

Fuel Cell MEA Test Bench

Stand-alone testing solutions



At the end of the production process, this rig tests the functionality of each individual MEA before it is assembled into a stack. The bench runs these tests with H₂ and air, simulating real operating conditions. Reactant pressure, humidity and temperature are also controlled.

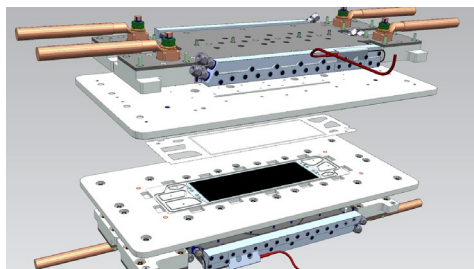
THE SYSTEM

The test bench is designed for both laboratory use and production-line auditing, and assesses the quality of the entire MEA production process.

It therefore also includes an automatic loading/unloading system and an advanced automation system.

The system is flexible: a fixture-changing system lets it process different product types.

- > Automatic loading/unloading
- > Fast changeover
- > Fast bipolar plate fixturing



1. Fixture design

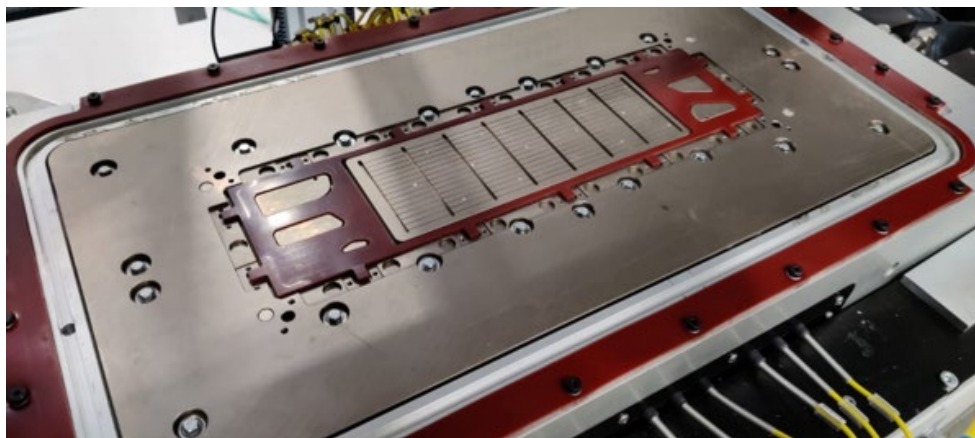
MAIN FEATURES

The system runs a range of tests on the MEA, both for in-depth performance analysis and for rapid detection of manufacturing defects.

- > Hydrogen leak test
- > Electrical functional test
- > Impedance spectroscopy (EIS)
- > Temperature uniformity analysis
- > CO poisoning analysis

TECHNICAL SPECIFICATIONS

- > Anode Flow Range 0.01 – 20 l/min
- > Cathode Flow Range 0.01 – 30 l/min
- > Controlled Gas Inlet Pressure 1 – 5 bara
- > Backpressure Control 1 – 5 bara
- > Humidity Control 25 – 90% RH
- > Gas Temperature Control 25 – 150 °C
- > BP Temperature Control 25 – 100 °C
- > Voltage 0 – 1.2 V
- > Current 0 – 1,300 A
- > MEA Contact Pressure 5 – 25 bar



2. Press

THE SOFTWARE

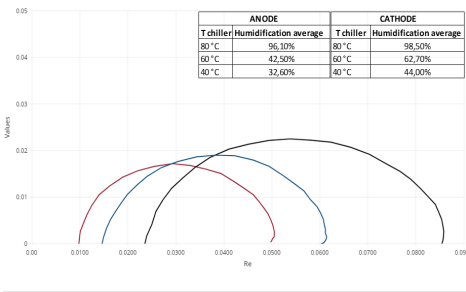
The software runs on Loccioni's Aulos platform, a suite of two main applications: **Aulos Automation**, a desktop monitoring application with the HMI for controlling the hardware and running routines; and **Aulos Supervisor**, which collects data and results from the systems and creates their programs and configurations.



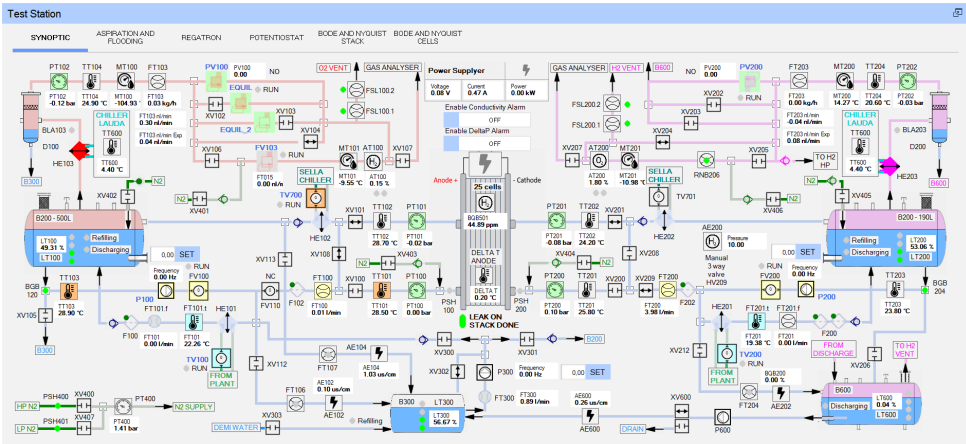
3. Automatic panel

Application features:

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



4. EIS analysis



5. Synoptic view

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