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Overview of JT-60SA HTS current lead manufacture and testing

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The Karlsruhe Institute of Technology (KIT) agreed to construct and test the High Temperature Superconductor Current Leads (HTS-CL) for the tokamak JT-60SA presently under construction in the frame of the Broader Approach agreement between Europe and Japan. In total 6 HTS-CLs for 25.7 kA for the TF coils and 20 HTS-CLs for 20 kA for the PF and CS coils are required and all of them have to be tested at operating temperatures in the test facility CuLTKa at KIT. The manufacturing started in 2014 and the last current leads will be tested in July 2017. The main parts of the acceptance test are the determination of the heat load at 4.5 K, the 50 K He mass flow rate through the heat exchanger, and the simulation of a loss of flow accident. One test of the PF current leads includes a pulse test at 20 kA to demonstrate their PF operation capability.
In the present paper an overview of the manufacture and the acceptance tests of the HTS current lead is given. The results for the different current leads are summarized and compared to the specifications showing a good and reproducible performance.

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