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Wed-Mo-PL3-01: Toward Completion and Delivery of the First EU ITER Magnets

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The plasma confinement of the International Tokamak Experimental Reactor (ITER) is provided by the magnetic field generated by 18 toroidal field (TF) coils while 6 poloidal field (PF) coils have the function to shape and pre-heat the plasma. Fusion for Energy (F4E), the European Domestic Agency for ITER, is responsible for the supply of 10 TFC and 5 PFC to the ITER project. The ITER Organization (IO) team is instead responsible for the design of such coils as well for the coordination of the activities of the different Domestic Agencies (DA) producing the different components for the Tokamak.

The PF coils utilize NbTi Cable-in-Conduit-Conductor and have different diameter ranging between 7 and 25 meters and a weight up to 400 tons. Regarding the PF coils produced by F4E, so far one has been completed by the the Institute of Plasma Physics Chinese Academy Of Sciences (ASIPP) under a collaboration agreement with F4E. The other 4 PF coils are being produced at the ITER site (Cadarache) under F4E supervision: the first PF coil (PF5) will be completed by June 2020 while the last coil (PF3) will be ready by the end of 2023. The TF coils utilize a Nb3Sn conductor and are manufactured with the “Wind, React & Transfer” method. The first TF coil is close to its completion and it will be delivered to ITER by begin of 2020, while the others TF coils will follow with a rate of about one every 3-4 months. In this article we will report on both PF and TF coils, in particular on the different utilized manufacturing strategies, the main challenges faced so far and the results obtained.

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