



PGM-Free Catalyst Successfully Scaled and Validated

Validated Performance

- ✓ Same performance in single cell and 6 kW stack
- ✓ Scalable coated catalyst substrate (CCS) production up to 100 kW

Competitive Advantages

- Reduces water electrolyser cost
- Enables affordable green hydrogen
- Accelerates transition away from fossil fuels
- Supports rapid scaling toward MW deployment

Comparison to conventional CCM & PEM systems

- Lower waste
- Less error-prone production
- Improved manufacturability



PFAS-Free AionFLX™ Membrane Scaled to 900 cm²

Validated Performance

- ✓ Single-cell validation
- ✓ 6 kW short stack validation
- ✓ Consistent performance maintained after scale-up

Competitive Advantages

- PFAS-free: strong environmental & regulatory benefit
- Polymer for membrane and ionomer produced simultaneously: reduced production cost
- Improved conductivity via ionic channel design
- Suitable for low KOH concentration operation
- High reproducibility achieved: enabling production volumes for 100 kW stacks and future MW systems.



100 kW Stack Design Finalised Production Ongoing

Expected Validated Performance

- Performance boost
- Durability improvement
- Manufacturability at scale
- Pathway towards MW production

Development Approach

- Design of the system-level stack engineering with:
 - Sealing strategy
 - Electrolyte flow management
 - Components integration
- Functional components validated in single-cell measurements and in a 6kW short stack

Current Targets

- 2 A/cm² at 2 V operating conditions
- Integration of AionFLX™ membrane into 100 kW demonstrator

Industrial Readiness

- CCS materials and design finalised
- Knitted mesh + 2-layer PTL selected and validated
- Production tools designed
- Prototype components prepared

Next steps

- Materials production finalised
- Full-scale 100 kW stack produced and ready for shipment to demonstration site in Greece
- Efficiency monitoring of 100 kW stack demonstrator system



HYScale is a multinational, industry-driven, interdisciplinary EU-funded project focused on upscaling innovative, high-performing CRM and PFAS-free materials and components for Anion Exchange Membrane Electrolysis (AEMEL).

Visit www.hyscale.eu