Contribution ID: **767** Type: **Poster**

New Fusion Facilities at UKAEA –FTF and H3AT

Wednesday 24 October 2018 08:30 (20 minutes)

The UK Government has invested ~€100M to create two new UKAEA centres for fusion research – Hydrogen-3 Advanced Technology (H3AT) and the Fusion Technology Facilities (FTF) both opening in 2020-21. FTF and H3AT will foster close cooperation with industry, academia and other international laboratories to develop and transfer knowledge between partners, offering opportunities to undertake RD; to reduce risk for ITER and to make significant contributions to the EU DEMO and international fusion programmes.
The FTF offers a complete development life cycle for materials and components in three facilities. The Materials Technology Laboratory develops and qualifies materials using small sample testing techniques to reduce costs and offer in-service testing. The Joining and Advanced Manufacturing Laboratory specialises in material joining and manufacturing technologies for fusion including additive manufacture and laser welding. It has a dedicated small sample test facility, HIVE, capable of providing up to 20MWm-2 over 20x20mm. The Module Test Facility provides fusion relevant testing environments, with heat flux up to 2MWm-2 (and higher localised flux) and DEMO relevant water cooling loop for metre-scale components.
H3ATprovides space for active and inactive experiments with Tritium grade ventilation and glove boxes complete with pressure control and purging systems offer user-ready specialist facilities for a range of RD; activities. In addition to providing a supply of Tritium, H3AT offers a flexible gas mixing capability, removing the need for gas mixture preparation for experiments. A flexible gas analytical system is networked to the experimental stations that are also served with vacuum systems, Tritium recovery and de-tritiation facilities.
This paper will describe the new facilities in terms of their technical capabilities and the progress to their realisation.

Country or International Organization

United Kingdom

Paper Number

FIP/P3-65

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Session Classification: P3 Posters

Track Classification: FIP - Fusion Engineering, Integration and Power Plant Design