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The PF1 coil electrical joint test results

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The Poloidal Field (PF1) coil is one of six PF coils of the ITER magnet system. It represents a stack of eight double pancakes (DP). Each DP is wounded from niobium-titanium "cable-in-conduit"conductors (CICC). All DPs are connected into a single electric circuit using electrical joints, which have a 'shaking hands'configuration. The new joint design was agreed by the ITER Organization (IO). It was required to upgrade the existed techniques and equipment. The work acceptance criterion is a resistance of less than 5 nOhm in the range of operating temperatures and magnetic fields. The upgrading was done in the following parts: (1) the superconductor cable preparation including masking of the double twist pitches; (2) electroplating of the strands; (3) inserting of the cable inside the termination box; (4) soldering cable inside the box and between two termination boxes. To check its operability the full size joint sample was manufactured and tested. The final electrical test was performed on CRPP "SULTAN"test facility (Switzerland). The results of the tests during manufacturing and electrical test are mentioned in this paper.

Submitters Country

Russia

Primary author: MARUSHIN, Egor

Co-authors: ANDREI MEDNIKOV; Dr STEPANOV, Dmitry (JSC "NIIEFA"); Dr RODIN, Igor (JSC "NIIEFA"); KOVALCHUK, Oleg

Presenter: MARUSHIN, Egor

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