensor wiring etc.
- Calibration for the range 1.5 K … 325 K
- Common criteria for temperature stability → better than 1 mK / minute
- Use of traceable calibration standards
- Check of reproducibility by using additional reference sensors
- Calibration protocols according to ILK´s quality standards

Calibration for customers, e.g.

Helmholtz-Zentrum für Schwerionenforschung (GSI) Darmstadt
→ more than 1300 sensors of type CX 1050 SD (in 2015/16)