

MIRAI

1 Fuel cell stack

Toyota's first mass-production fuel cell, featuring a compact size and top level output density.

- Type: Polymer electrolyte fuel cell
- Volume power density: 3.1 kW/L (world top level ^{*2})
- Maximum output: 114 kW (155 DIN hp)
- Humidification system: Internal circulation system (humidifier-less; world-first ^{*2})

2 Fuel cell boost converter

A compact, high-efficiency, high-capacity converter newly developed to boost fuel cell stack voltage to 650 V. A boost converter is used to obtain an output with a higher voltage than the input. Number of phases: 4 phases

3 Battery

A nickel-metal hydride battery which stores energy recovered from deceleration, supplemented by energy produced by the fuel cell stack under low load driving conditions, to assist output during acceleration.

4 High-pressure hydrogen tank

Tank storing hydrogen as fuel. The nominal working pressure is a high pressure level of 70 MPa (700 bar).

Nominal working pressure	70 MPa (700 bar)
Tank storage density ^{*1}	5.7 wt% (world top level ^{*2})
Tank internal volume	122.4 L (front tank: 60.0 L / rear tank: 62.4 L)
Hydrogen storage mass	Approx. 5.0 kg

5 Motor

Motor driven by electricity generated by fuel cell stack and/or supplied by battery.

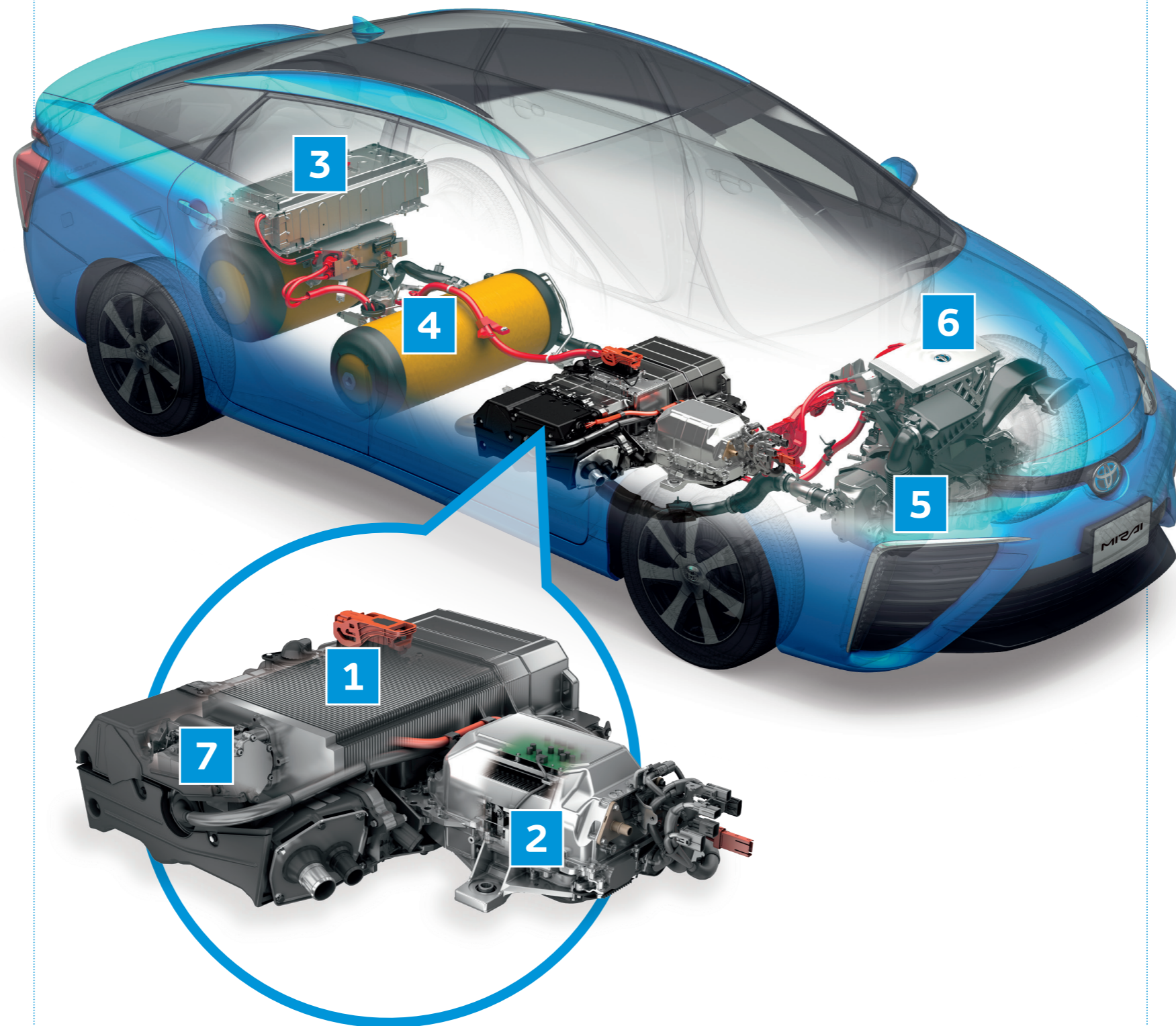
- Maximum output: 113 kW (154 DIN hp)
- Maximum torque: 335 Nm

6 Power control unit

The component that optimally controls both fuel cell stack output under various operational conditions and drive battery charging and discharging.

7 Auxiliary components

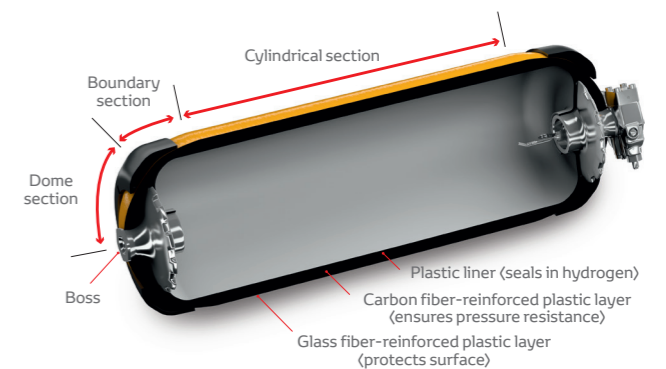
Hydrogen circulating pump, etc.



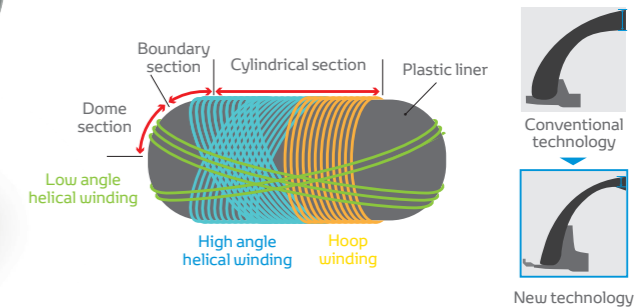
Tank storage density ^{*1}

Lighter weight achieved through innovations of carbon fiber reinforced plastic layer structure.

Tank storage density of 5.7 wt% achieved (world top level ^{*2})



Innovations to the plastic liner configuration and efficient layering pattern resulted in a reduction of approximately 40% in the amount of carbon fiber used.

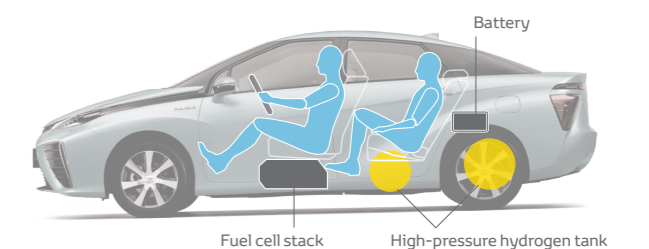


Low centre of gravity

Fuel cell stack, high-pressure hydrogen tanks and other power unit components are placed under vehicle floor.

The lower centre of gravity raises handling stability and produces a comfortable driving experience by reducing body movements.

The front-rear weight balance is adjusted to produce a midship feel despite the front wheel drive design.



^{*1} Hydrogen storage mass per tank weight ^{*2} November 2014, Toyota data