EVALUATOR ES

Electrolyzer Stack Testing

EMISSIONS

ELECTRIFICATION

CAV

DATA

- Electrolyzer stacks testing
- Up to 5 MW power range
- Water or alcaline electrolyte (option) supply with recirculation and temperature adjustment
- Level controled water knock out with automated gas / liquid separation
- Several pressure controll modes up to 100 bar
- Fully automated for safe, reliable, unattended operation

HORIBA Automotive

EVALUATOR ES

The HORIBA FuelCon electrolyzer test station of the Evaluator ES line allows automated testing of electrolyzer single cells and short stacks in the range up to 5 MW. The electric system consists of the powerful TrueData X-HVT high voltage technology including outstanding features like IGBT technology with extremely low noise design, safety features for fulfillment of performance level “d” and data acquisition with highest accuracy and reproducibility.

The operator can simulate fully automatic several working conditions like stationary operating points, polarization curves or the reproduction of typical intermittent power sources like solar panels or wind energy with the flexible TestWork software. The process part has several fully automated pressurization modes (by nitrogen or other inert gases or by product gases). Anode and cathode are supplied with pressurized DI water supply with high precision pumps including liquid flow meter, conductivity and temperature control. The supply can be realized in a recirculation or a direct mode.

The design ensures reliable water flow to the cell, keeping pressure and temperature constant during operation. The pressure of the liquid circuits can be adjusted automatically according to the gas pressures to avoid mechanical stress on the electrolyzer stack. The proprietary water knock out system includes automatic level control to avoid pressure drops and reliable separation of gas and liquid phases. As an option, the anode feed can be switched between DI water or alcaline electrolyte supply.

Further options are electrochemical characterization like impedance spectroscopy or signal cell voltage monitoring up to 700 cells. Various safety features ensure safety of the operator and of the test facility at all time.

GENERAL FACTS	
MAXIMUM GAS TEMPRATURE	100 °C (212 °F)
BACK PRESSURE CONTROL RANGE	50 bar/725 psi (standard) optionally up to 100 bar/1,450 psi
THERMAL MANAGEMENT	Independent loops and control for anode and cathode recirculation and test item
EXHAUST TREATMENT	Powerful gas / liquid separation; exhaust flow metering
GAS ANALYSIS (OPTION)	Hydrogen, oxygen
DATA LOGGING	SQL data base

SAFETY	
CE CONFORMITY MARKING (ACCORDING TO)	EMC directive 2014/30/EC Low voltage directive 2014/35/EC ATEX directive 2014/34/EC General product safety directive 2001/95/EC Machinery directive 2006/42/EC Pressure equipment directive 2014/68/EC
RISK ASSESSMENT	DIN EN ISO 13849 DIN EN ISO 12100

ELECTRICAL SPECIFICATION	
POWER RANGE	Up to 5 MW with TrueData X-HVT technology
POWER SUPPLY	Up to 1,000 A/1,000 V
ELECTROCHEMICAL CHARACTERIZATION (OPTION)	Impedance analysis TrueData-CYV (cyclic voltammetry)

OPTIONS
Water balance measuring system
H_2 input line on cathode for TrueData-CYV operation
Pre-pressurization of cell / stack by high-pressure
Nitrogen gas input line

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