

## CONCEPTUAL DESIGN OF THE HOT CELL FACILITY UNIVERSAL DOCKING STATION AT ITER

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The main function of the Hot Cell Facility (HCF) is to repair or refurbish components, tools and equipment activated by neutron exposure, contaminated with tritium and beryllium, or covered with activated dust. These components and tools are transferred, between the Tokamak complex and the HCF using different types of sealed but not shielded casks during ITER machine shutdowns.

Each type of cask has a dedicated physical interface with the Vacuum Vessel, this interface needs to be the same with the HCF. Studies have been performed to allow different types of casks to be compatible with a unique docking station. Major constraints to be considered for the design are shielding, confinement and maintenance of systems in a nuclear environment. The main issue of the design improvement is to combine, in a single interface, all the requirements coming from the Vacuum Vessel and the specific ones to fulfill the Hot Cell Facility operations.

The paper presents the new conceptual design of a HCF universal docking station, using removable flanges. The comprehensive design is based on:

- a first door located in a non contaminated area. It is maintained hands-on and it opens when the cask arrives at the docking station,
- a adaptable docking flanges which slides from the docking station to the room located above. It includes the same double door design as used at the vacuum vessel. It is controlled from a radiological zone low enough to allow planned maintenance and emergency repairs to be carried out manually,
- a confinement door located behind the docking flange. The side of the door located in the red zone shall be cleaned before any maintenance operation, using existing remote handling equipment, also used for the cleaning of In Vessel components.

The design feasibility of the universal docking flanges has been demonstrated and will become the reference. It increases the operability efficiency and removes the hot cell docking operation from the critical path.

The paper will highlight the design solutions that have been chosen to obtain a safe, robust and simple universal docking station. The maintenance of the system will also be described.

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