

## European Testing Blanket Modules auxiliaries design

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The design of the auxiliary systems for the two European Test Blanket Modules is an important engineering task that will allow the successful integration of the two DEMO Blanket mock-ups into the ITER machine, and, through these experiments, demonstrate the technological feasibility of a blanket module for a future fusion power plant.

These auxiliary systems are mainly circuits devoted to the removal of thermal power and tritium recovery from the blanket modules, as follows:

- The Helium Cooling System (HCS);
- The Coolant Purification System (CPS);
- The Tritium Extraction System, divided in two subsystems in case of Helium Cooled Lithium Lead (HCLL), the Tritium Extraction Unit and the Tritium Removal System;
- The lead lithium loop (HCLL)

Starting from the preliminary design developed in the past, the optimization and the engineering design of these subsystems was performed in the first year of activity of the TBM Consortium of Associates. The input parameters were reviewed and, when possible, DEMO relevant solutions were proposed. The present design takes in account both the TBM operational requirements as well the ITER operation, safety, and spatial constrains.

In this paper the current loops design with accent on the integration into the ITER machine are presented.