

The Photon Beamline Vacuum System of the European XFEL. First years of operation (2017-2023): An overview.

Thursday, 18 April 2024 11:00 (25 minutes)

The European XFEL is a hard X-ray free-electron laser (FEL) with MHz repetition rate, based on a high-electron-energy superconducting linear accelerator. Located in Schenefeld, near Hamburg, Germany, the facility started operation in April 2017 and now provides extremely intense X-ray beam pulses to seven scientific instruments, up to three of them simultaneously by means of a multiplexed delivery configuration. Both the transport beamlines and the instruments are located underground in a fan-like photon beamline configuration that comprises a length of more than 3 km.

The photon beamline vacuum system is essential to retaining the beam properties and reliable operation of the many optical and diagnostics components distributed along the different beamlines. It also provides non-conventional functionality that enables the modulation of the photon flux delivered to the softer X-ray regime beamline experimental end-stations.

The present contribution offers an illustrative overview of this young facility, describing some of the key experiences accumulated from the early days of operation until the present and describing how these experiences are helping us to shape, optimize, and consolidate methods, protocols, and operational plans in order to sustain the current performance with minimum downtime.

Summary

Primary author: VILLANUEVA GUERRERO, Raúl (European X-Ray Free Electron Laser Facility)

Co-authors: DOMMACH, Martin (European X-Ray Free Electron Laser Facility); Mrs EIDAM, Janni (European X-Ray Free Electron Laser Facility); Mrs PETRICH, Michaela (European X-Ray Free Electron Laser Facility)

Presenter: VILLANUEVA GUERRERO, Raúl (European X-Ray Free Electron Laser Facility)

Session Classification: session 5