

LHC Dump Assembly – Operational Feedback and Future Prospective

The current LHC dumps (TDE) are operational since 2008. The dump cores are 7.6 m long and made up of different grades of graphite, enclosed in a stainless steel vessel, welded together in different sections. The core itself is part of a longer assembly immersed in a nitrogen atmosphere, delimited by a thin stainless steel sheet upstream and a titanium disk downstream.

Since 2015 a series of leaks of nitrogen have been observed. Leaks have occurred in all the gaskets upstream of the dumps (both UD62 and UD68) as well as in the downstream window for one of the two operational dumps (UD68).

This presentation summarises the type of leaks observed and corrective measures taken during run2, together with the vibration and displacement measurements performed to analyse the behaviour of the device during beam dumping.

Different upgrades are proposed to be implemented during LS2, aiming at increasing the reliability of the assembly and hence, reducing corrective interventions or eventual machine downtime.

Additionally, numerical simulations are shown in order to analyse the risk of failure of the upstream and downstream windows under different beam dumping scenarios, including run 2, run 3 and HiLumi beams, under normal operation or in case of partial dilution failure.

Considerations about the possibility to reach $1.8E11$ during Run3 will be provided, together with upgrade proposals.