

Building the world's most powerful magnet

The first module of the central magnet for a state-of-the-art hydrogen fusion reactor has embarked on an epic road trip across the United States, on its way to the ITER megaproject in southern France

Module 1

Weight: **110 tonnes**
Width: **4.25m**

5.6km of **niobium-tin** superconducting cable

Escort vehicles

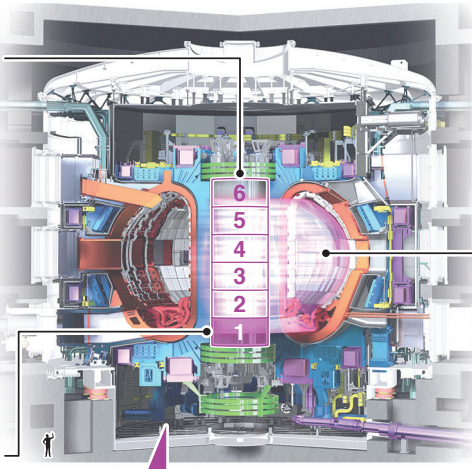


Transport: 24-axle design only drives at night to avoid everyday traffic



ITER (Latin for “the way”) will be world’s largest **tokamak** – device which uses magnetic field to confine plasma in shape of **torus** (doughnut shape, left). Its aim is to replicate fusion processes of **Sun** to create energy

Central solenoid:
Shapes and controls normally unstable reactants of nuclear fusion. Largest and most powerful pulsed electro-magnet ever constructed – composed of stack of **six modules**



Tokamak:
Superheats vaporised **deuterium** and **tritium** isotopes, stripping away electrons and converting gas into **plasma** (150m°C), hotter than Sun

Atoms undergo **fusion**, giving off large amounts of energy

Energy Holy Grail: Reactor will attempt to use **50MW** of heating power to generate plasma of **500MW** – 10-fold increase in energy (**carbon-free**)