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## Experimental analysis of dummy load prototype for ITER coil power supply system

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This paper mainly introduces the experimental analysis of the dummy load prototype, whose functions are to verify the capability of the ITER magnetic power supply systems to operate at their rated power levels without energizing the superconducting coils. The rated inductance of dummy load is 6.73 mH and the pulse test currents are 45 kA, 55 kA and 68 kA. To meet the requirements of the large inductance and different pulse test current classes, a dry-type air-core water-cooling prototype with epoxy resin casting technique has been fabricated, which has 24 layers and 72 turns. The experimental analyses are introduced in detail, focusing on the consistency test, inductance test, and temperature rise test. The consistency of different coil layer is ensured by comparing the voltage wave under the same voltage excitation. The inductance test includes dc inductance test by using the first order circuit method and ac inductance test by LCR instrument and finite-element simulation analysis. The temperature rise test results under different current classes are introduced by comparing with the simulation analyses. The above experimental results are coincided with the requirements and it shows the availability and feasibility of the prototype.

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