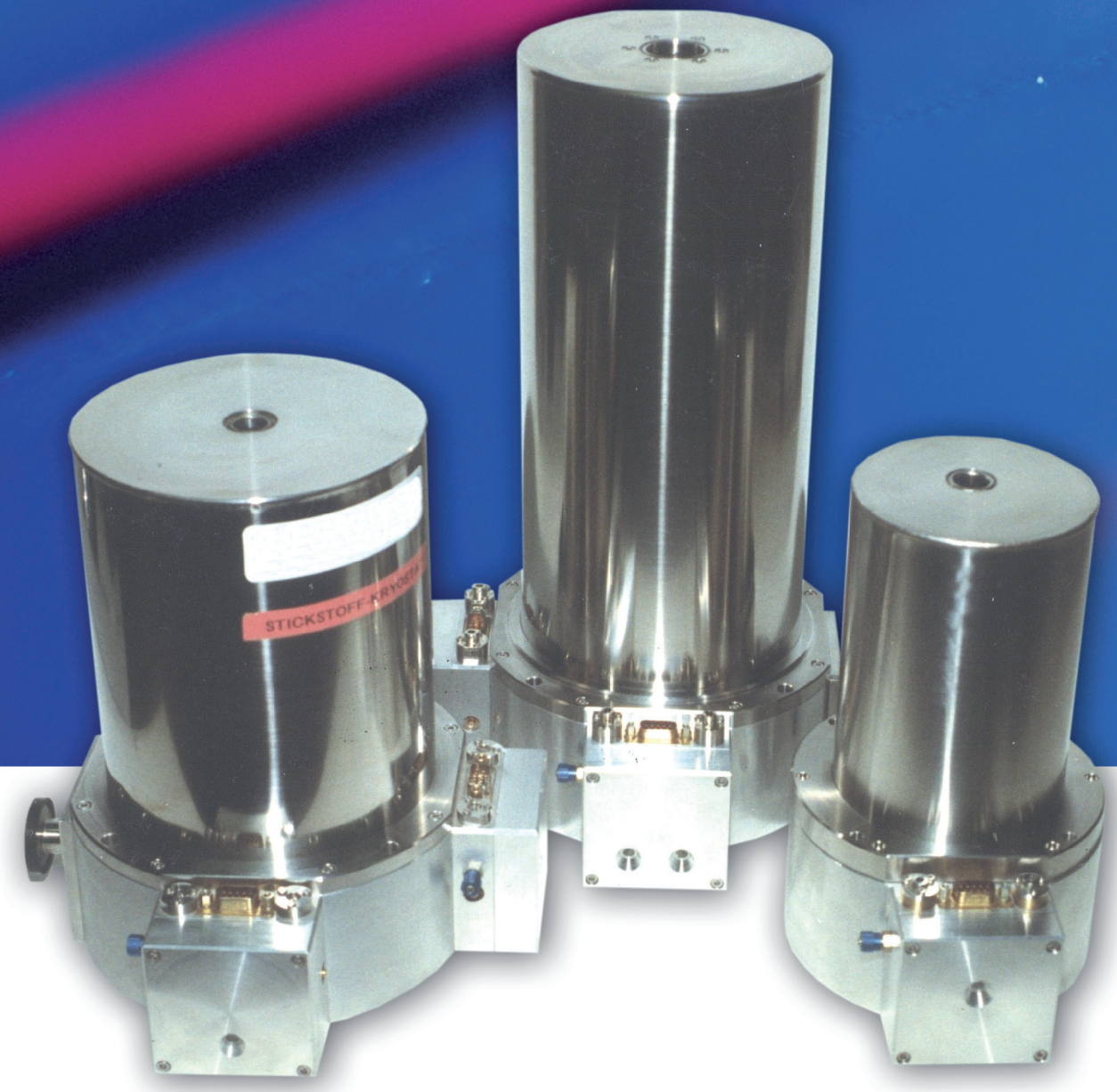
ILK Dresden

Cooling for highly sensitive measuring devices

Development and manufacturing of liquid nitrogen cryostats for sensor cooling

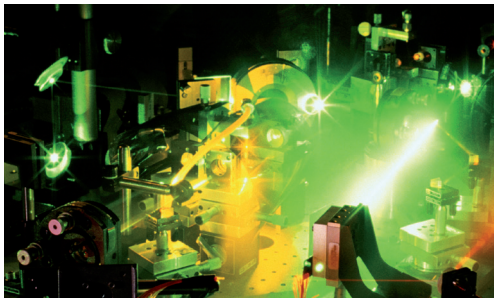


ILK Dresden

Modern technology requires sensor measuring systems

A liquid nitrogen cryostat for diode laser cooling to be used for sensitive gas detection was developed in a collaboration between ILK Dresden and Fraunhofer-Institut für Physikalische Messtechnik Freiburg. In applications of this cryostat it is possible to operate three tunable sensors independently in the temperature range between 80 K and 300 K with a precision of +/- 3 mK. The lasers and sensors are located in three measuring chambers, which can be opened independently.

For a quick and user-friendly sample change each of the chambers is separated. The cryostat contains 1.5 liters of liquid nitrogen and enables an operating time of 70 hours. 40 minutes after filling of liquid nitrogen the cryostat is ready for operation. The settlement of a new operating temperature can be achieved within 7 minutes.

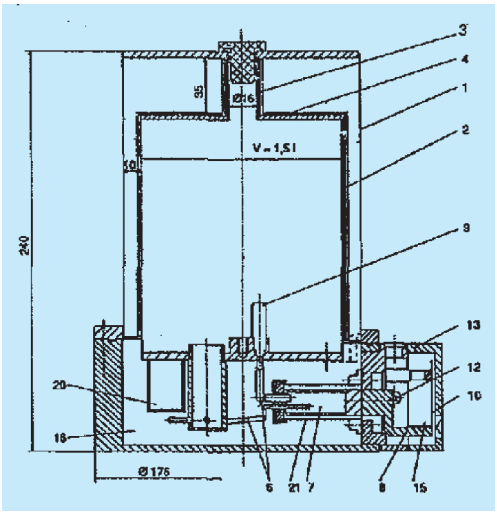


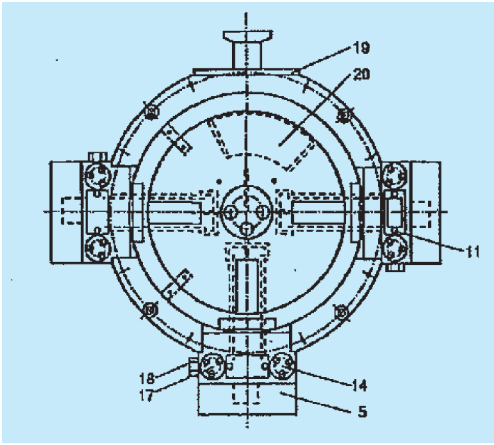
We develop and manufacture for you

- Closed cycle cryocoolers and their components for low-temperature generation,
- complete cooling systems with cryocoolers as cooling source,
- special cryostats for laser spectroscopy and the measurement of low magnetic fields by use of SQUID,
- liquid nitrogen special applicators for medical use.

Technical Data

Liquid nitrogen content	1.5 liters
Evaporation rate	40 liters/h gaseous nitrogen
Vacuum hold time (in cold state)	30 days
Height	245 mm
Diameter	175 mm
Volume of measuring chamber	8 cm^3
Current leads for each measuring chamber	9
Coaxial cable leads for each measuring chamber	2
Operating temperature range	80 K ... 300 K
Temperature stability	±3mK





1 outer vessel
2 inner vessel
3 thin walled neck tube
4 multi-layer insulation
5 measuring chamber
6 capillaries
7 evaporator
8 cold finger
9 valve
10 printed conductor board
11 9-lead socket
12 coaxial socket
13 cover flange
14 1st vacuum valve
15 sample space in measuring chamber
16 main vacuum space
17 2nd vacuum valve
18 vacuum flange
19 flange with valve
20 charcoal vessel
21 glass fiber epoxy tube

Contact

Institute of Air Handling and Refrigeration
Main Department Cryogenics and Low Temperature Physics
Bertolt-Brecht-Allee 20
01309 Dresden,Germany
Phone +49-351-4081-630
Fax +49-351-4081-635
kryo@ilkdresden.de
www.ilkdresden.de

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