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Moving Toward Completion of manufacturing of ITER PF1 Coil

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The ITER Poloidal Field (PF) coils consists of six coils, PF1 through PF6 that serve to stabilize the position and control the shape of the plasma in the tokamak. PF1 coil, which is one of six PF coils, is procured by the Russian domestic agencies (RFDA) under procurement arrangement between ITER and RFDA. After signing the PAs, for the supplier of PF1 Coil, RFDA has selected Efremov institute as a main supplier of the fabrication of PF1 coils. For the preparation work for PF1 coil manufacturing, RFDA and Efremov institute have completed the activities on the building and tooling preparation in 2014.

As a first step of manufacturing, several qualification samples such as helium inlet sample, a mock-up with 3x3 dummy conductors and the turn insulation samples with resin were fabricated. Mechanical and electrical testing of the samples have been carried out at room temperature and 77 K. As PF1 coil is fabricated by stacking 8 double-pancakes wound by two-in-hand winding scheme, a dummy double pancake and a winding pack mock-up have been fabricated to check the quality before starting real manufacturing of PF1 coil.

Based on the experiences of various qualification, eight double pancakes have been successfully fabricated and these eight double pancakes have been successfully stacked and impregnated to make a winding pack.

This paper focuses on the latest activities for ITER PF1 coil, which include the requirements, the various tests, the acceptance criteria and the manufacturing process. Finally, the paper concludes with a summary of the result of PF1 coil manufacturing and future work to be carried out.

The views and opinions expressed herein do not necessarily reflect those of the ITER Organization

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