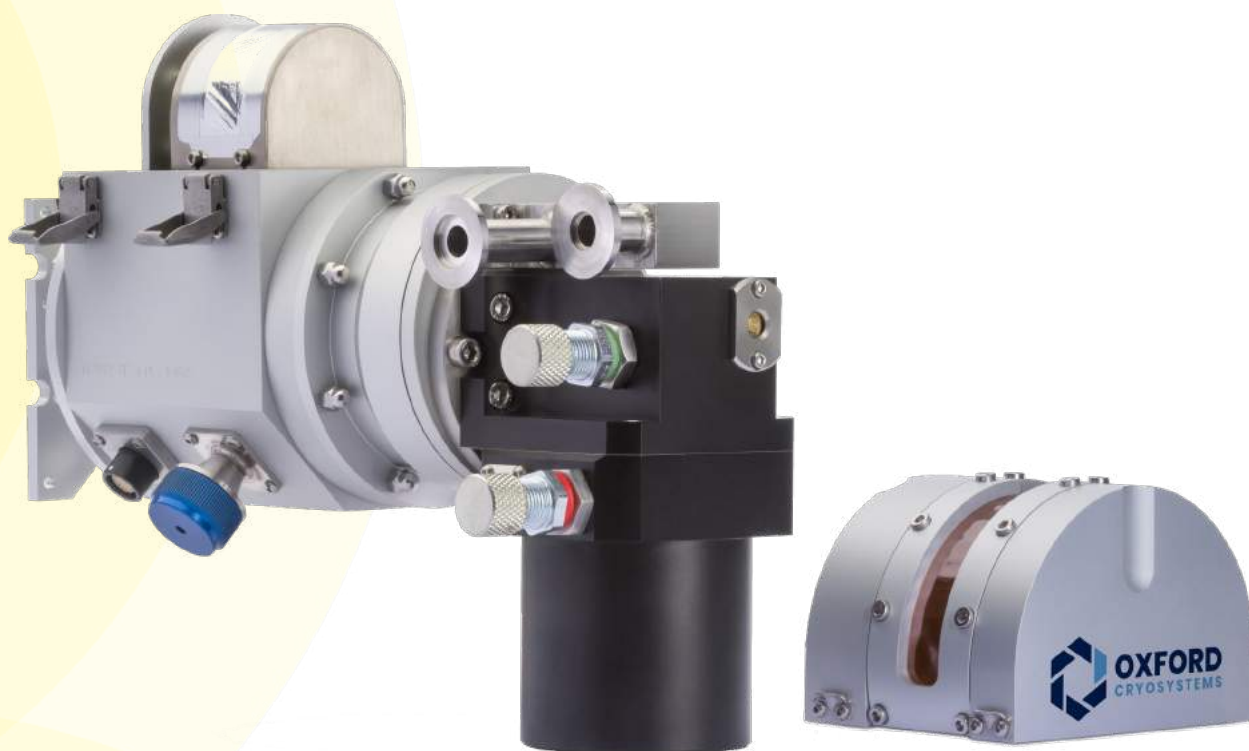


# PHENIX

## LOW TEMPERATURE CRYOSTAT FOR POWDER DIFFRACTION



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The PheniX is a unique closed cycle cryostat designed to cool flat plate powder samples to temperatures as low as 12K.

The system houses our custom built 2-stage Gifford McMahon (GM) cooler. This closed cycle cooler is capable of fast and controllable cooling, without consuming cryogenics such as helium or nitrogen. The PheniX has excellent stability of 0.1 K, fast cool-down and warm-up times and an easily accessible sample chamber.

Designed to fit to vertical powder diffractometers, the PheniX can be used in both the theta - theta and theta - 2 theta modes. This is made possible by a specially designed rotating seal that sits between the integrated GM Cryocooler and the sample stage. This allows the sample stage to move in the theta - 2 theta range of the detector without the high pressure hoses and cables becoming tangled up or interfering with other services in the enclosure.

### GONIOMETER MOUNTING PLATE

The compact design means the PheniX can be easily fitted to the goniometer from the front with a specific adaptor plate. Oxford Cryosystems has worked with major X-ray companies to design a number of goniometer mounting plates for various X-ray systems.

For more information contact [info@oxcryo.com](mailto:info@oxcryo.com)

### MODE OF OPERATION

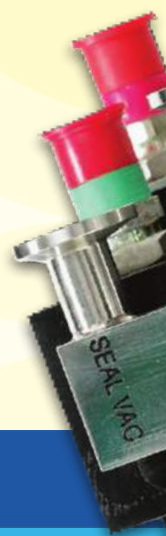
A two stage Gifford McMahon (GM) closed cycle cooler, made by Oxford Cryosystems, is mounted within the body of the PheniX and operates using compressed helium gas provided by our K450 helium compressor. It is important to note that there is no helium gas consumption in this system as the helium gas circuit in the K450-Coldhead cycle is sealed. The sample is cooled by the conduction of heat between the sample stage and the cold stages of the Coldhead, and the PheniX sample temperature is measured at the sample stage.

20mm diameter chromium plated copper sample stages are provided with the PheniX system, however different materials may be available at an additional charge.



Heat leaks are reduced by a mylar radiation shield, while the PheniX lid includes X-ray transparent windows made of Kapton.

In addition, an optional vacuum system can be used to continuously pump the vacuum space around the PheniX internals and the rotating seal to further minimise unwanted heat leaks into the system.



## KEY FEATURES

- Base temperature of 12 K and excellent stability of 0.1 K
- Fast cool-down to 20 K in just 40 minutes and 12 K in 60 minutes
- Fast warm-up to room temperature from 12 K in just 45 minutes
- Incorporates our custom built, two stage GM Cryocooler. No consumption of cryogen required.
- Monitor and control remotely via Cryoconnector software and Oxford Connect website

## THE OXFORD CRYOSYSTEMS PHILOSOPHY

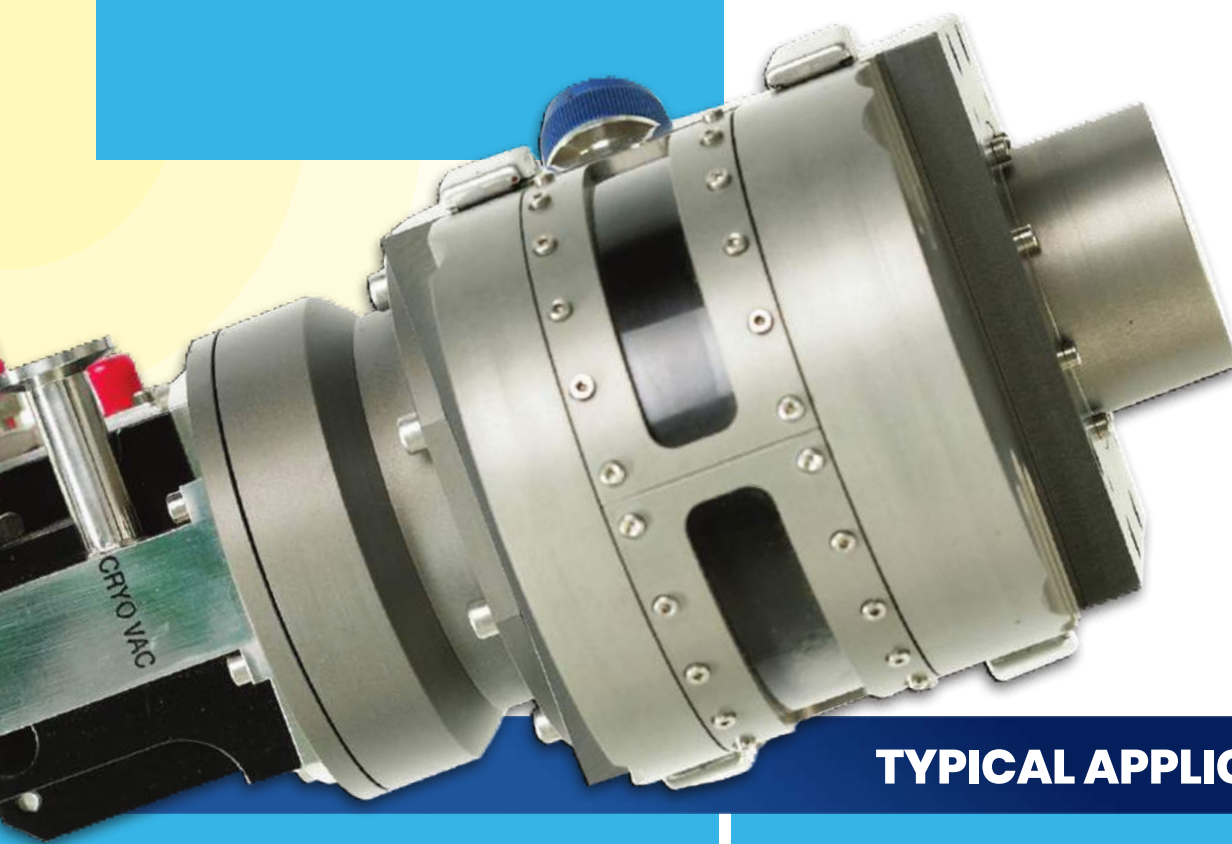
When you buy a product from Oxford Cryosystems, you are investing in over forty years of research and development in low temperature devices for X-ray crystallography. We see your low temperature device as more than just an accessory. It is central to your research.

Because of our focus on low temperature systems, you will find that every one of our products has superior functionality, reliability and control. For example, the Phenix is built on a unique software platform which allows the constant monitoring of a wide range of inputs and outputs within the system. The controller then manages a number of unique relationships such as sample temperature as a function of coldhead motor speed.

## OXFORD CONNECT

The Phenix now incorporates our Oxford Connect feature. By using our Cryoconnector software and registering your system on Oxford Connect, you will be able to:

- Start, program and stop your Oxford Cryosystems device from your PC, tablet or smartphone
- Easily access historical performance data on the Oxford Connect website
- Enable remote technical assistance, allowing faster support of your device
- Receive email notifications when your device status changes



## TYPICAL APPLICATIONS

- Compact chamber for easy sample access, compatible with the most popular vertical goniometers

- Investigation of materials at low temperature including organics, inorganics, drugs, minerals, metals and ceramics
- Phase identification, quantitative analysis and determination of structural imperfections
- Determination of crystal structures & extraction of 3-D micro-structural properties

## TECHNICAL SPECIFICATIONS

PHENIX	
Temperature range	12-290 Kelvin
Temperature stability	0.1 Kelvin
Cool down time to 20 K	40 minutes
Cool down time to 12 K	60 minutes
PheniX coldhead dimensions & weight	120 mm W x 302 mm L x 259 mm H, 6 kg
PheniX window materials	PheniX lid incorporating Kapton windows
PheniX sample mounts	2 x 20 mm diameter Chromium-plated copper fat sample holder 2 x 20 mm diameter Chromium-plated copper sample holder with mm recess
PHENIX CONTROLLER	
Dimensions & weight	W 240 x H 166 x D 262 mm, 7.1 kg
Mains Power supply	100-240 V, 50/60Hz
Power Consumption	200VA
K450 HELIUM COMPRESSOR	
Electrical requirements	
	50 Hz                      60 Hz
Supply Voltage	200 – 240 V                      208 – 230 V
Operating Current	17.0 A (@240 V)                      15.7 A (@230 V)
Operating Power	3.4 kW (@ 240 V)                      3.6 kW (@230 V)
Supply Fuse Rating	20 A (Starting current: 65 A)
Weights and Dimensions	H 639 x D 610 x W 540 mm, 100 kg
Water Cooling Requirements	Chiller requirement of 3.0 kW Typical flow rate 5l/min at 18
TURBOMOLECULAR VACUUM PUMP (OPTIONAL)	
Dimensions & weight	W 510 x H 740 x D 360 mm
Mains Power supply	220/240V 50/60 Hz or 115V 50/60Hz

## SUPPORT FOR ALL OUR CUSTOMERS

Aside from our development expertise, Oxford Cryosystems have also gained an excellent reputation for customer service and support. Whilst Oxford Cryosystems' products are known for their reliability and ease of use, users may occasionally require advice on technical aspects of their system. Technical support is offered to all Oxford Cryosystems customers on all products. There are no time limits, no expensive telephone numbers and no small print. If you need support, you'll get it.

## SERVICE WHEN YOU NEED IT

Oxford Cryosystems design their devices to be as economical to maintain as possible and we can supply all the service parts and guidance needed to carry out the required routine maintenance. We also offer a choice of pre-paid scheduled maintenance packages for complete peace of mind, or the more traditional reactive servicing approach. Whatever route you choose, you can be assured that we will advise you of the optimal service intervals.

For further details on service intervals and the support we can offer, visit our website or contact us at [info@oxcryo.com](mailto:info@oxcryo.com)



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