

camelot

UNDERSTANDING CHARGE, MASS AND HEAT TRANSFER
IN FUEL CELLS FOR TRANSPORT APPLICATIONS

NEWS
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CAMELOT REACHES HALF-WAY POINT

CAMELOT has passed the month 18 marker of its three-year duration. The project has shown **good progress** in the period with **development of beyond state-of-the-art components for fuel cells**. Characterisation and simulation is being performed in order to guide the development further. Some highlights from the period:

- **Extensive characterisation of baseline materials** has been performed with both in-situ and ex-situ techniques.
- **Open-source model** has been updated to better simulate water transport in thin ionomer layers. **Validation of model** has been performed with dynamic vapor sorption experiments showing excellent correlation.
- **Development of ultra-thin layers has progressed well beyond target:** with conventional production techniques 8 μm membrane production is now being optimised. For additive manufacturing, layers as thin as 6.5 μm have been produced. The production of X-Y-Z graded catalyst layers has been started. Samples have been distributed to the consortium for characterisation with segmented cell hardware.
- **A first version of the updated open-source model has been made available** for the consortium. The model is currently 1D but work is being done to include geometry in a 1+1D update incorporating flow field geometry.
- Validation of the 1D model is currently being done **comparing simulations with baseline material characterisation**.

The project took part in a **workshop hosted by its sister project FURTHER-FC**. Potential collaboration was identified and a possible joint workshop in 2022 is being considered.

The project has submitted all deliverables and completed the reporting for the first period, and the progress has been reviewed by the Clean Hydrogen Partnership in October 2022.



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