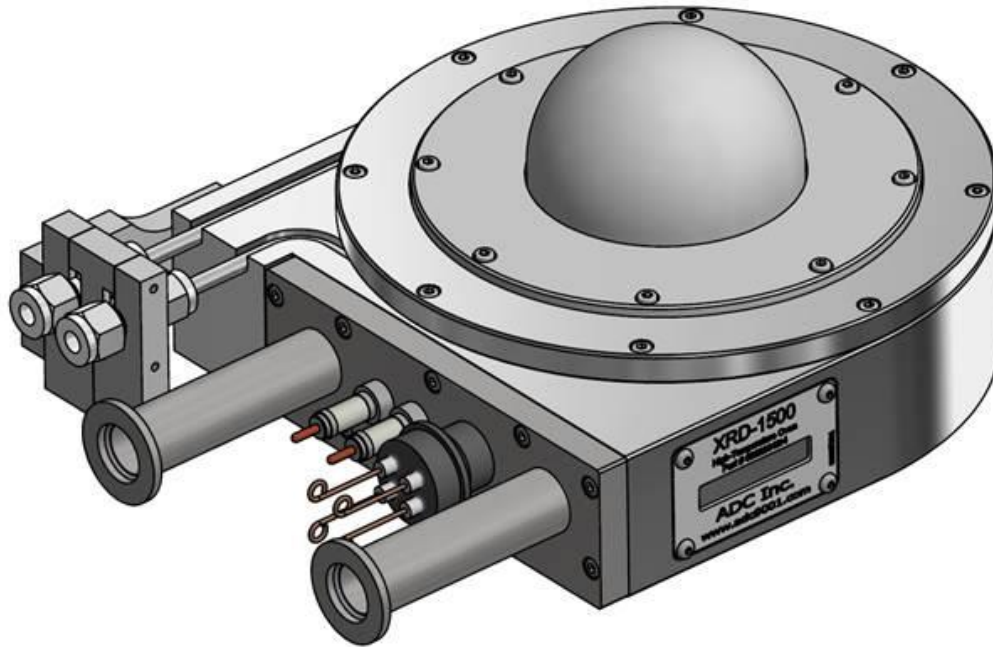


XRD-1500



Innovation in Material Science...

XRD-1500 High-Temperature Oven

New materials science calls for refined tools that enable X-ray research in well-defined environments and under controlled temperature conditions. The XRD-1500 High-Temperature Oven Chamber is a resourceful and dynamic sample stage for in-situ X-ray studies in different atmospheres up to 1500 °C. It guarantees superb temperature consistency in the sample as well as precise temperature measurement and control.

The XRD-1500 is an innovative heating High-Temperature Oven Chamber for in-situ diffraction studies on two, four, six or eight-circle goniometers up to 1500 °C. It fits all common goniometers. The XRD-1500 is exceptionally compact and lightweight. The heating plate design secures a high temperature regularity and respectable position stability at higher temperatures.

The distinctive dome-shaped X-ray window made of beryllium allows the investigation of samples under vacuum and inert gas conditions to avoid oxidation or other chemical reactions of the sample at high temperatures. Extensive cooling of the dome and the XRD-1500 housing is reached. The unique design of the XRD-1500 provides all the features our customers have in mind - compactness, safety and high performance.

The temperature sensor in XRD-1500 is located directly under the sample in a protective ceramic sample holder. This type of structure allows for a highly repeatable and dependable temperature measurement and firm temperature control compared to those arrangements with free-standing temperature sensors. The well-proven design of the environmental heater assures that there are essentially no temperature gradients in the sample, allowing for varying sample thicknesses.

Applications

- ▶ Temperature-induced phase transition studies
- ▶ Texture measurements
- ▶ Stress analysis
- ▶ Profile analysis
- ▶ Grazing incidence studies
- ▶ High resolution studies
- ▶ Analysis of layered structures

Technical Specification

Heater rating:	up to 1500 °C
Atmospheres:	air, inert gas, vacuum (10 ⁻⁵ mbar)
Diameter/Height/Weight:	199 mm/98 mm/9.7 Kg
Gases:	Air, O ₂ , N ₂ , He, other non-hazardous noncorrosive gases
Temperature measurement:	2 Pt-10% Rh-Pt thermocouples – Type R/S
Dome Material Options:	Beryllium, Quartz, Aluminum

Features and benefits

- ▶ Exceptional sample temperature regularity due to environmental heating
- ▶ Dependable measurement and control of the sample temperature
- ▶ Sample mounting for optimum data quality
- ▶ Custom specialized inner and outer heater shielding
- ▶ Easy interchange of samples
- ▶ Chemically passive sample carrier
- ▶ Easy installation in most standard powder diffractometers
- ▶ Durability
- ▶ Automatic heating, pumping of samples with one button operation
- ▶ Graphical data display of real time for each run
- ▶ Integrated work station
- ▶ Integrated temperature controller
- ▶ Universal and application specific sample base
- ▶ Safety and ergonomically designed system and process chamber
- ▶ Compact and mobile
- ▶ Uses standard 100–250 V / 50-60 Hz power supply

XRD-1500 Accessories

- ▶ Temperature Controller: The TC provides precise control with graphic/user interface that controls the heating applications.
- ▶ Recirculating Water Chiller: EQ-KJ5000 is a CE certified Water-cooled Chiller with built in refrigeration machine that provides a clean, environmentally friendly and reliable source of temperature-controlled fluid for closed loop systems up to 16L/min.
- ▶ Pumping Station: The compact dimensions and high performance of the dry HiCube Eco pumping station is ideal for the XRD-1500.

CE



XRD-1500 Long Path in Innovation...

At ADC we are constantly searching for answers and pushing back physical and technical boundaries. We enjoy the challenge of research and development and take pride in our achievements. As a result, our customers receive instruments produced with the highest level of technical perfection, tailored to meet their specific requirements.

ADC's long tradition as a manufacturer of scientific instruments for X-ray studies has been characterized by innovation and the continuous integration of new technologies in our design concepts.



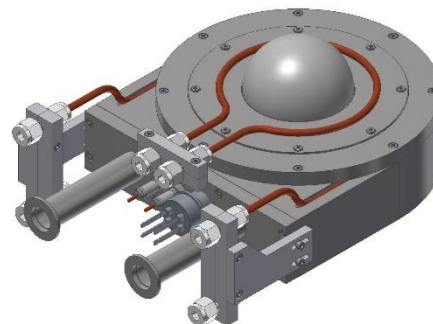
1998

1st Instrument Designed and successfully used at Oak Ridge National Laboratory



2000 - 2011

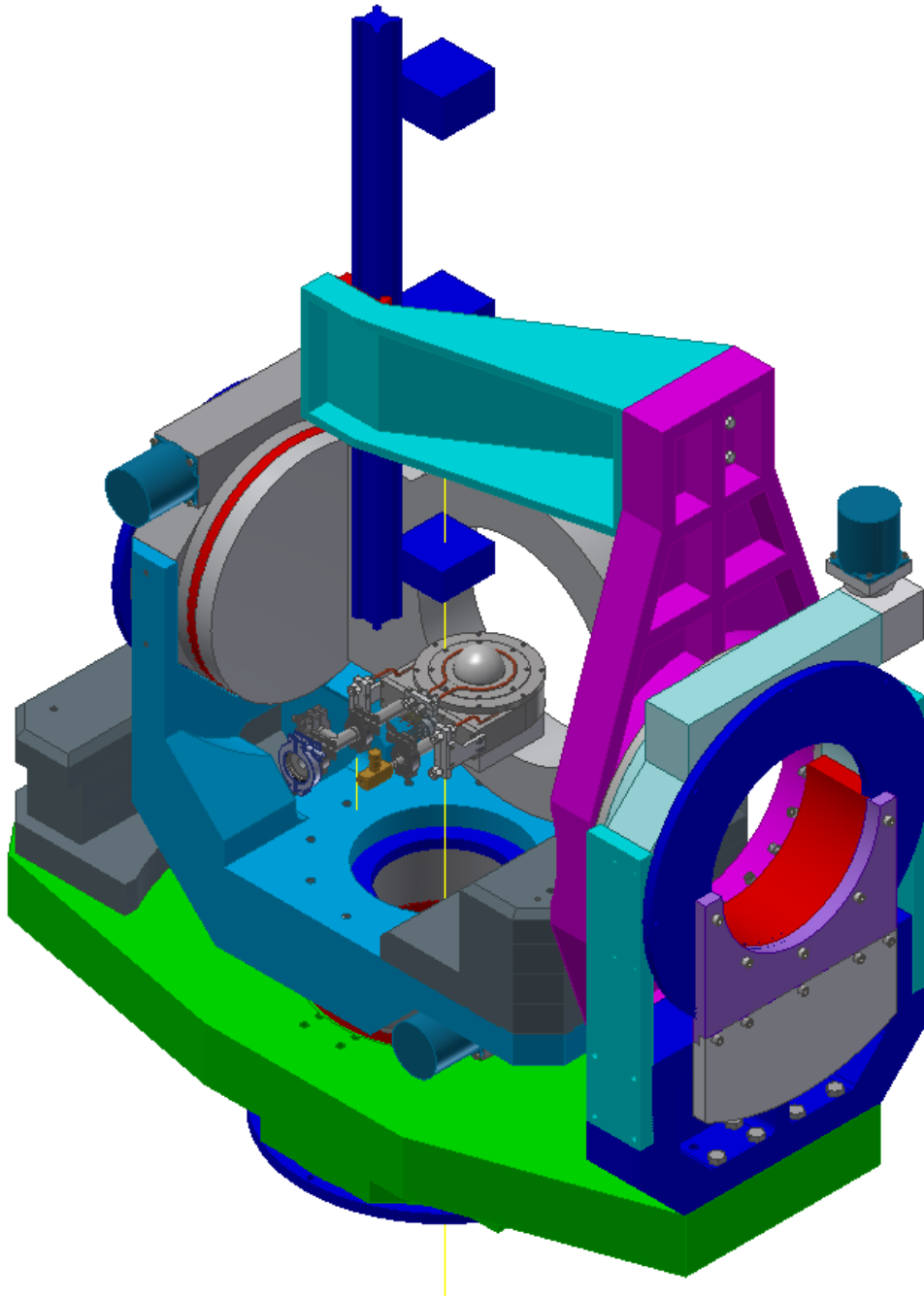
Over a 10 year period many generation of this model were designed and used in different synchrotron facilities around the world.



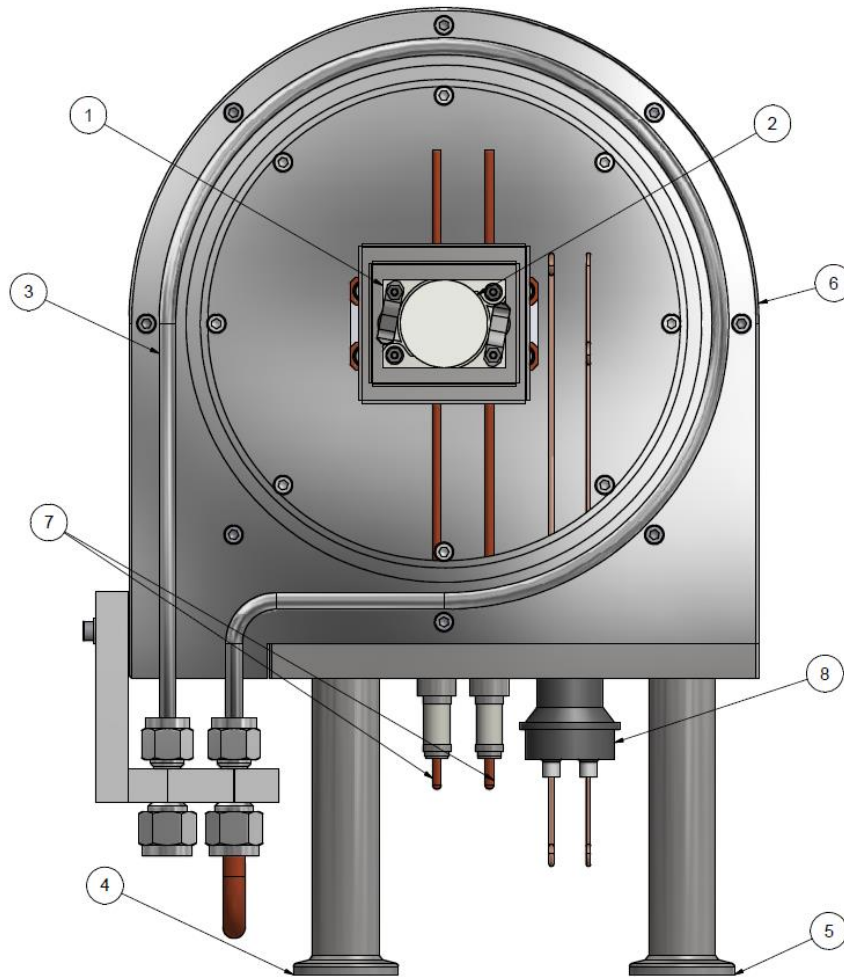
2014

XRD-1500 latest robust design introduced.

Example Install with Goniometer



Oven shown installed in a six circle Goniometer.

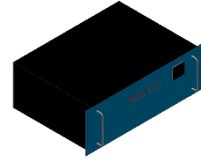


Parts List		
ITEM	QTY	DESCRIPTION
1	1	High-Temperature Oven Heater Assembly
2	1	Sample Disk
3	2	Copper Cooling Loops
4	1	KF Output Tube
5	1	KF Input Tube
6	1	Oven Chamber
7	2	Power Feedthroughs
8	1	Thermocouple Feedthrough

Temperature Controller

Temperature Controller

- High Accuracy: 0.5°C ($\pm 0.9^\circ\text{F}$), 0.03% Reading
- Totally Programmable Color Displays (Visual Alarms)
- Software
- Full Autotune PID Control
- Embedded Ethernet Connectivity
- RS485 Serial Communications
- Built-In Excitation
- 2 Control or Alarm Outputs Optional: DC Pulse, Solid State Relays, Mechanical Relays, Analog Voltage and Current



Power Supply

The programmable AC-DC power supply is available in a Rack Mounting or Benchtop at 720W power levels with single output voltages ranging from 3.3 to 135V and current capabilities up to 70A.

A user-friendly front panel provides reliable linear controls for XRD-1500 finer adjustment and optional digital LED Voltage and Current meters. Standard features include, 'soft start' operation, and "no load" operation; Short circuit and overload protection, Thermal protection, Internal EMI Filtering, RFI Shielding and Remote Sensing.

Optional digital interfaces including RS232, RS485, Ethernet, and USB available upon request.

- Universal input
- Power Factor Correction
- Constant voltage and constant current modes
- Short circuit and overload protection
- Thermal protection
- Internal EMI Filter and RFI Shielding
- Pluggable connectors for input and control wiring
- Remote Sensing
- 'Soft start' operation
- 36 VDC Output
- 220VAC Input

