

8th High Power Targetry Workshop (HPTW2023)



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Life cycle of the proton beam window in J-PARC MLF

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Material and Life science experimental facility (MLF) in J-PARC is Neutron and Muon experimental facility in Japan.[1] 3 GeV pulsed proton beam are injected to the spallation neutron target. Beam power of the MLF reached to 950 kW in the last operation period. The proton beam window (PBW) is the boundary wall between the vacuum space in the proton beam line and the helium atmosphere in the helium vessel where the neutron target is installed. The PBW is made of aluminum alloy. Lifetime of the PBW is estimated to be 10000 MWh and during this summer maintenance period, we are planning 4th PBW replacement in MLF.[2]

Irradiated PBW is replaced to the new one using the shielding cask specially designed to handle the PBW. Used PBW is removed from shielding plug by remote handling in the hot-cell. Then utility pipes connected to the PBW are cut to reduce the volume for storage. The new PBW will be mounted to the shielding plug for the next PBW replacement.

In this presentation, we will present the life cycle of the PBW, the structure of PBW, replacement work, and handling of used one in the MLF.

Themes for the contribution

7 Operation of targets and beam dumps:

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