ITER Lower Port Systems Integration

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The lower ports systems are installed inside the vacuum vessel lower ports and in the adjacent port cells. The vacuum vessel ports and penetrations are allocated as follow:

- 4 ports dedicated to remote handling of the divertor cassettes, contain diagnostics racks and divertor cooling pipes.
- 5 ports connect the main vessel to the torus cryopumps, contain divertor cooling, pellet and gas injection pipes and vertical stabilization coil feeders.
- 3 torus cryopumps are connected to the Vacuum Vessel by branch pipe.
- Specific penetrations for divertor cooling lines, in-vessel viewing and glow discharge systems.

The general layout of the port systems has been revised recently to improve the cryopump (8t weight, 1.8m diameter, 2.5m long) maintenance scheme with remote handling tools and integrate the in-vessel vertical stabilization coil feeders. The port allocation, the pumping ports design, interfaces in-between ports and cryostat and in-between cryopumps and cryostat have been up-dated.

The integration inside the 18 port cells (11m x 4m each) has been reviewed to avoid clashes in between systems and fix the openings in the port cell concrete walls. The new layout integrates safety and neutron-shielding requirements as well as remote handling and maintenance compatibility for the different systems.

The paper presents the up-dated integration of the lower port systems inside the ports and the port cells. Interfaces of the port systems with the vacuum vessel, the cryostat and the port cells are described.

Topic: Vessel / In-Vessel Engineering and Remote Handling
Preference: Poster

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