

# Beam delivery system GeniX<sup>3D</sup> Cu Ultra Low Divergence



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Fig. 1: Beam delivery system head and control unit

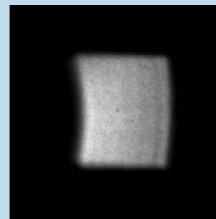
The GeniX 3D Cu Ultra Low Divergence is the latest generation of collimated X-ray Beam Delivery System from Xenocs providing increased brightness. It combines a 40  $\mu\text{m}$  focus source with single reflection FOX3D multilayer optics for the generation of a highly collimated X-ray beam with a further reduced divergence.

The X-ray beam provided by the GeniX 3D Cu ULD is homogeneous with a well controlled beam propagation. It has a high flux density which remains constant over long distances. This makes the GeniX 3D Cu ULD a high performance system for long SAXS set-ups. Moreover the system is adapted for scatterless collimation add-on to reduce parasitic scattering in SAXS applications. The ultralow divergence achieved by the GeniX 3D Cu ULD makes it also ideal for combining with a crystal monochromator in High Resolution X-ray Diffraction.

The new GeniX 3D is in the continuation of the GeniX platform in terms of high stability, reliability and low maintenance level. It is designed to be easily integrated as a standard sealed tube system and to be adapted to any type of diffractometer.

Fig. 2: High resolution CCD images of the collimated X-ray beam, collected in air

A)  
Mirror to camera :  
0.28 meters  
Spot size : 1041 x  
1485  $\mu\text{m}$   
HxV FWHM



B)  
Mirror to camera :  
1.48 meters  
Spot size : 1040 x  
1442  $\mu\text{m}$   
HxV FWHM

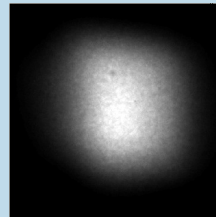
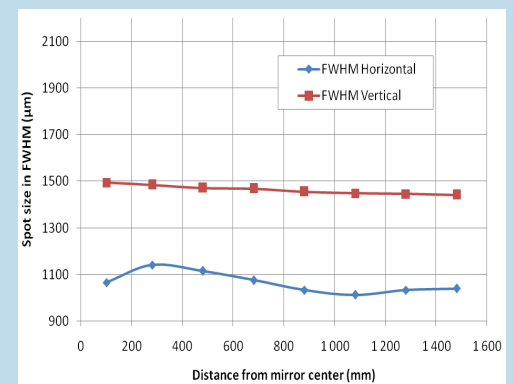


Fig. 3: Focusing curves (FWHM).



## Applications

- small angle x-ray scattering (SAXS)
- grazing incidence SAXS
- high resolution x-ray diffraction

## Benefits

- improved brightness
- reduced divergence
- low background parasitic radiation
- extremely stable beam
- compact system - easy to integrate
- low power and low maintenance source
- smart source power management
- intuitive interface

## Options

- scatterless slits systems
- configurable collimator system
- software utility for remote operation

## Accessories

- alignment camera
- pindiode detector
- dry vacuum pump
- water to air chiller

## Preliminary Technical Data

Subject to technical changes without notice

### Beam features

- Wavelength 1.54  $\text{\AA}$  / 8 keV (Cu  $K\alpha$ )
- Integrated flux > 100 x 10<sup>6</sup> photons/sec  
(vacuum, 30W-50KV-0.6mA source)
- Flux within 1 mm<sup>2</sup> at 70 cm from source (in vacuum) > 55 x 10<sup>6</sup> photons/sec
- Divergence ~ 0,4mrad FW20%M both planes

### Electronic

- Dimensions 3U — 19" — 600mm in depth
- Total weight 13.6kg
- Power 110/220 V (AC)

### Head

- Dimensions (LxWxH) 27 x 12 x 37 cm<sup>3</sup>
- Total weight Maximum 14.5Kg

### Integration

- System power consumption 150 Watts
- Remote control features Ethernet port & Software
- System shutter Safety shutter
- Cooling flow rate (closed loop) >1.0l/min (set point 25°C)
- Dry vacuum pump Working pressure: 3mbar  
Pump speed: 0.6m<sup>3</sup>/hr

19, rue François Blumet  
38360 Sassenage - France

Phone: +33 4 76 26 95 40

Fax: +33 4 76 26 95 49

www.xenocs.com

sales@xenocs.com