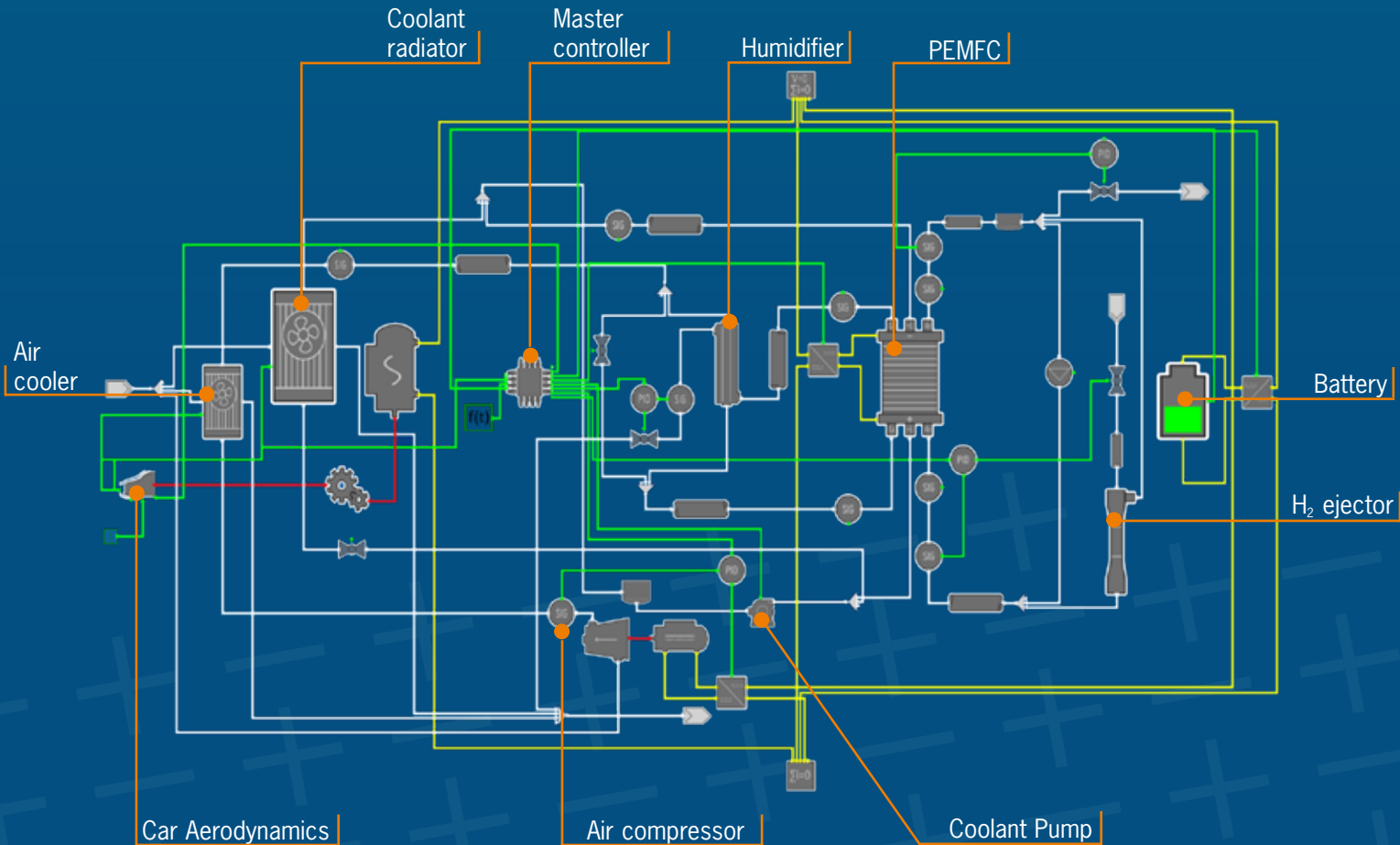


PEM FUEL CELL

Accelerate development, reduce technology risk, and better integrate R&D with engineering design using a single solution for modelling MEA, stack and system



Explore the decision space rapidly

gPROMS FuelCell multi-scale predictive models provide engineers and scientists with all the power of the gPROMS platform. The multi-scale predictive models are validated against experimental data then applied within a simulation, optimisation and global system analysis framework to explore the multi-dimensional decision space.

The result is accelerated development, better cell and system design, reduced technology risk, and better integrated R&D experimentation and engineering design.



Advanced Digital Process Twins

A Siemens Business

pseenterprise.com

Operations in UK, USA, Japan, Korea, UAE, China, Taiwan and Thailand.

Head Office
t: +44 20 8563 0888
e: info@pseenterprise.com

gFUELCELL – a single solution for stack and system design

Data-based validation of MEA

- Determine optimal materials for applications of interest
- Validate cell model to predict behaviour of different cell designs using data
- Characterise performance of catalysts and membranes

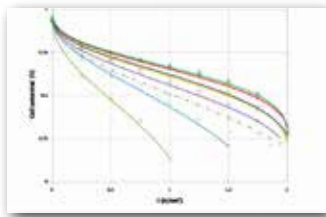
Detailed stack design

- Removes the need to model micro-scale phenomena with Fluent mesh
- Higher confidence in prediction and faster simulation time
- Couple the validated MEA model with a complex model of the flow field and GDLs in ANSYS Fluent

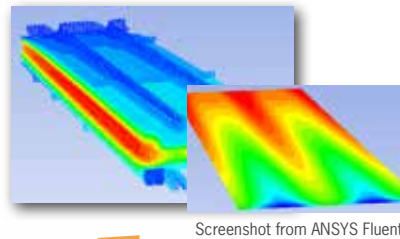
Benefits

- Getting maximum information from experimental data
- Quantified design decisions
- Optimal stack design and system configuration
- Reduced technology risk
- Confidence in safe, durable stack operation
- Faster time-to-market
- Strong usability

DATA PROCESSING

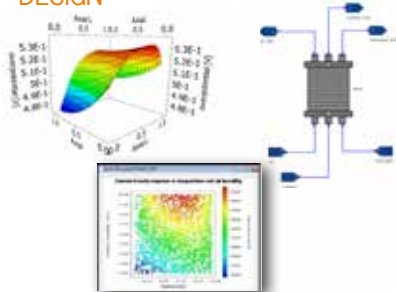


INTEGRATION

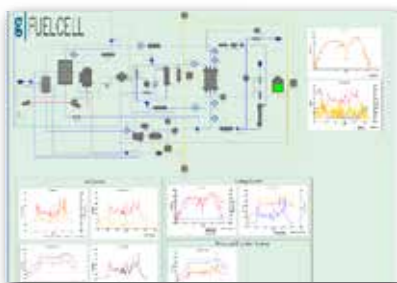


g|FUELCELL

DESIGN



OPTIMISATION



Stack performance design

- Use the validated MEA models embedded within high-fidelity first-principles models
- Analyse transient behaviour of the stack to design water management strategy
- Explore the decision space with the Global System Analysis tool
- Use the Optimisation tool to improve design (eg. minimise catalyst loading while meeting performance requirements)

Whole system design and optimisation

- Design full system with pressure driven model to help design control strategies
- Study system response to various disturbances in model inputs
- Simulate performance for standard drive-cycles or for special operations such as start-up and shut-down
- Implement hierarchical control strategies with the signal libraries

Find out how PSE can help you optimise stack and system design

pseenterprise.com