

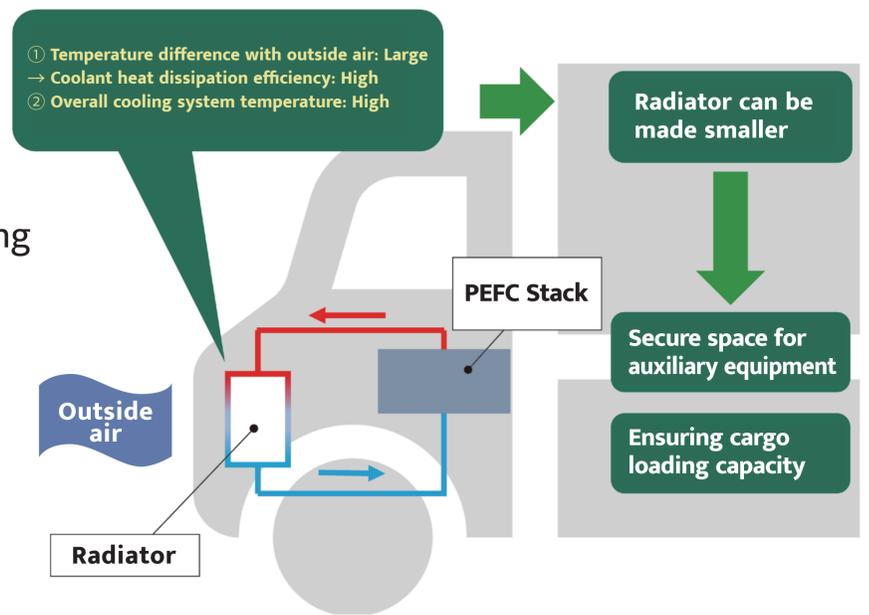
# High-temperature power generation test of fuel cell stack for HDV

Increasing the operating temperature of polymer electrolyte fuel cells (PEFCs) is becoming increasingly important. KRI has conducted an operational evaluation test of a PEFC stack at 120°C.

## Circumstance/Assignment

### PEFC expansion to HDV

- PEFCs installed in HDVs require a compact system (PEFC stack, secondary battery, and cooling system). Focusing on the cooling system, the higher the PEFC cooling water temperature, the greater the difference with the outside air temperature, allowing for a smaller radiator.
- Therefore, PEFCs require a higher operating temperature, and development is underway to achieve 120°C by 2040.
- As stack manufacturers continue to develop, PEFC stack testing at an operating temperature of 120°C is required.



## Features of the 120°C operation evaluation test

It is possible to circulate cooling water (pure water) stably at a high temperature of 120°C.

- Feature 1  
Programmable automatic operation allows for evaluations while varying load and other parameters.
- Feature 2  
Performance of evaluations requiring long-term operation, such as durability evaluations, is also possible.
- Feature 3  
The safety shutdown function shuts down the equipment while protecting the test specimen if an abnormality is detected.

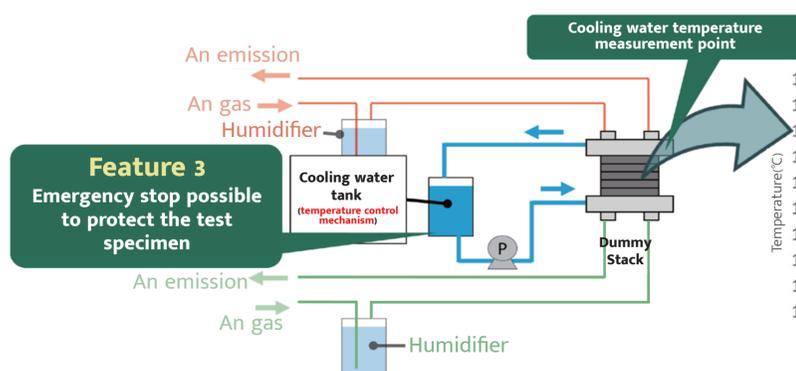
**Feature 1**  
Automatic operation by program allows parameter changes

Items	Device Specifications
Current	~600A
Gas Type	H <sub>2</sub> , Air, N <sub>2</sub>
Gas Supply Amount	Anode : ~100L/min Cathode : ~200L/min
Dew Point Temperature	~100°C
Gas Pressure	~250kPaG
Cooling Water Flow Rate	~3L/min
Cooling Water Temperature	~120°C
Cooling Water Pressure	~250kPaG

### Cooling system conditions when checking equipment capacity

Items	Setting value
Cooling Water Flow Rate	2L/min
Cooling Water Temperature	120°C
Cooling Water Pressure	150kPaG

### Test system diagram for confirming equipment capacity



### Coolant temperature results graph

