



670 ELECTROLYSIS WORKSTATION

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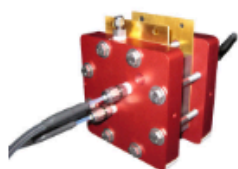
The 670 Electrolysis Workstation is a turn-key, customizable platform that can accommodate both liquid and gas on one or both of the electrodes. It boasts a multi-range, high current (± 20 Amp) potentiostat for high accuracy over a broad range of reaction rates and cell sizes. Included in the system is the powerful, user friendly FlowCell® software for system operation and experimentation. Perfect for investigating a wide range of Electrolysis processes.

The 670 was designed and built to be chemistry agnostic. It works with a broad of a range of chemistries as possible: Acids, bases, water-based solutions or organic-based solutions, and a wide range of gases.

Broad Range of Application Areas

General Purpose Electrolysis and CO₂ Reduction

OPTIONS



Cell Fixture



Pt-Ti Flow Field



Back Pressure



892 Data Expansion Unit

FEATURES

- ▶ 670 Controller with 20A/5V Potentionstat plus Impedance Analyzer for EIS & HFR
- ▶ Flow Bench with heated reservoirs, pumps, purge, and taps for product sampling
- ▶ Mass Flow Control of Dry or Humidified Gases

Processes Power-to-Fuels

- ▶ CO₂ reduction
- ▶ Low temperature CO / Syngas Production
- ▶ Organic Electrosynthesis
- ▶ Electrochemical Ammonia Synthesis
- ▶ Electrochemistry-based Chemical Manufacturing

Accommodations for Liquid & Gas

- ▶ Inert carrier gas (e.g., N₂) or a reactant (e.g., CO₂)
- ▶ Integrated Gas Selector for automatic switching between up to three (3) gases on both channels (e.g., CO₂ and N₂)
- ▶ Two (2) Precision Peristaltic Pumps for liquid feed control
- ▶ Each channel is independently controlled
- ▶ Provisions for in-line sensors for product monitoring, ion selective probes and/or pH, using the 892 for data integration and control / alarm conditions

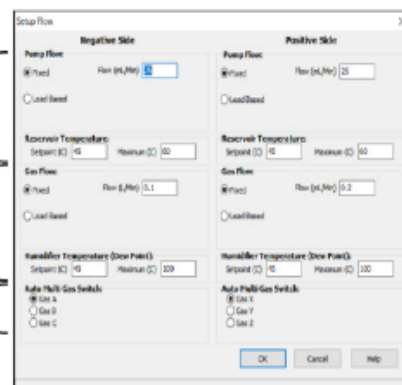
Advanced Diagnostics

- Voltage & Current Control Modes - Constant, Scanning, Step-Stair
- Electrochemical Impedance Spectroscopy (EIS) plus internal resistance by High Frequency Resistance (HFR) with Integrated 881 FRA
- Whole cell, half-cell and IR-Free Voltage

Liquid Flow Rate and Reservoir Temperature

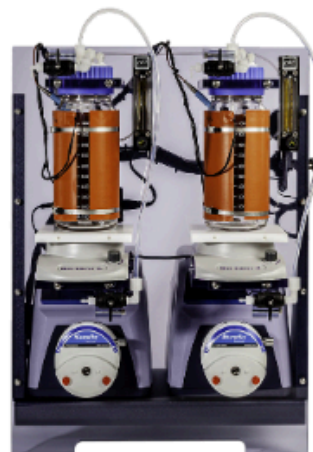
Gas Flow Rate & Humidifier Temperature (Dew Point)

Inlet Gas Selector-Switch Between 1 of 3 Feed Gases on Each Channel



Flow Bench

- Separation of gas and liquid
- Blanket of inert purge gas for liquid reservoirs
- Independent control of temperature & flow rate on each liquid channel
- Taps for product sampling
- Single pass or recirculating modes
- Wetted materials selected for chemical compatibility across a broad range of environments – acids, bases, oxidizing/reducing, aqueous and non-aqueous (organic) solvents
- Optional pressurized operation to 1.5 bar_g



Description of Image to right:

The 670 Flow Bench supports (a) two liquids with pumps (variable flow rate; CW and CCW operation), (b) two gases with MFCs (dry or humidified), (c) Source Gas Selector (up to 3 different gases for each side), (d) tap-offs for gas sampling, (e) Inert gas purge of reservoir headspace and cell, (f) check-valves to prevent back-flow (not shown), (g) additional monitoring (pressure, in-line sensors, product gas flow rate, etc.), (h) elevated pressure operation to 2.5 bar_{abs} (1.5 bar_g), (i) recirculating or single-pass operating modes, (j) wetted materials are compatible with very broad range of environments (all non-metallic, borosilicate glass, PFA, Teflon, Viton, PVDF), (k) temperature-controlled reservoir/liquid and cell.

