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At Japan Atomic Energy Agency (JAEA), the JT-60 is planned to be modified to a fullsuperconducting tokamak referred as JT-60 Super Advanced (JT-60SA) as one of the JA-EU broader approach projects. In JT-60SA, magnets system consists of 18 toroidal field (TF) coils, 4 stacks of central solenoid (CS) and 6 plasma equilibrium field (EF) coils. The CS and EF coils are procured by Japan. The maximum magnetic field and maximum current of EF coils is 6.2 T, 20 kA. EF coil conductors are NbTi cable-in-conduit (CIC) conductor with SS316L jacket.

Delivered superconducting cables and jackets are fabricated into CIC conductors at the jacketing facility constructed in the Naka site of JAEA. The length of jacketing facility is about 680 m. The production of superconductors for actual EF coils was started from February 2010. Three superconductors with 444 m in length were already produced as shown in Fig. 1. The measured pulling force of cable into jacket was as about 8 kN. The cross sectional dimensions of produced conductors measured by laser micrometer satisfied the requirement of 27.7 ± 0.2 mm. The mass flow rate was measured using the GN2.

In order to confirm the superconducting performance of produced conductor, current sharing temperature (Tcs) tests under coil operational condition is required. Test facility in National Institute for Fusion Science (NIFS) has potential for Tcs tests. In order to test conductors for JT-60SA at NIFS facility, JAEA and NIFS designed the experimental equipment. The maximum magnetic field of NIFS split coil is 9 T. Circular 6.2 T field in 300 mm is available by adjusting the field distribution. EF conductor sample was designed to racket shape with 300 mm diameter. The measured Tcs was agreed with the expectation values from strand values indicating that no degradation was happened by production process.

In this paper, production and test results of EF conductors will be described.



Figure 1: First superconductor for actual EF coil.