

# □ IN-HOUSE FUEL CELL STACK

Nissan has independently developed its first in-house fuel cell stack, aimed at improving the practicality of fuel cell stacks designed for vehicle application. The first in-house fuel cell stack is featured on the 2005 model X-TRAIL FCV.

## Features of Nissan's in-house fuel cell stack

### Compact design with high power output.

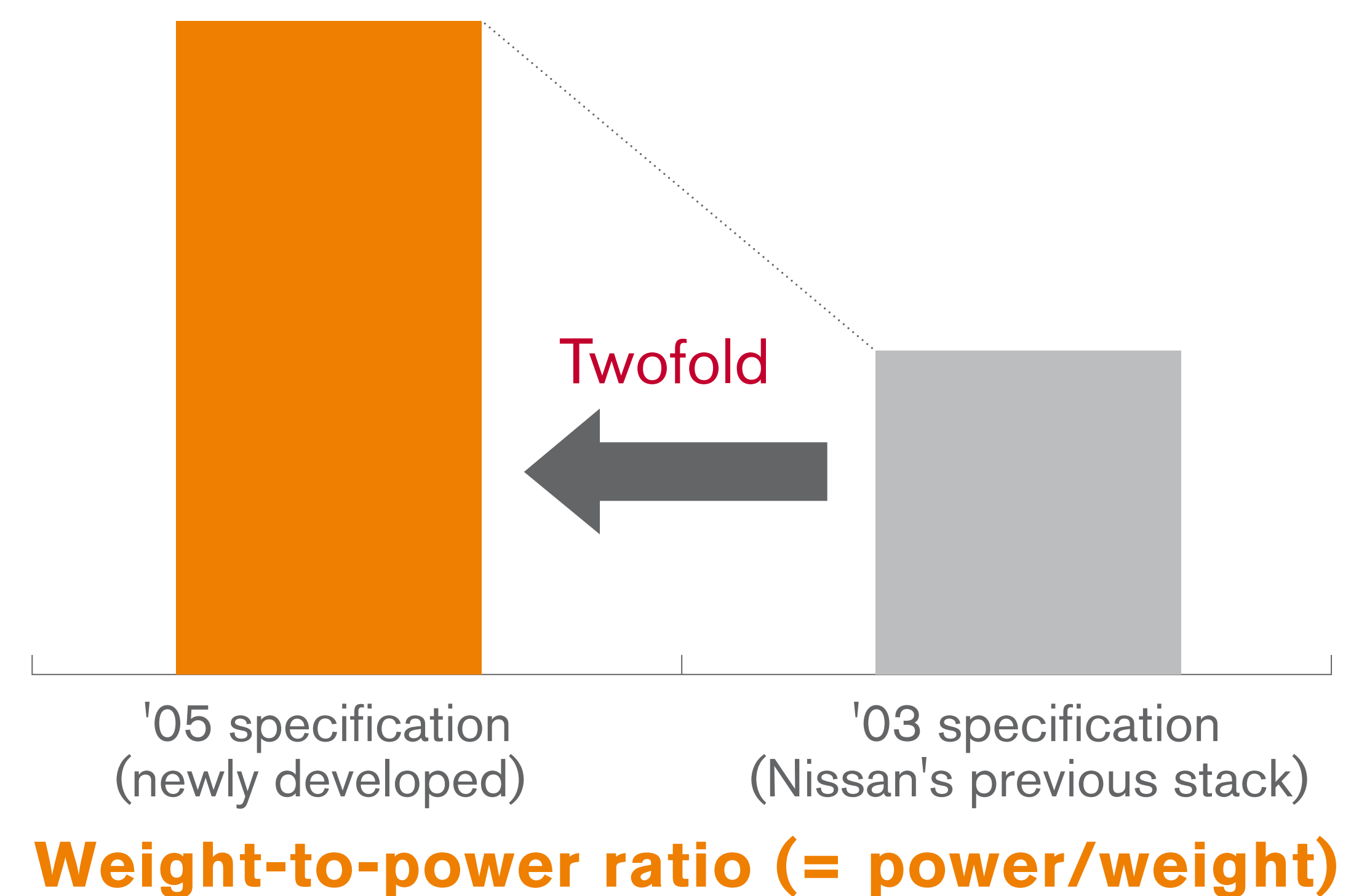
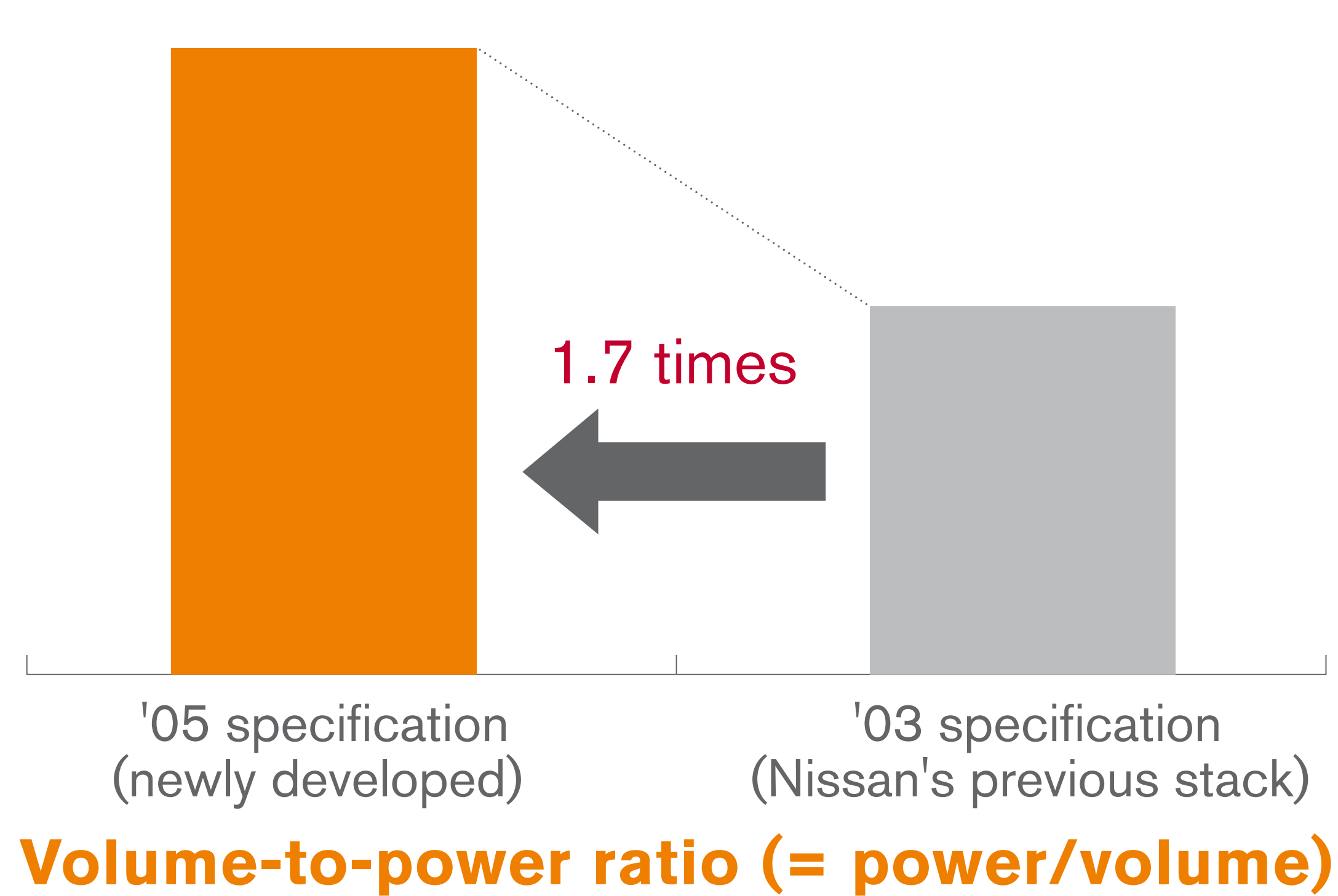
Nissan's fuel cell stack features a newly developed thin separator\*1, a cell pitch\*2 that is 40% narrower than before, integrated parts in the air intake and exhaust systems and a built-in cell voltage monitor, all of which contribute to its smaller size. Thanks to these and other improvements, the stack achieves exceptionally high power output for its volume and weight.

### Long life

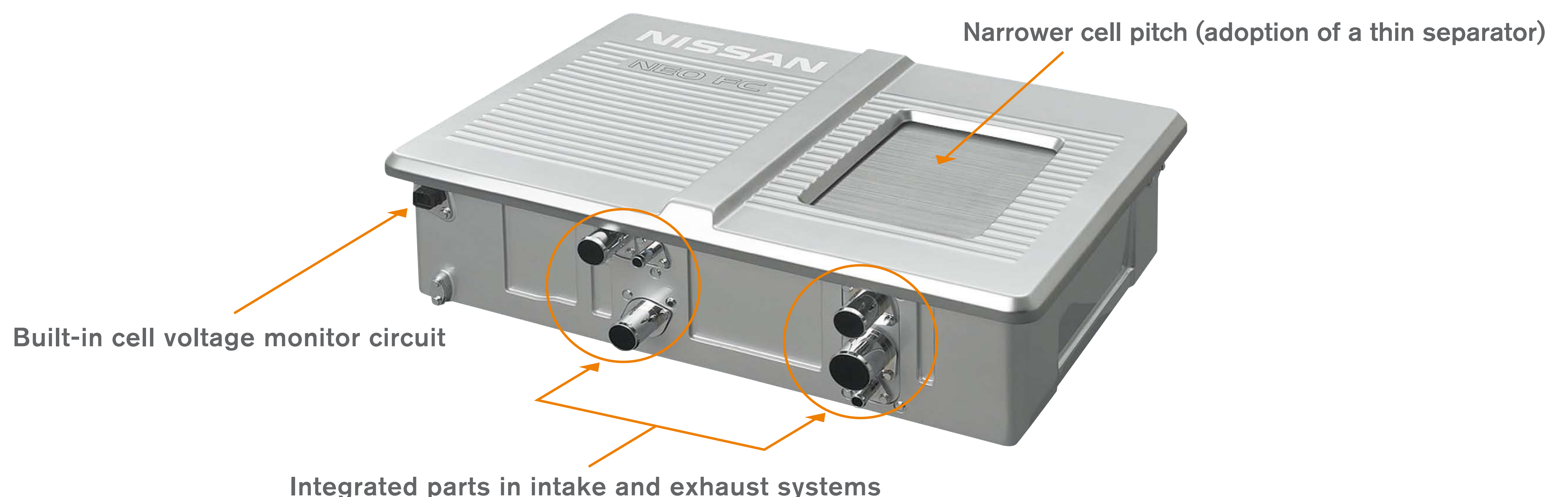
Improvements made to the electrode materials more than double the service life compared with Nissan's previous fuel cell stack.

### Improved drivability

The polymer electrolyte membrane\*3 and gas diffusion layer (GDL)\*4 have been improved to provide quicker start-up and shutdown response, while maintaining the power output characteristic required for vehicle use.



## Fuel cell unit configuration



## Specifications

Type	Polymer electrolyte membrane (PEM) FC
Output	90kW
Other	Waterproof and dustproof specification

\*1 This component separates the hydrogen and oxygen gases supplied to the individual cells and transfers the electricity produced to the next cell.

\*2 Pitch refers to the spacing between adjacent cells that are connected in series. A stack for vehicle application normally uses several hundred cells connected in series to obtain the necessary electrical voltage.

\*3 This ion-exchange membrane made of a polymer material allows hydrogen ions (protons) produced in the cells to pass through the membrane to the other side.

\*4 This porous material diffuses supplied hydrogen and air, and distributes them to the electrode layer homogeneously.