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Development and qualification of ITER current lead electrical insulation

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ITER high temperature superconducting current lead is a critical component for the magnet system, which has the benefit of reduction in the heat load of the cryogenic system compare with the conventional current lead. The current lead is located in the coil terminal box and dry box in the ITER feeder system. As a warm to cold transition section, the current lead fed the huge current from the power supply system into the coils. On the surface of the current lead, one layer composite insulation are made to isolate the high voltage potential to the ground. The main configuration of the current lead is over 2 m long cylinder, but at the cold termination and the cooling inlet, the local geometry is much irregular. So the insulation wrapping and curing technology of the current lead shall be researched and developed to acquire the uniform mechanical and electrical performance.
Now, the multi-stage autoclave curing technology has been qualified in ASIPP, the series ITER current leads are manufacturing based on the qualified procedure. In this paper, the latest insulation progresses on ITER current lead are introduced, the electrical results in the formal qualification are presented and discussed.

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