

EVALUATOR BOP

Balance-of-Plant



EMISSIONS



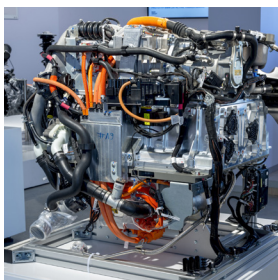
ELECTRIFICATION



CAV



DATA



- Anode and cathode fuel cell system component testing
- Dynamic and static applications
- Usage of approved engineering hardware from stack and system test stations
- Performance and quality control
- Customized test system design
- Automated test programs with sequences and scripts
- Fully automated for safe, reliable and unattended operation

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Automotive

EVALUATOR BOP

The development of powerful, efficient fuel cell systems for propulsion applications is a major issue of today's R&D. Besides the test of entire stacks and systems, the validation and qualification of single components is getting more important. HORIBA FuelCon's Evaluator BOP is tailored perfectly to those needs and enables complex testing of balance of plant components for anode and cathode applications with high dynamic operation.

The test station therefore acts as sophisticated system that allows the validation for complete, partial or single components with a total system output higher than 200 kW. Especially recirculation fans, intercoolers, humidifiers, compressors, throttles or vehicle cooling systems can be qualified under „fuel cell conditions“ that simulate real operating scenarios.

Furthermore the Evaluator BOP comes along with an extended equipment of safety features for a reliable test operation and can also be combined with additional components like climate chambers or shakers.

ANODE BOP	
TANK SIMULATION	Inlet pressure regulation, control of test item valves
STACK SIMULATION	Pressure, flow, temperature, humidity of anode exhaust, pressure drop via fuel cell
DEAD-END	Recirculation fan control, control of purge valves

ENVIRONMENTAL SIMULATION	
ULTRA-LOW TEMPERATURE	Conditioning (Gas, intercooler) Temperature: -40 up to 120 °C
ENVIRONMENTAL SIMULATION	Thermal or climate chamber

GENERAL FEATURES	
ONBOARD POWER SIMULATION	Electronic load, performance on customer's request
CAN INTERFACE	Residual bus simulation (RBS) Hardware-in-the-Loop (HiL) Port for external devices Communication with FCMS
STACK SIMULATION	Flow, pressure, temperature and humidity of fuel cell stack or other BoP components inside anode or cathode fuel cell system
VEHICLE COOLING SYSTEM	Cooling circuit for vehicle electronics, intercooler, test item, system components
AUTOMATION SYSTEM	Unattended 24/7 operation Scripts and sequences Sampling rates up to 1 ms
DATA LOGGING	Electrical and process engineering data up to 1 ms
SYSTEM PERIPHERY	Valve control, throttle etc.

CATHODE BOP	
TEST OF AIR SYSTEM COMPONENTS	Compressor Intercooler Membrane humidifier
POWER SUPPLY	Highly dynamic for electric turbo chargers or compressors up to 50 kW Frequency converter optional Vehicle energy system simulation
STACK SIMULATION	Pressure, flow, temperature, humidity of cathode exhaust, pressure drop via fuel cell

PERFORMANCE RANGE	
FLOW	Anode: up to 4,000 NL/min Cathode: up to 10,000 NL/min
HUMIDITY	Up to 90 °C dew point
PRESSURE (STANDARD)	Fuel cell system: 0 up to 6 bar(a) Periphery: customized
TEMPERATURE	Environment up to 200 °C, optional ultra-low temperature

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

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