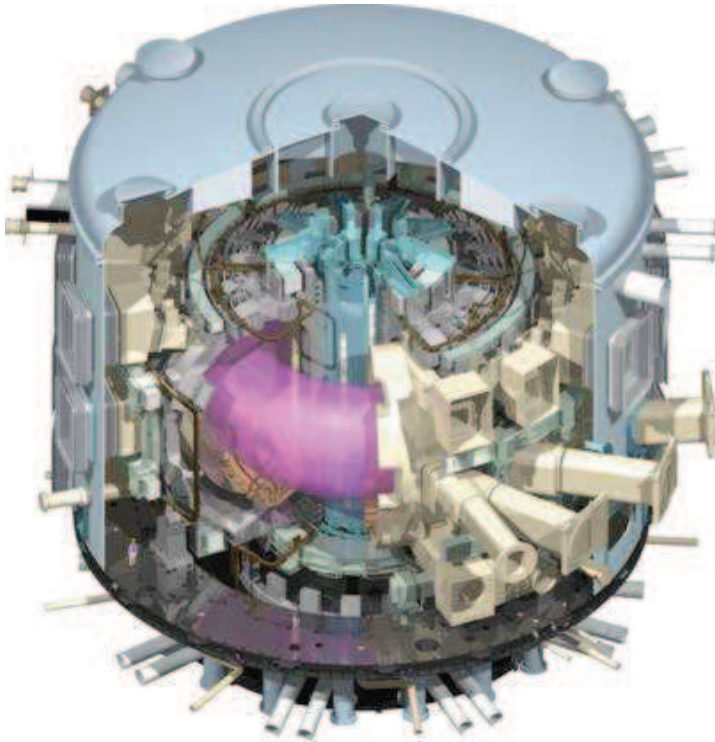


ITER Toroidal Field Coils



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.

