Fuel Cell Special Radiator

High-efficiency radiator for fuel-cell vehicle cooling circuits

A fuel-cell radiator built for the coolant quality that stacks require. The circuit keeps impurities below 100 µm and conductivity under 5 µs/cm, sealed with nitrogen above 0.6 MPa, and uses vacuum-brazed aluminium plate-fin technology with a flux-free welding process.



Fuel-cell coolant quality

No impurities above 100 µm and conductivity below 5 µs/cm, meeting stack cooling requirements.

Nitrogen sealed

Nitrogen sealed above 0.6 MPa against corrosion and contamination before installation.

Vacuum-brazed plate-fin

Aluminium plate-fin, flux-free brazing — no flux residue enters the coolant loop.

Corrosion-resistant material

Core in corrosion-resistant 3003 or 5-series aluminium.

Winter–summer mode with CAN bus

Adjusts to the seasonal ambient temperature, cutting power consumption. CAN bus with HMI.

Model selection

Parameter	ATS-R50	ATS-R80
Applicable vehicle	Fuel cell vehicle	Fuel cell vehicle
Matched power range	50 kW	80 kW
Standard heat dissipation	55 – 75 kW	110 kW
Conductivity	≤ 5 µs/cm	≤ 5 µs/cm
Typical dimension (L×W×H)	1200 × 900 × 243 mm	1800 × 950 × 400 mm
Voltage	24 V	24 V
Single fan power	500 W	500 W

Customised designs are available based on actual vehicle configuration parameters.

Position in the cooling loop

Stack outlet

Hot coolant leaves the fuel-cell stack at the temperature set by the stack reaction and the current operating point.

Radiator

The radiator rejects that heat to ambient air. In a fuel-cell vehicle the circuit also carries the balance-of-plant components.

Winter–summer control

The fan and pump output are modulated to the regional seasonal ambient temperature rather than running continuously at full capacity.

Specification and application notes

Product description

Fuel-cell vehicles need more than an engine radiator. The stack and its balance-of-plant components must be cooled with a clean circuit — the coolant that leaves the stack carries products of the reaction, and any corrosion or contamination in the loop shortens stack life. This radiator is designed for that duty: a low-conductivity, particle-free circuit that is nitrogen sealed from the factory, a plate-fin core that resists the coolant chemistry, and a control strategy that follows the season.

Cooling circuit requirements

Impurity size	No impurities larger than 100 μm
Conductivity	≤ 5 μs/cm
Sealing	Nitrogen, above 0.6 MPa
Cooling medium	Fuel-cell coolant
Core technology	Vacuum-brazed aluminium plate-fin
Welding process	Flux-free

Construction and control

Radiator material	Corrosion-resistant 3003 or 5-series aluminium
Fans	500 W single fan
Supply voltage	24 V
Operating mode	Winter–summer automatic
Network	CAN bus, seamless connection
Interface	Human-machine interface for barrier-free comms

Application and selection

Fuel-cell vehicles

Both models are intended for fuel-cell vehicle installation, covering passenger cars up to heavy-duty applications.

Matched to stack power

ATS-R50 covers a matched power range of 50 kW with 55–75 kW heat dissipation; ATS-R80 covers 80 kW with 110 kW dissipation.

Seasonal control

Winter–summer mode adjusts to the regional seasonal ambient temperature, cutting vehicle power consumption and extending range.

Clean circuit from factory

Nitrogen sealing above 0.6 MPa and a flux-free brazing process keep the coolant clean from the moment the radiator leaves the factory.

Integration with the cooling circuit

Circulation pump

A seal-less coolant pump such as the EPH series moves the coolant through the radiator without adding a leak point to the circuit.

Conductivity sensor

An inline conductivity sensor confirms the coolant stays below the 5 μs/cm limit that the fuel-cell stack requires.

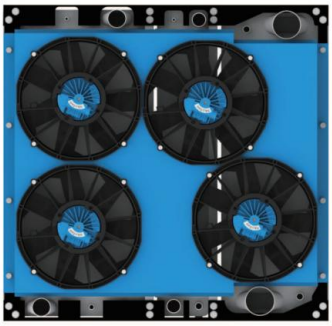
Expansion tank

The expansion tank accommodates the coolant volume change across the full temperature range, including the winter–summer switching.

Particulate filter

A particulate filter in the return line keeps the circuit free of the impurities that would otherwise foul the radiator core.







Note

Heat dissipation figures are the standard values at the stated conditions. Mounting layout, fan arrangement and coolant type are confirmed against the vehicle configuration on request. together with the matching model number.