Enhancement of the remote handling strategy for the refurbishment of the replaceable Backplate Bayonet concept of IFMIF Target system

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One of the most technically challenging activities of the IFMIF facility is the maintenance and the refurbishment of its components, and among these the target system appears to be critical since it is located in the most severe region of neutron irradiation (50 dpa/fpy). Two different target assembly systems have been developed: the first is known as integral target while the second one is based on the so called replaceable backplate bayonet concept. This latter concept has been developed with the objectives to reduce the waste material and to simplify the procedures of backplate replacement and thus reducing the intervention time for its substitution. Nevertheless the present Remote Handling (RH) procedures developed for the refurbishment of the backplate foresee the removal of all the components from the upper part of the test cell. This operation has a strong impact on the intervention time for the backplate refurbishment which has to be repeated at least every year, if not more frequently. Consequently the need to update the RH strategy for the refurbishment of this component becomes a precondition in order to fulfil the stringent requirement to enhance the duty cycle of IFMIF plant. Several proposals to review the RH strategy for the refurbishment of the backplate are under discussion within the IFMIF community, all entailing modifications of the IFMIF test cell design requirements. In particular in this paper two potential approaches are presented: the first relies on the possibility to perform all the refurbishment operations in situ in the test cell cavern, whilst the second one foresees to perform these operations off-line in a hot cell. Advantages and disadvantages of these approaches together with the RH requirements for the refurbishment operations of the backplate bayonet concepts are also reported.