

# THE ITER MACHINE

30 m tall x 30 m wide

## WHAT IS ITER?

ITER is the biggest international partnership in the field of energy and will demonstrate the viability of fusion. The project brings together half of the world's population (China, Europe, Japan, India, the Republic of Korea, the Russian Federation and the United States) and represents 80% of the global GDP. It will be the world's largest experimental fusion facility and the first in history to produce net energy of 500 MW. The site of the ITER project is in Cadarache, in the south of France.

## WHAT IS FUSION?

Fusion is the process which powers the sun and the stars. When light atomic nuclei fuse together form heavier ones, a large amount of energy is released. Fusion research is aimed at developing a safe, limitless and environmentally responsible energy source. The fuels needed for fusion are abundant on Earth. With fusion there are neither greenhouse gas emissions nor long-lasting radioactive waste. Fusion reactors are intrinsically safe with no risk of a chain reaction.

## HOW IS EUROPE CONTRIBUTING TO ITER?

Europe, as host of the project, is responsible for nearly half of the ITER components and the construction of 39 buildings on site. Fusion for Energy (F4E) is the EU organisation managing Europe's contribution to ITER in collaboration with industry, SMEs and research organisations.

## WHY INVESTING IN FUSION IS IMPORTANT?

The EU is the largest energy importer in the world. To meet our daily needs and fight climate change we need to develop a diversified and sustainable energy mix, and fusion can be part of it. Investing in fusion will give European companies the opportunity to improve their expertise and acquire new skills, increase their competitiveness, help them tap into new markets, create jobs and generate spin-offs with significant economic benefits.

## ITER IN FIGURES

Size of the site : 42 hectares  
 Weight of the machine : 23 000 tonnes  
 Number of components : 1 000 000  
 Plasma volume : 840 m<sup>3</sup>  
 Temperature at plasma core : 150 000 000°C  
 Fusion power : 500 MW



CRYOSTAT



COOLING SYSTEMS



THERMAL SHIELD



CENTRAL SOLENOID



VACUUM VESSEL



BLANKET MODULES



TOROIDAL FIELD COILS



POLOIDAL FIELD COILS



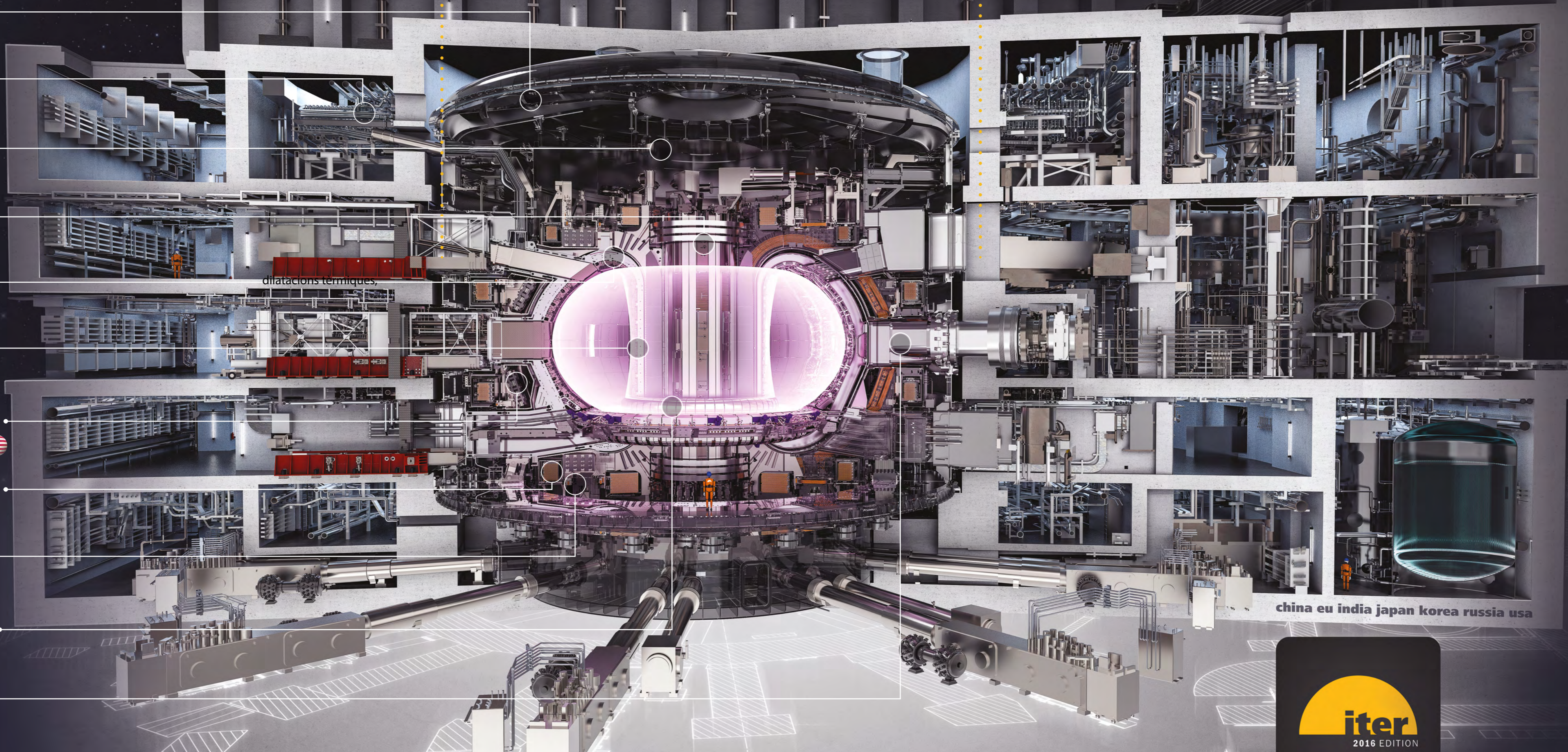
CORRECTION COILS



DIVERTOR CASSETTES



HEATING SYSTEMS



dilatations thermiques

china eu india japan korea russia usa

NOT ALL SYSTEMS (OR CONTRIBUTIONS) COULD BE REPRESENTED IN THIS ILLUSTRATION.

## HOW ITER WORKS

