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## A Prototype Conductor by React&Wind Method for the EUROfusion DEMO TF Coils

*Wednesday 30 August 2017 16:00 (15 minutes)*

The R&D method for the large Nb<sub>3</sub>Sn magnets of the EUROfusion DEMO device was proposed since 2013 by the Swiss Plasma Center. A first prototype conductor (RW1) was tested in the EDIPO test facility in 2015 up to 82 kA at 13 T, confirming the low thermal strain and the lack of cyclic load degradation. After the baseline of the DEMO device was updated in 2015, the new requirements led to an updated conductor design, for 63 kA at 12.5 T. The manufacturing experience of the first prototype is exploited in a second prototype conductor (RW2), assembled and tested in 2017: the conductor aspect ratio is reduced and the segregated copper wires are replaced by a solid block of mixed matrix stabilizer. Although designed for the TF coils, with substantially DC operation, the low AC loss of the flat cable makes the RW2 a good candidate also for the Central Solenoid (CS) conductor.

The Nb<sub>3</sub>Sn strand is supplied by WST (PRC) and the flat cable is made at TRATOS (I). The rationale of the design, the conductor manufacture, the sample assembly and the test results in SULTAN are reported.

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