

Key Features

- Full integrated, standalone system for testing of alkaline water electrolysis
- Fully re-circulating electrolyte system
- Programmable for automatic, unmanned test operation (in addition to manual operation)
- Integrated, software-controlled power supply
- Thermostatically controlled electrolyte heater
- Programmable test regimes
- Full sensing and data acquisition system for voltage, current, temperature and cell compression
- CSV output data for interoperability and ease of use
- H₂ and O₂ product gas separation, N₂ dilution and expulsion
- N₂ cell compression with pressure control available
- Optional single and multi-cell test fixtures available
- Multiple safety features: N₂ stack safety purge, product gas dilution, E-Stop, shutdown on over voltage, over current, over temperature, low electrolyte level and low N₂ pressure

ElectroFlow™ ETS20

Multi-cell Electrolyser Test Station

The **ElectroFlow ETS20 Multi-cell Electrolyser Test Station** is a turn-key solution for laboratory R&D testing and analysis of electrolyser cells.

A fully integrated system, the ElectroFlow ETS20 provides the control, measurement and data acquisition required for evaluation and comparison of cell performance.

Available with an optional multi-cell test fixture, the ElectroFlow ETS20 enables evaluation of key cell components, such as membranes, electrodes and coatings, operating under controlled conditions.

The ElectroFlow ETS20 is also ideal for gaining familiarity with the operating principles of electrolyser systems, as well as methods for testing and analysis of electrolyser cells and components.



ElectroFlow ETS20 Specifications

System Details:

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|-----------------------------|---|
| Type | Alkaline water |
| Electrolyte | Potassium hydroxide [KOH], up to 30% (not supplied) |
| Operating pressure | Atmospheric |
| Operating temperature | Up to 95°C (203F) |
| Electrolyte heater | Thermostatically controlled |
| Electrolyte path | Re-circulating |
| Electrolyte reservoir | 5L with automatic top-up |
| Electrolyte flow rate | Integrated digital pump control (max 3 L/min) and flow meter |
| Product gas handling | Condensate separation, N ₂ dilution prior to expulsion |
| Cell compression (optional) | N ₂ based, up to 5 bar _g |
| Control software | Windows 10 or 11 compatible PC (not included) |

Test and Measurement:

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|---------------------------|---|
| Power supply | Integrated, software controlled |
| Current range | 0-20A, controlled to ± 0.01A |
| Voltage range | 0-40V, controlled to ± 0.01V |
| Test regimes | Step/sweep and constant current/voltage |
| Data acquisition | Current, voltage, temperature, cell compression and time. |
| Cell voltage measurement | 5 voltages: ± 0.01V |
| Total current measurement | ± 0.01A |
| Temperature measurement | Stack input and stack outlet, K-Type thermocouple |
| Data format | CSV |

Safety Features:

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|---|-----------|
| N ₂ purge (electrolyte reservoir and test fixture) | Yes |
| N ₂ dilution of Anode & Cathode Product Gases | Automatic |
| E-Stop Shutdown | Yes |
| Electrolyte Level Low Shutdown | Automatic |
| H ₂ Gas Detector Shutdown | Automatic |
| Over Voltage/Current Shutdown | Automatic |
| Over Temperature Shutdown | Automatic |
| N ₂ Pressure Low Shutdown | Automatic |

Interfaces:

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|------------------------------------|--|
| Control (to external PC) | USB |
| Test cell electrical supply | 4mm banana socket (female) |
| Electrolyte inlet and outlets | 1/4" double ferrule compression fitting (female) |
| Cell compression (N ₂) | 8mm pneumatic push fitting (female) |
| Stack & cell voltage measurement | 4mm banana socket (female) |

Physical and Environmental:

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|--|--|
| Dimensions | 1010 x 600 x 1690 mm (39.7 x 23.6 x 66.5 in.) (W x D x H) |
| Rear clearance for N ₂ and cooling water supply | >= 200mm |
| Weight | 85kg (187.3 lb) |
| Operating temperature range | 5-30°C (41-86F) |
| External power supply | 220-240V AC, 50/60 Hz |
| N ₂ supply | 5 bar _g recommended, 8 bar _g maximum |
| Cooling water supply | Flow rate >3L/min, temperature <10°C |

Options:

| | |
|------------------------------------|---|
| Single cell stack | 4.9cm ² active area cell 15.9cm ² active area per cell |
| Additional cell | 4.9cm ² active area cell 15.9cm ² active area cell |
| Cell voltage measurement expansion | Required for > 5 cell voltage measurements |
| Customisations available | Please call |

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V04-02-24