



# ITER TB03

Cadarache, France / 2013

Structural type  
Characteristics  
Owner  
Client  
Scope

industrial building  
tender, detailer desing  
ITER Organization  
VFR (Vinci + Ferrovial + Razel)  
detailed design and construction support



In southern France, it is under construction the ITER complex (International Thermonuclear Experimental Reactor). One of the biggest international Project were 35 countries are collaborating (the most important are China, the European Union, India, Japan, Korea, Russia, and United States), with the aim of proving experimentally the feasibility to produce net energy from fusion for long periods of time.

The ITER is a magnet fusion device type Tokamak. This means that it is a toroidal chamber with magnetic coils that supports and maintains the particles of plasma at temperatures up to 150 million degrees (ten times the temperature of the sun). With that, the neutrons obtained in the fusion reactions will collide with the walls of the vessel producing heat. Just like a conventional power plant, a fusion power plant will use this heat to produce steam and then electricity by way of turbines and generators.

This process requires a great initial power to heat the gas in order to become plasma were, in optimum conditions, collisions are obtained. The objective is to obtain 500MW of fusion power from 50 MW of initial heating power (it means a ten-fold return on energy). Additionally the process will be maintained during 500 seconds.

With a global budget up to 21,000 million euros, the ITER complex is comprised by 39 buildings and technical areas, that are currently under execution in a 180Ha platform near to Cadarache (France). All of these constructions are needed for the correct functioning of the Tokamak.

Fhecor has been working in the ITER from the Tender in 2011, carrying out the construction and execution project for the contractors Ferrovial-Agroman, Vinci Construction and Razel-Bec. During these years, Fhecor has been the structural designer of 23 of the most important buildings in the ITER, most of them have already been finished and in installation or operating phase. Some of the buildings were Fhecor is involved are:

- The roof of the Tokamak Building (Building#11).
- The Assembly-Hall Building (Building#13).
- The building with the particle accelerators necessities for the plasma heating (Building#15)
- The cryogenic plant necessary to cool the magnetic coils of the nucleus (Buildings#51,#52 y #53)
- The buildings for the magnet conversion (Buildings#32,#33 y #38)
- Electrical galleries and drainage system around the ITER complex.
- The technical areas for the electrical conversion from 400kV high voltage to 22kV medium necessities for the input power of the Tokamak (Building #36 and special foundations).



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