

300 kW – 50 bar PEM short-stack electrolyzer test bench

Stand-alone testing solutions



The test bench is designed to test pressurized short-stack PEM electrolyzers, rated up to 300 kW, mainly for R&D, laboratory work and long-duration testing. The bench runs on ultrapure demineralized water in symmetric or asymmetric mode, with electrolyte recirculation and operating pressures up to 50 barg. Gas flow, cross-leak and the differential pressure between anode and cathode are measured and controlled.

THE SYSTEM

The test bench is designed for R&D and laboratory use, for long-duration tests on short-stack PEM electrolyzers of up to 300 kW. It runs on demineralized water, with recirculation from 1 to 300 l/min and pressures up to 50 barg.

The system can perform impedance analyses on up to 25 cells operating simultaneously at maximum power.

MAIN FEATURES

The system performs a range of tests on short-stack PEM electrolyzers, both on single cells and on the full stack.

- > Leak test on the stack
- > Constant current / constant voltage
- > Polarization curves
- > EIS on single cells and on the full stack
- > Product gas flow measurement
- > Cross-leak measurement

TECHNICAL SPECIFICATIONS

- > Electrolyte flow 0 – 300 l/min
- > Operating pressure 0 – 50 barg
- > Adjustable anode/cathode ΔP balancing
- > Temperature 20 – 90 °C
- > Voltage 0 – 80 V
- > Current 0 – 10,000 A
- > Gas flow O₂ 0 – 32 kg/h, H₂ 0 – 4 kg/h
- > H₂/O₂ cross-leak 0 – 20% LEL



1. Test chamber



2. Test bench

THE SOFTWARE

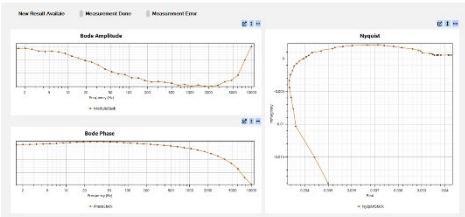
The software is based on Loccioni's Aulos platform and suite and consists of two subsystems: **Aulos Automation**, a desktop monitoring application that includes the HMI for controlling the hardware and running routines, and **Aulos Supervisor**, a web-based server where users can create test plans in a user-friendly way by dragging and dropping instructions, and access the data generated by the system to compare tests and overlay the results of several runs.



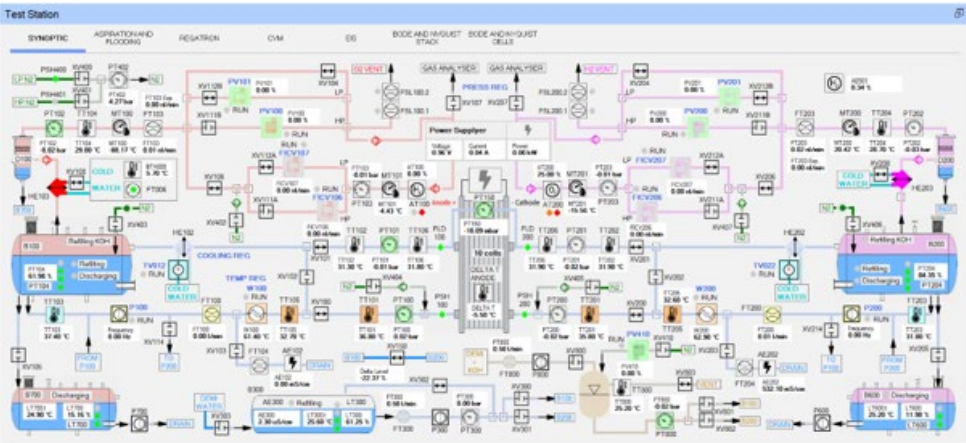
3. Automatic panel

Application features:

- > User Access Configuration
- > Hardware Monitoring and Calibration
- > Manual Debug
- > Dashboard
- > Program Editor
- > Program Execution
- > Automatic Cycling
- > Results Analysis
- > Health Analysis
- > Data Maintenance Tool



4. EIS panel



5. Synoptic view

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