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Advance in Japanese Superconductor for ITER

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Japan Atomic Energy Agency (JAEA) has been manufacturing superconductors for ITER Toroidal Field (TF) coils and Center Solenoid (CS). Since CS will be operated in the pulse mode, development of conductor that has stable performance against cyclic electromagnetic force was necessary. Conductor with shorter twist pitch cable to yield higher cable stiffness was successfully developed and no degradation against cyclic electromagnetic force was observed in a full-size conductor test. This result allowed JAEA to start CS cable manufacturing in 2013 consequently. At the end of 2013, manufacturing of 91% of Japanese TF conductors was successfully completed. All superconducting strand for TF whose total length is 23,000 km has completed in 6 years. It was demonstrated that strand performance has maintained stable from the initial to the final production.

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