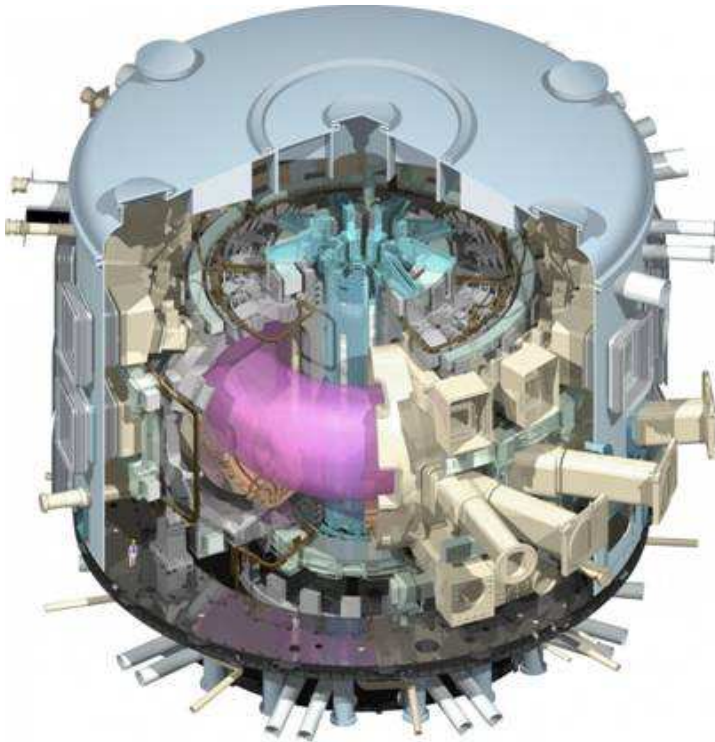


ITER Poloidal Field Coils



The ITER project is aimed at the construction of a nuclear fusion test-plant, a tokamak, dedicated to the investigation of scientific principles and the technologies that will allow to exploit nuclear fusion as the world's primary source of energy. ITER involves many nations from all around the world and each shall contribute components or services to the project.

This machine will allow to perform the controlled thermonuclear fusion in an industrial sized plant. ITER is based on the concept of magnetic confinement, in which the plasma is contained in a doughnut-shaped vacuum vessel.

The fusion process involves two hydrogen isotopes, deuterium and tritium, heated to temperatures in excess of 150 million °C, forming a hot plasma. Strong magnetic fields are used to keep the plasma away from the walls; these are produced by superconducting coils surrounding the vessel, and by an electrical current driven through the plasma.

The heat produced, through proper heat exchangers (steam generators), will allow the production of electric power by a standard turbo-alternator group.

The ITER device will operate with a system of superconducting magnets which relies on the Toroidal Field Coils, the Central Solenoid, the Poloidal Field Coils and the Correction Coils. Europe will manufacture 10 of the 19 TF Coils, including a spare one, while Japan is responsible to produce the remaining nine. Winding packs of this size have never been manufactured before.

Fusion for Energy awarded a contract for the Engineering Integrator for the manufacturing of the Poloidal Field Coils (PF2-PF3- PF4 e PF5) and cold test of PF6 to ASG Superconductors SpA.

ASG Superconductors scope of supply

- Manufacturing Plan
- Layout and workflow definition
- Manufacturing and Process Procedures
- Coils Manufacturing and Testing Supervision
- Project Management of the whole project

The PF magnet system is composed of six circular coils, shown in the Fig.1, below; consisting of superconducting winding packs (WP) made up from a stack of Double Pancakes (DP).

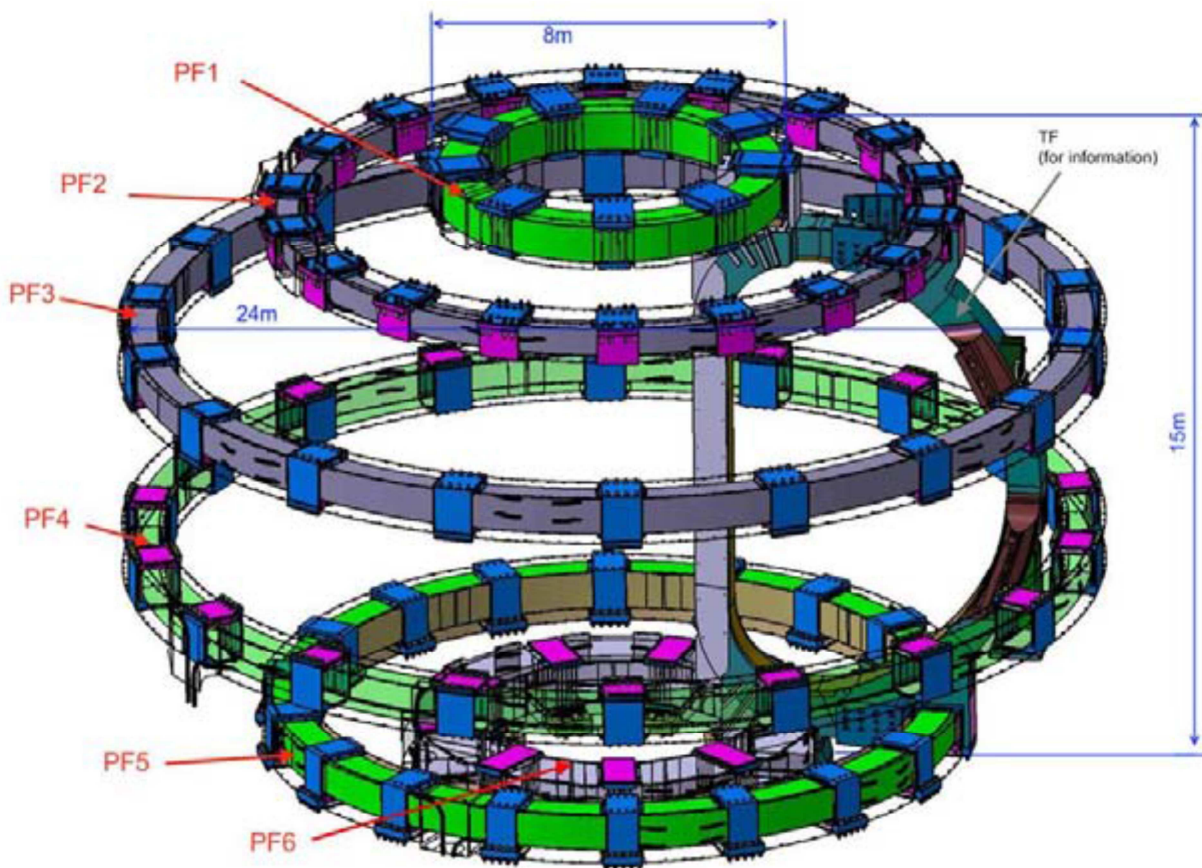


Figure 1: Schematics of the PF Coils Configuration

Due to the large coil sizes the coils are to be fabricated adjacent to the ITER site in a dedicated PF Coil fabrication building (PF building), and after cold testing they will be handed over to ITER for the assembly into the tokamak machine. The cold testing will be carried out in another dedicated facility to be built adjacent to the PF building, if needed.

The diameters of the PF Coils are from 8 to 24 meters and their weights range between 208 tons to 399 tons.

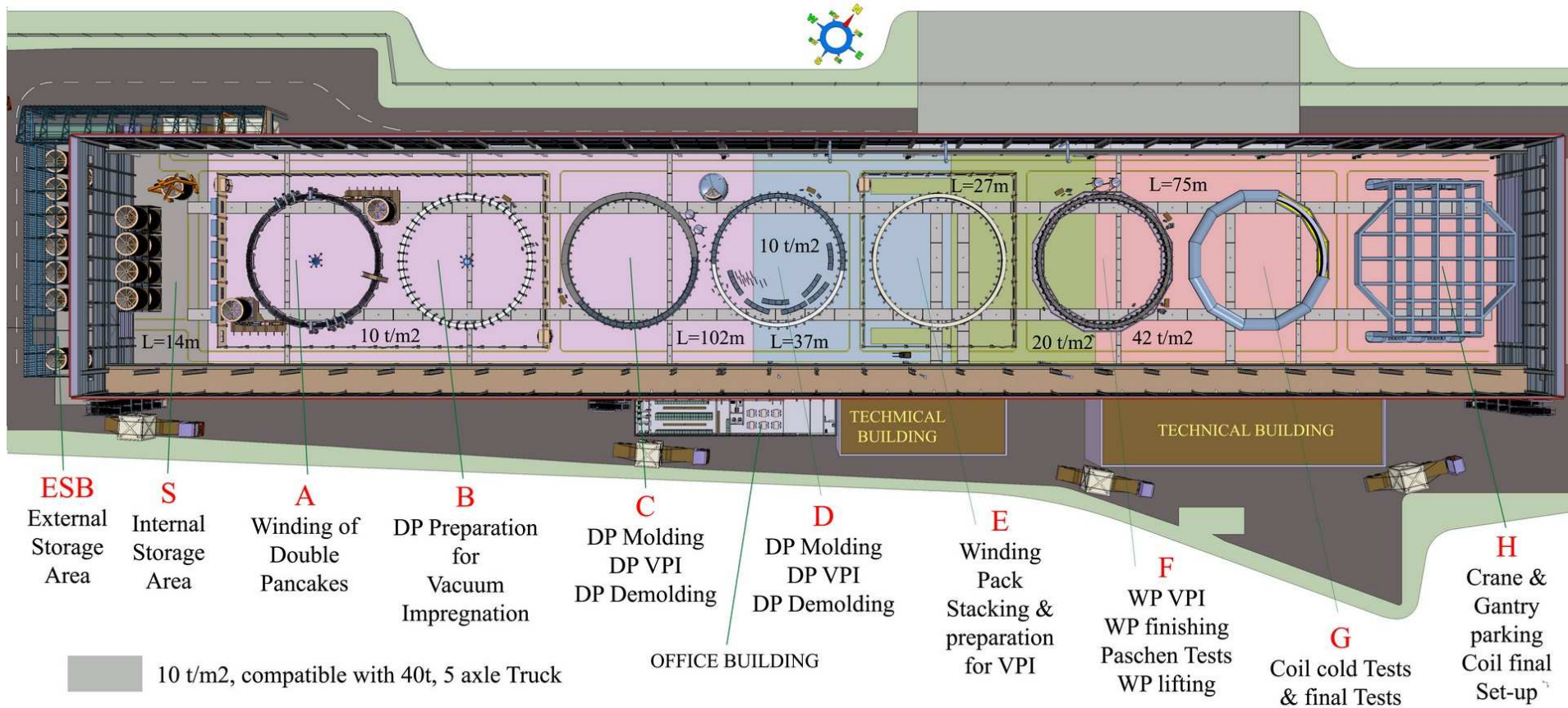


Figure 2: PF building workshop how will appear at steady state