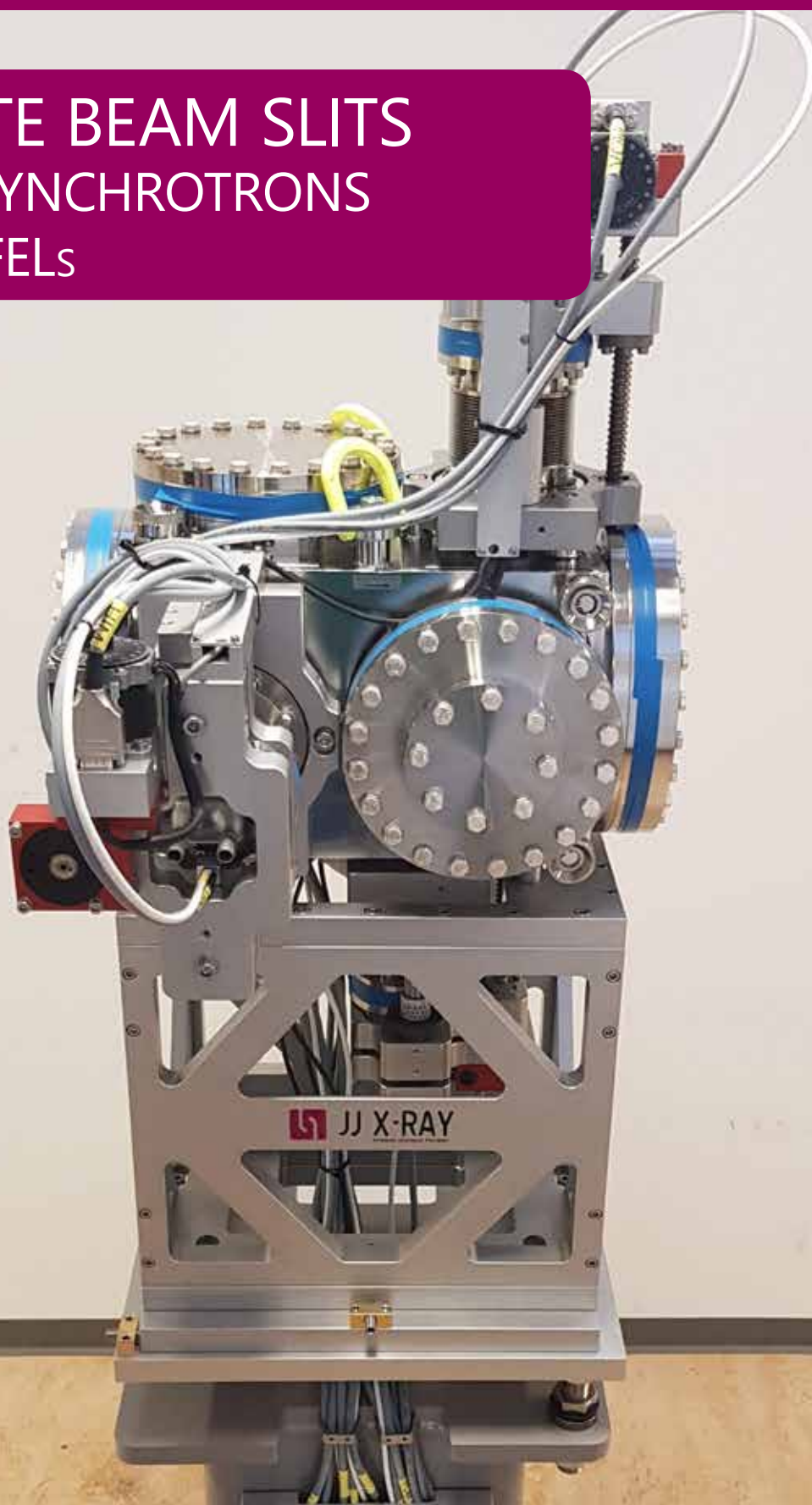


WHITE BEAM SLITS FOR SYNCHROTRONS AND FELs



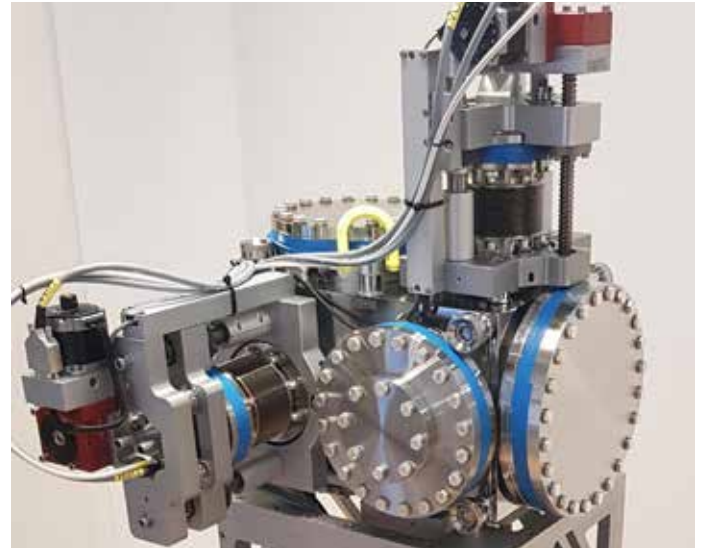
JJ X-RAY

Danish Science Design

WHITE BEAM SLITS

For more than a decade, JJ X-Ray has developed several UHV-slit systems to a wide range of synchrotrons and FEL's such as: DESY, XFEL, DLS, LNLS, NSLS, PAL, SSRF, SLAC, PSI and SIRIUS.

The watercooled white beam slits are part of this portfolio. IB-C50-UHV-4000W features a a high Z material as the beam defining entity and blades that can absorb up to 4000W.



FEATURES

- ✓ Stiff and highly guided driving mechanism that can accommodate both synchrotron and FEL blades, which yields a first eigenmode at 72 Hz measured under in-situ conditions.
- ✓ A relative roll vibration between the blades of less than 20 nrad RMS at a nominal flow of 3L/min, see figure on the back page.
- ✓ Fully overlapping blades that can be moved individually.
- ✓ An Ion-pump can be directly mounted on the slit vessel.
- ✓ Auxiliary ports for gauges, right-angle vales, RGA and what else may be required.
- ✓ 50x50 mm aperture operated in UHV.
- ✓ 3D printed water manifold for optimized water flow at specific flow/power level.
- ✓ Renishaw incremental or absolute encoders.

THE BLADES

The synchrotron white beam blades can absorb up to 1500W when drain current readings are mandated. If the drain current capability can be omitted then the blades can absorb 4000W.

The white beam blades are typically made from a Cu alloy, for heat absorption and a high Z element for beam definition. The beam defining entity can be any of our slit blades including: Nano-polished rods, knife-edges, single crystals or multilayers.



OPTIONS

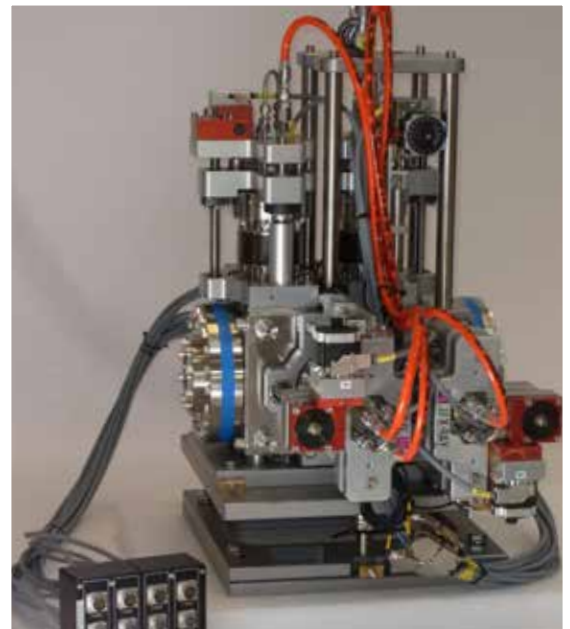


- EXTREME RADIATION HARDENING
- DRAIN CURRENT (UP TO 1500W)
- VARIOUS MATERIALS FOR BEAM DEFINITION
- TWO OR FOUR ARMS DESIGN AVAILABLE, 263mm AND 448mm RESPECTIVELY
- BAKING UP TO 300 °C

COMPACT AND STABLE

As space along the white beam section of beamlines often is at a premium, we have designed our white beam slits such that a DN160CF ion-pump and vacuum auxiliaries can be mounted directly on the slit vessel. This means that the white beam slit functions both as an aperture- and pumping-unit.

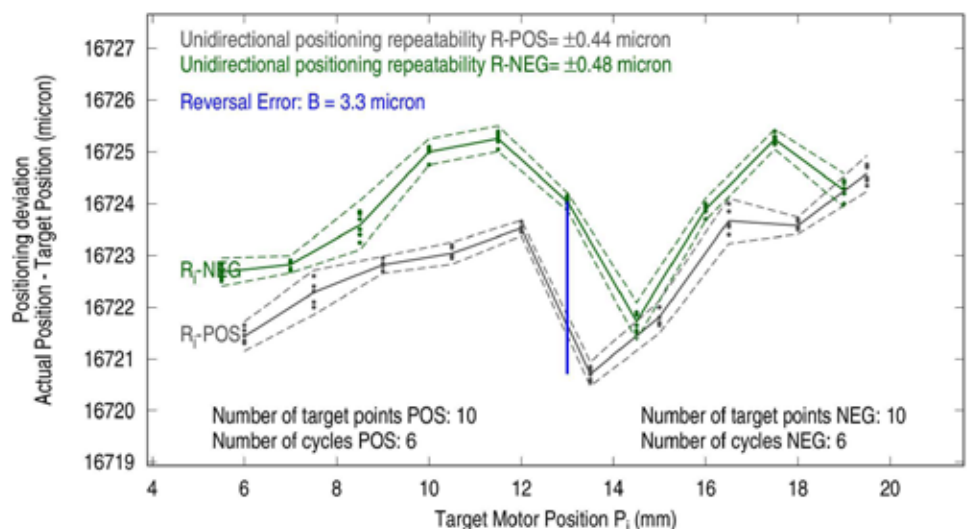
To optimize the vibrational and thermal drift performance, the support structure is filled with sand at installation.



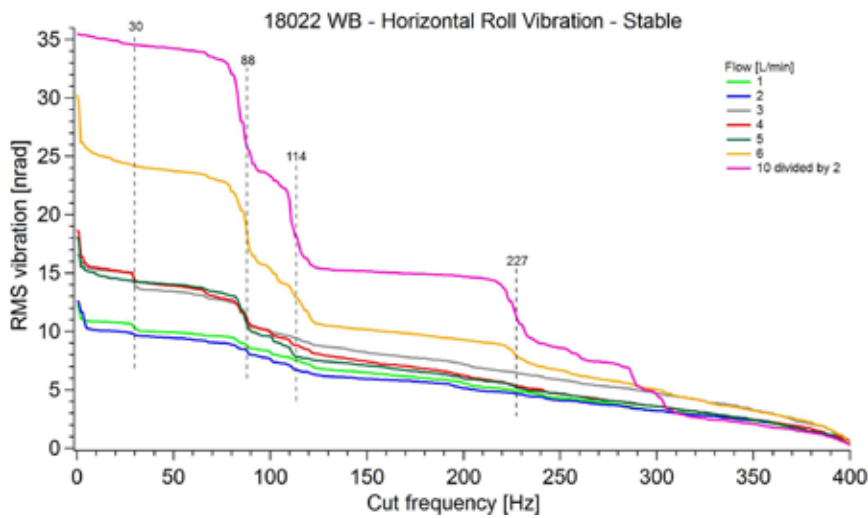
The graphs shows the open loop repeatability and reversal error of the blade translation.

- Resolution < 200 nm
- Repeatability < 2µm
- Accuracy < 3µm

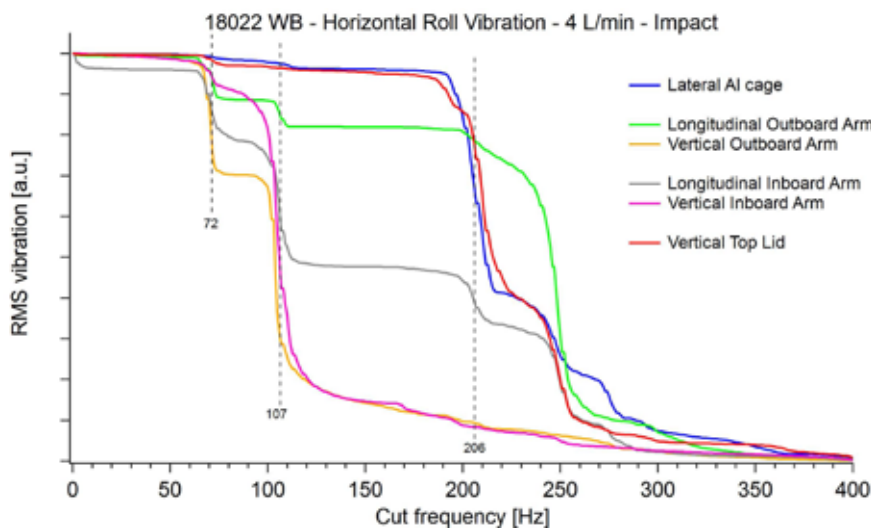
Open loop repeatability – a true test of workmanship



VIBRATION ANALYSIS



The relative roll between the blades were measured with a laser interferometer under in-situ conditions and are shown here at various flows. As seen, the relative vibration at the nominal flow of 3 L/min is < 20 nrad RMS.



To identify the first eigenmode, the system was impacted at various places and the vibration response is shown here with a first mode at 72Hz.

CONTACT US

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Synchrotron

Beamlines

