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Status of ITER thermal shield development

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Thermal shield (TS) will be installed in the ITER Tokamak to protect the superconducting magnet from thermal radiation from cryostat and vacuum vessel. The TS is cooled by 80 K helium supplied from cryoplant. The emissivity of TS surface must be maintained below 0.05 by bath-type silver electroplating. The TS is to be fully procured by Korea and it will be assembled in the ITER Tokamak by ITER organization. This paper describes the overall status of the ITER TS procurement: the manufacturing design and the current manufacturing status of vacuum vessel thermal shield (VVTS). Some mock-ups were fabricated and tested to validate the TS design and manufacturing: in-pit joint assembly, 3D shape bending method of long cooling tube, specimen tests for silver coating and cooling tube welding. Prior to the manufacturing of the TS, full-scale prototype of VVTS 10 degree section was developed in order to assess the overall manufacturing procedure of the TS except silver coating. After the completion of manufacturing design, R&D and prototype fabrication, the VVTS manufacturing started in October 2014. The current status of VVTS manufacturing is summarized in this paper.

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