Experience in Operating Safety of EAST Superconducting Magnets

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Abstract - EAST (Experimental Advanced Superconducting Tokamak) is the first fully superconducting Tokamak device. The EAST superconducting magnets system comprises 16 D-shape Toroidal Field (TF) coils, 14 Poloidal Field (PF) coils, 13 pairs of HTS current leads and superconducting bus-lines. The electromagnetic, thermal hydraulic and mechanical performances of EAST TF and PF magnets have been fully and successfully tested. EAST superconducting magnet systems have operated 6 times: 3 times for commissioning and 3 times for plasma research experiments. The performance of the magnet system satisfies the operational requirements. The construction and commissioning of EAST superconducting magnets are presented in this paper; we focus on the quench protection for superconducting magnets, interlock system for safe operation, steady-state operation of superconducting magnets and effects of abnormal events on superconducting magnets.

Index Terms - EAST, quench protection, superconducting magnets, Tokamak.

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