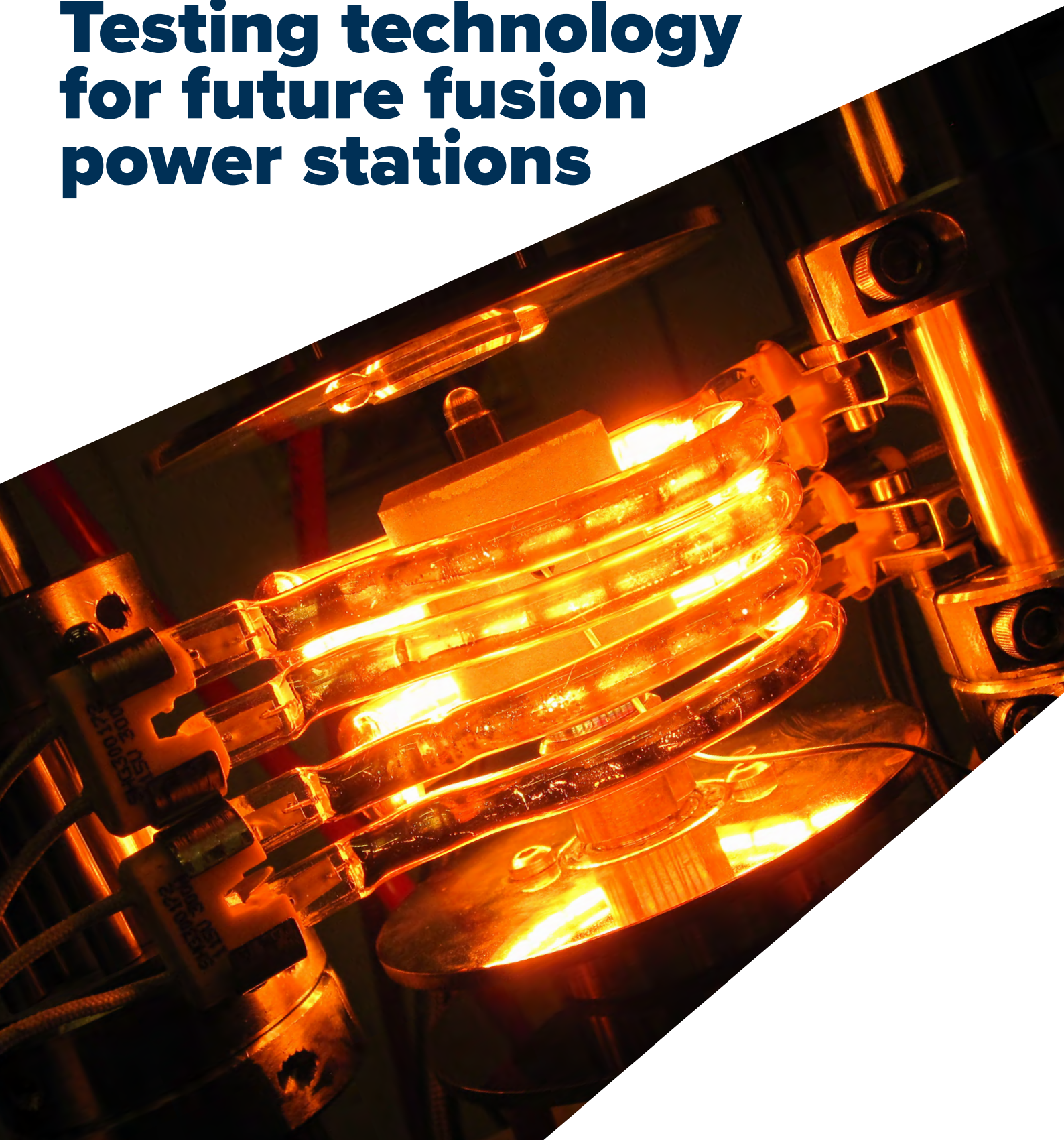




UK Atomic
Energy
Authority

FTF – Testing technology for future fusion power stations



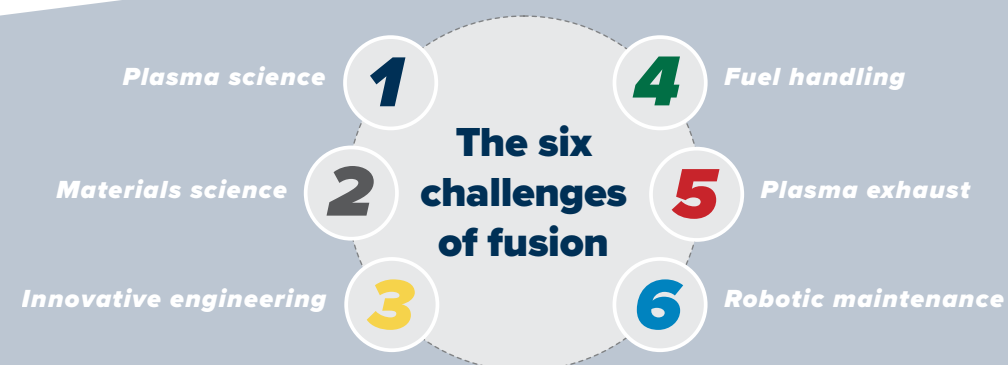
Leading fusion power

Nuclear fusion has the potential to change our world. Fusion – the process that powers the Sun – offers low-carbon energy with virtually limitless fuels. Bringing it to the electricity grid is one of the grand challenges in technology, but potentially one of the most rewarding.

The UK Atomic Energy Authority's mission is to lead the commercial development of fusion power and related technology, and position the UK as a leader in sustainable nuclear energy.

Based at Culham Science Centre near Oxford, we run the UK's fusion research programme and operate the Joint European Torus (JET) experiment on behalf of scientists from 28 European countries. We are keeping Britain at the forefront of fusion as the world comes together to build the first reactor-scale experiment, ITER – the next step towards electricity from fusion. In addition we aim to make the UK the place where the first fusion power stations are designed.

Along the way, UKAEA is securing benefits for UK industry, working with them to secure contracts on ITER in several key areas and helping to introduce advanced technology and develop skills in the wider nuclear sector. Delivering in many of these areas will require the testing of components in the harsh environment expected in a fusion power station (e.g. high temperature, in vacuum, high heat flux and magnetic fields).



FTF and its three domains of expertise

The Fusion Technology Facilities (FTF) – to be located in new buildings at Culham and the Advanced Manufacturing Park in Rotherham, Yorkshire - will provide a suite of testing facilities to bring advanced technologies into the UK nuclear fusion industry. FTF will initially consist of three sub-domains:

- ▶ The **Module Test Facility (MTF)** is designed to test component prototypes in the simultaneous extreme temperature, heat flux and electromagnetic conditions representative of fusion power reactors.
- ▶ The **Joining and Advanced Manufacturing laboratory (JAM)** will lead the development of critical material joining and manufacturing technologies required to deliver fusion, such as component manufacturing using novel materials; testing integrity of joints under fusion reactor conditions (high heat flux, magnetic field etc); development of novel architectures and non-destructive testing techniques.
- ▶ The **Materials Technology Laboratory (MTL)** will establish new facilities and research programmes, providing an opportunity to UK industry and academia to be at the forefront of fusion materials production and testing, in areas such as materials testing & characterisation; design codes & standards; application specific material selection and recycling.

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