

Overview of vacuum at Extremely Brilliant Source (EBS) storage ring at ESRF: from design to full operation

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Since 2017, ESRF started the program to update the storage ring with a new one: EBS (Extremely Brilliant Source). The program that has been concluded on March 2020, when user mode and experiments restarted. Nevertheless, even after the restart of user mode, lot of time and efforts have been dedicated to the new EBS storage ring commissioning and conditioning.

Many devices and technologies are necessary to have a full operating machine, among these, good vacuum is essential for attaining full beam performance.

Respect of schedule, in particular the limitation of the long shut-down to less than one year, has been of the most challenging goal. Differently from the construction of a brand new machine, in a complete up-grade of an existing one, with 40 beamlines, the limitation of the down-time is a key point.

This tight schedule has impact also on vacuum and not only on the assembly and installation phases. Notably vacuum is one of the main limitation to rump up current and achieve reasonable life-time, in synchrotrons. Hence, the vacuum system has to perform well, as fast as possible and most of all be reliable.

The main structure and solutions, adopted in the EBS vacuum systems, the usage of an unpopular material like aluminium, the obtained performances as well as the and aspects to be improved will be discussed.