

Report on the visit of the Society to Culham Centre for Fusion Energy on 17th August 2011

This visit was jointly organised by the Society and The Malmesbury Probus Group and was part of an open evening run by the Centre for educational purposes.

18 of our members attended a series of short lectures and question and answer sessions regarding the set up and the ultimate purpose of the Centre. It was emphasised that this was very much an open science centre for all of the subscribing nations. It is at the fore front of research into fusion energy resources and has been in existence for some 20 years now.

It is the place where the UK's national fusion programme co-exists with JET, the world's largest fusion device, which Culham Centre for Fusion Energy operates for scientists from around Europe under the European Fusion Development Agreement.

Nuclear fusion can be an important long term, source to complement other non carbon options such as hydro, wind and solar. Fusion could start providing commercial electricity in about 30 years and has the potential to supply up to 20% of the worlds electricity by the year 2100.

Fusion energy will have a range of advantages :

- No atmospheric pollution
- Abundant fuels
- An efficient way of making electricity
- An inherently safe system
- Leaves no long lived radioactive waste
- Economically competitive

We were shown the original JET machine which is still being used for research and at this moment is being updated for forthcoming experiments. This machine holds the record for fusion power having reached 16MW in 1997.

The other main machine we were shown was that entitled MAST which is a much more compact experiment. This was commissioned in 2000 and is the main subject for materials research.

The next generation of machines is now being developed and these are known as ITER. This is being built in France at this moment.

There are many problems yet to be faced when dealing with temperatures which are even greater than that of the sun, hence the work on materials and control of the plasma.

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