

INTERNATIONAL THERMONUCLEAR EXPERIMENTAL REACTOR

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ITER (originally an acronym of International Thermonuclear Experimental Reactor) is an international nuclear fusion research and engineering project, which is currently building the world's largest and most advanced experimental tokamak nuclear fusion reactor at Cadarache in the south of France.

The ITER project aims to make the long-awaited transition from experimental studies of plasma physics to full-scale electricity-producing fusion power plants.

The project is funded and run by seven member entities - the European Union (EU), India, Japan, the People's Republic of China, Russia, South Korea and the United States. The EU, as host party for the ITER complex, is contributing 45% of the cost, with the other six parties contributing 9% each.

The ITER fusion reactor itself has been designed to produce 500 megawatts of output power for 50 megawatts of input power, or ten times the amount of energy put in. The machine is expected to demonstrate the principle of getting more energy out of the fusion process than is used to initiate it, something that has not been achieved with previous fusion reactors.

Construction of the facility began in 2007, and the first plasma is expected in 2019. When ITER becomes operational, it will become the largest magnetic confinement plasma physics experiment in use, surpassing the Joint European Torus.

The first commercial demonstration fusion power plant, named DEMO, is proposed to follow on from the ITER project to bring fusion energy to the commercial market.