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Start of the ITER Central Solenoid Assembly

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The Central Solenoid (CS) is a key element of the ITER Magnet system, including six identical coils, called modules, assembled together to form a 4 m outer diameter, 13 m high solenoid. It is a superconducting magnet, using a 45 kA Nb₃Sn conductor internally cooled by circulation of supercritical helium at 4.5 K with a peak field up to 13 T. It is enclosed inside a structure providing vertical pre-compression and mechanical support. Procurement of the components and the special assembly tooling of the ITER CS is the responsibility of US ITER, the ITER Domestic Agency of the USA, while the ITER Organization (IO) will carry out the assembly of these components.

US ITER has awarded several contracts since 2011 to supply seven modules, including a spare, structure components, and the special tooling required for the CS pre-assembly. All deliveries are organized with the objective to start the CS assembly at IO site by the end 2021. IO is now starting first phases of the assembly mostly focused on on-site assembly contractor.

The paper describes the general CS assembly status and outcomes from first module factory acceptance tests results overview, preliminary training for special activities up to the start of the first module stacking. The special assembly processes and related tooling qualifications will be detailed. A focus is given on the module factory acceptance tests, lifting tool and the busbar joint assembly qualification.

The views and opinions expressed herein do not necessarily reflect those of the ITER Organization.

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