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P4.152 The DTT device: advances in conceptual design of first wall vessel and cryostat structures

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In this work the authors present the latest progresses in the conceptual design of the first wall and the main containment structures of DTT device. The previous DTT baseline design was reviewed in terms of both materials and plasma shape. This in turn led to a new all-welded double-wall vacuum vessel structure, made of AISI 316L(N) stainless steel. While the basic design has still 18 sectors, ports configuration has been revised according to new design constraints about remote maintenance, diagnostics and heating equipment. Supports have been also designed for the first wall, which was conveniently segmented in view of assembly and remote maintenance. FEA analyses confirmed that mechanical structures well withstand all primary and secondary loads, in particular the ones resulting from possible plasma disruptions. The design principles of the cryostat were chiefly based on cost minimization and functionality; thus it was conceived as a single-wall cylindrical vessel supported by a steel frame structure. The same structure holds vacuum vessel and magnets.

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