



Contribution ID: 532

Type: **Contributed Oral**

## **Sat-Af-Or1-06: Demo4 - Presentation of the assembly and commissioning of a representational set of high filed HTS magnets in a reactor relevant configuration**

*Saturday 5 July 2025 15:30 (15 minutes)*

- Tokamak Energy is pursuing commercial fusion energy based on the development of spherical tokamaks with high temperature superconducting (HTS) magnets.
- The Demo4 project is an ambitious high field HTS magnet build that has delivered a full spherical tokamak magnet system. This will provide a world first demonstration of the operation of a representative array of coils in a toroidal and poloidal configuration, operating at fusion-relevant magnetic fields and temperatures.
- This presentation will provide a system-level overview of the magnet system and its key components, including HTS coils, vacuum vessel, bespoke cryogenic cooling system, mechanical structure, instrumentation and other systems.
- 2024 saw the accelerated build of Demo4, taking 28 Toroidal field coils, and 16 Poloidal field coils and building them into a cold mass assembly with over 600 sensors. Phase testing of sub-assemblies down to 18K was completed, testing both the power supplies and TF current leads up to full energisation current. Early 2025 saw the full HTS cold mass suspended below the cryostat top plate and enter into the commissioning phase.
- The assembly sequence will be shown from coil winding to commissioning at 20K
- The sequence of initial cool down and commissioning, leading to the energisation of the TF and PF HTS coils will be presented.

**Author:** DUNBAR, Graham (Tokamak Energy Limited)

**Presenter:** DUNBAR, Graham (Tokamak Energy Limited)

**Session Classification:** Sat-Af-Or1 - Fusion Test Facilities