



EUROfusion Introduction

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What is EUROfusion?

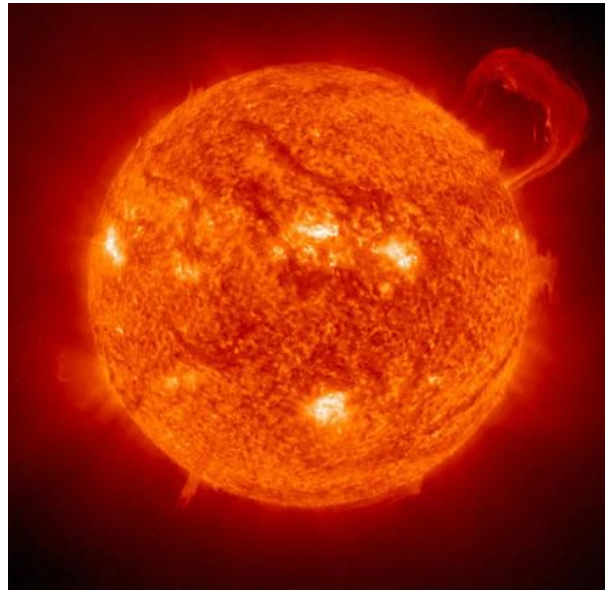


- European Consortium for the development of Fusion Energy
- 30 European members + Switzerland + Ukraine + 150 academic and industry organizations
- Goal: Road map for production of electricity from Fusion Energy

What is Fusion?



- Process by which two particles merge together to form larger ones and release energy
- Example: The Sun, the stars...



courtesy by www.euro-fusion.org

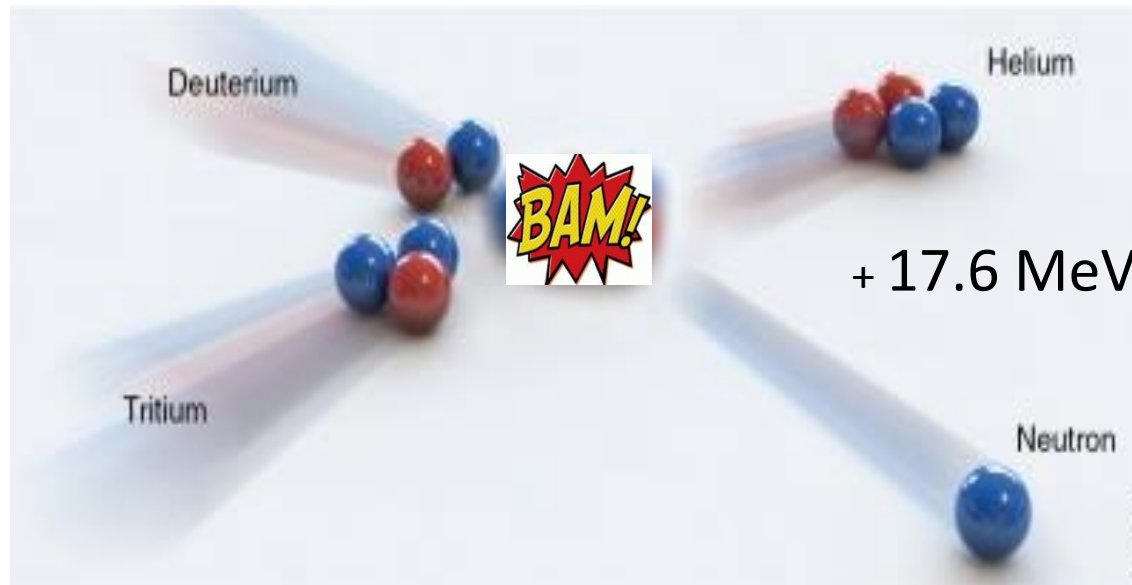
- Main Objective of Fusion Research:
 - Recreate the Sun here on Earth
 - Obtain the energy for the production of electricity

Fusion Reaction



Highest efficient reaction:

Deuterium + Tritium (Two Hydrogen isotopes) \rightarrow Helium + neutron + 17.6 MeV



courtesy by www.ccf.ac.uk

High temperature plasma

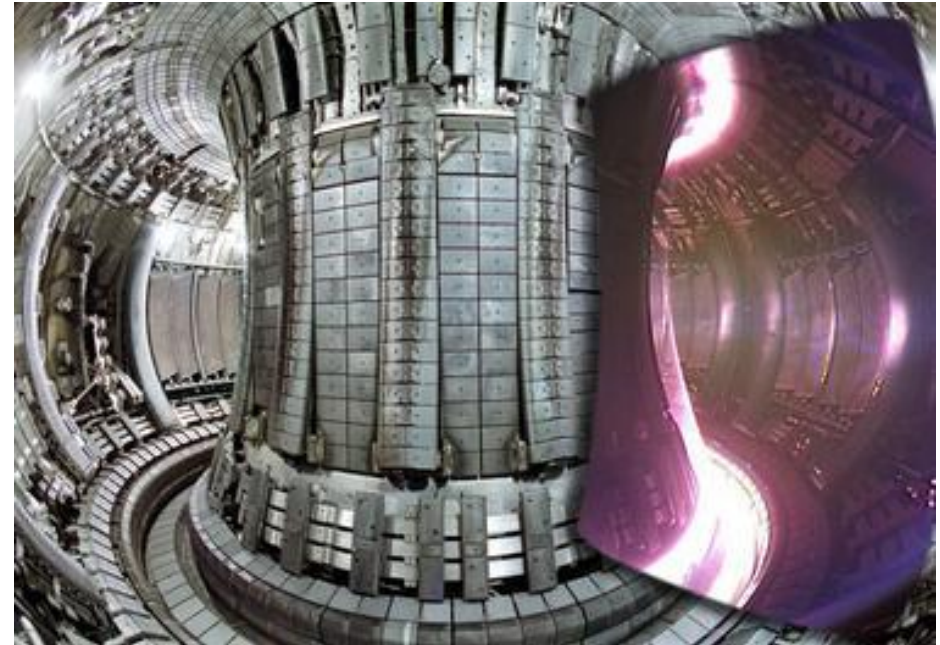
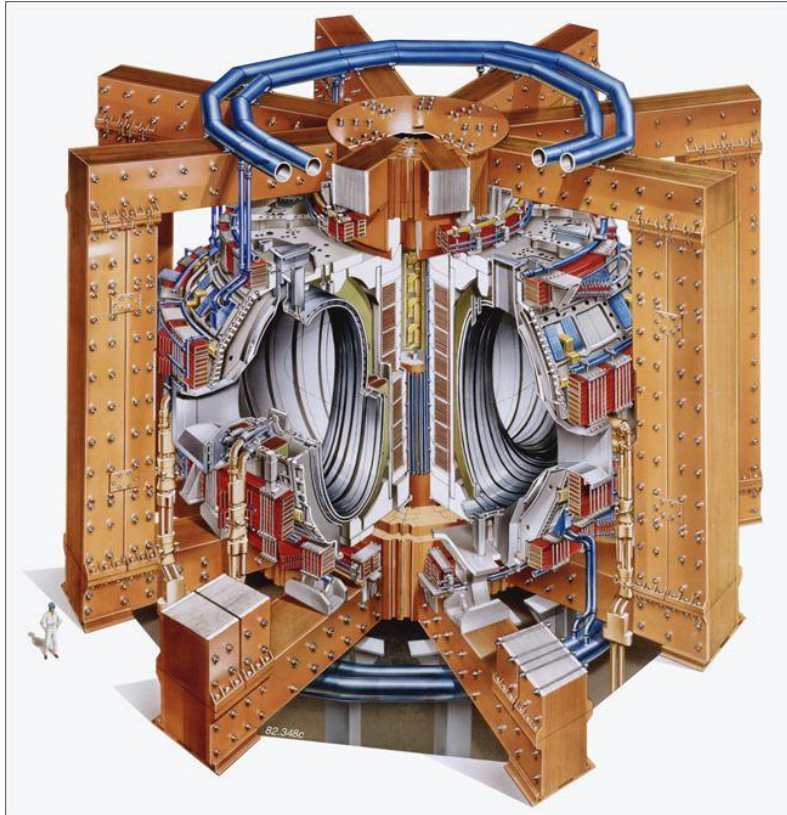
Different approaches in fusion research:

- Inertial Confinement Fusion
- Magnetic Confinement Fusion \rightarrow Developed by EUROfusion

Magnetic Confinement Fusion: JET



Concept: Confine the plasma in a toroidal vacuum vessel (**TOKAMAK**) using magnets
Example of European Tokamak: **JET** (Joint European Torus) Largest Tokamak in the world



Core Plasma Temperature
100 million degrees Celsius

Location:
Culham Centre for Fusion Energy (CCFE)
Dates: 1984 - present

JET



- Protecting the vacuum vessel
- Sustain the Plasma
- Power out $>$ Power In

MAIN ACTIVITIES

- Funds fusion research in Europe – experiments in different machines
- Supports fusion education and training
- Contribute to the next generation of tokamaks: ITER
- Paving the way for the first prototype power plant: DEMO

FUNDING:

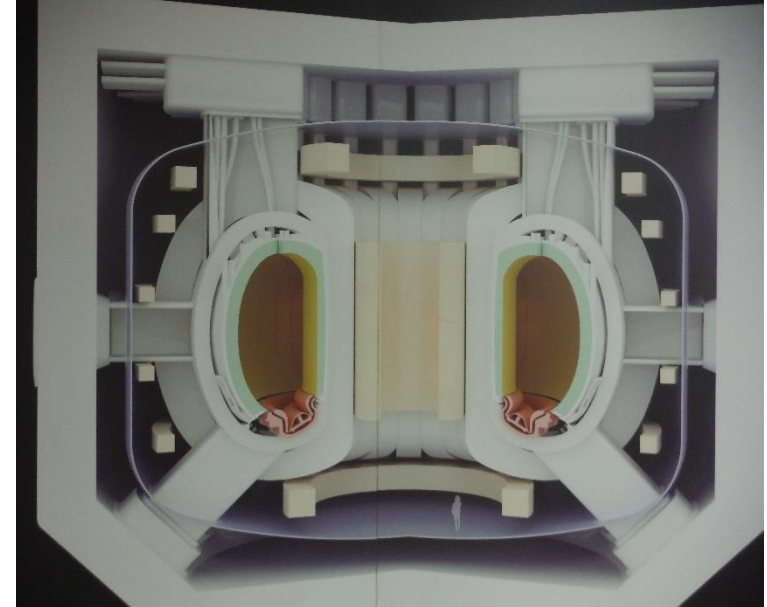
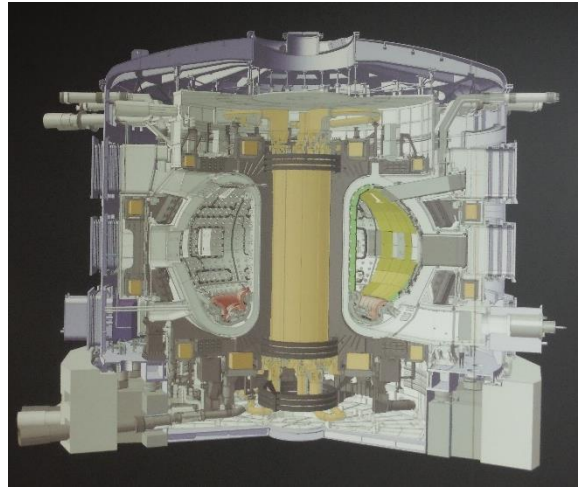
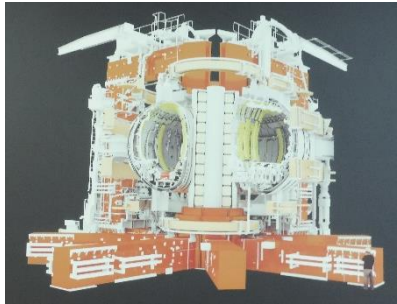
EUROATOM Horizon 2020 programme



DEMO

ITER

JET



2025

2050



<https://www.euro-fusion.org/>