

## **HCLL TBM design status and development**

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The Helium Cooled Lithium Lead Test Blanket Module (HCLL-TBM) is one of the two European TBMs, representative of DEMO blanket technology, that shall be ready for installation in ITER starting from first day of operation. It is developed by the CEA in the framework of the activities of the Test Blanket Module Consortium of Associates and under contract with the European Joint Undertaking Fusion For Energy (F4E). A series of 4 different HCLL-TBMs will be installed into one of the ITER equatorial ports during the experimental campaign.

This paper aims at presenting the development process and design status of HCLL-TBM, with particular focus on the so-called “integral-TBM (IN-TBM)”, which will include all the main features of the corresponding DEMO blanket module. The design of such a complex component already poses considerable issues and is complicated by the peculiarities of the ITER environment (high temperature, radiation damage, pulsed plasma operation). Indeed, present design codes used in the nuclear industry will probably need to be updated to cover all TBM-related aspects. After recalling the main features of the HCLL IN-TBM, as well as the design choices that have led to the present geometry, supporting design analyses will be presented and discussed.