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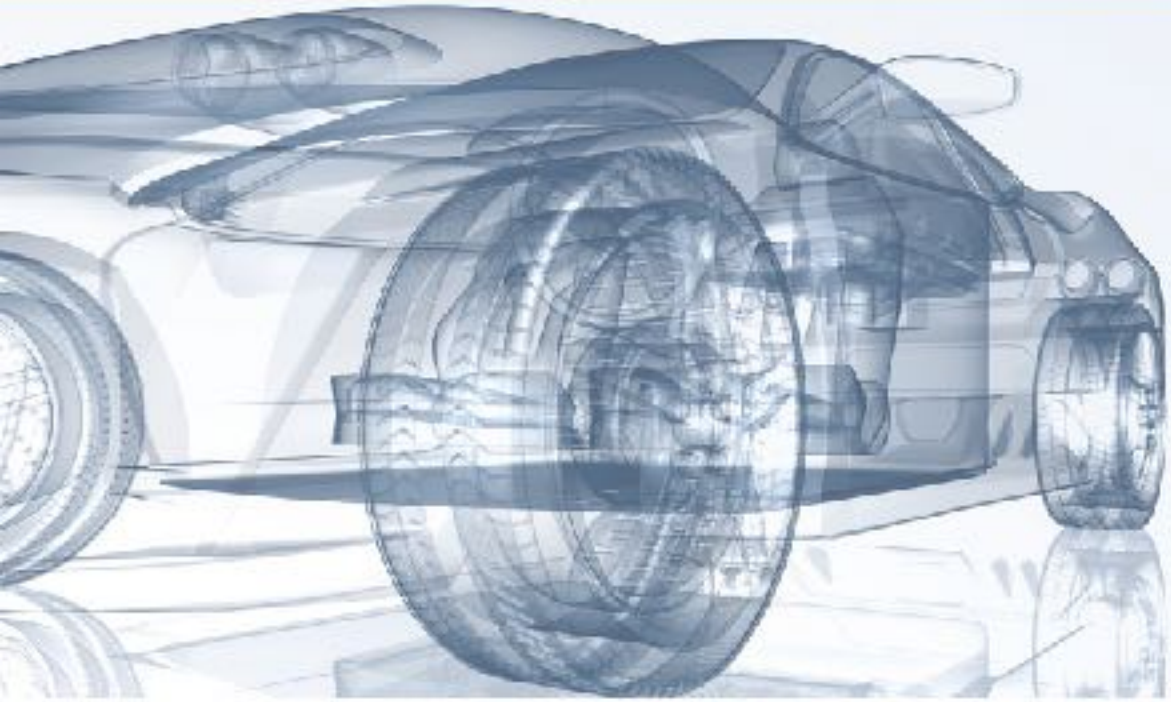

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Daimler‘s Next Generation Fuel Cell Engine

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Agenda

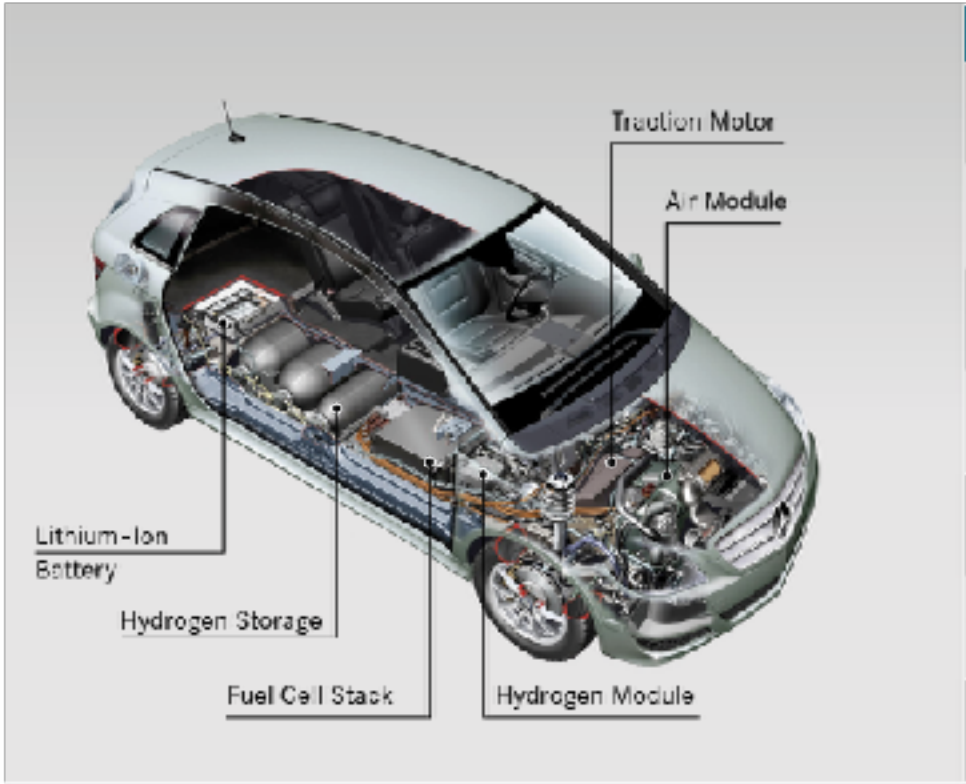
1. Introduction and Daimler‘s Powertrain Strategy
2. B-Class F-CELL as Current Generation of Fuel Cell Vehicles
3. The Fuel Cell gets a Plug!
4. Next Generation Fuel Cell Engine
5. Worldwide Fuel Cell Compentence of Daimler

Daimler is shaping the future of mobility in many aspects. We re-invent the car!

Fuel Cell Technology is an Integral Part of Daimler's Powertrain Strategy

Highly efficient combustion engines	Full- and plug-in-hybrids	Electric vehicles with battery and fuel cell
		
		
A 180 CDI BlueEFFICIENCY 3,5 l/ 100 km, 89 g CO_2/km	S 560 e 2,1 l/100 km, 49 g CO_2/km	GLC F-CELL, 0 l/100 km, 0 g CO_2/km

Current Generation of Fuel Cell Vehicles: Mercedes-Benz B-Class F-CELL

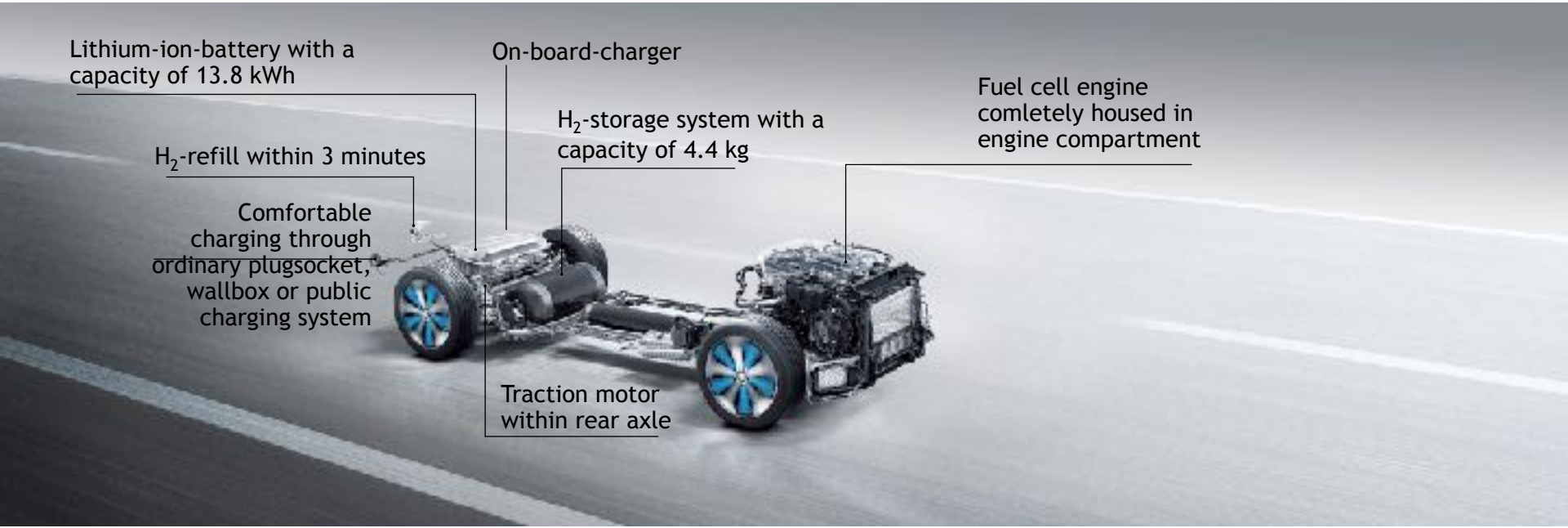


Specification	
Vehicle	Mercedes-Benz B-Class F-CELL
Fuel Cell System	90 kW (122 PS)
Traction Motor	Power (cont./peak): 70 / 100 kW (136 PS)
Range	380 km (NEDC)
Maximum Speed	170 km/h
Acceleration 0 - 100 km/h (0 - 60 mph)	11,4 s
High Voltage Battery (Lithium-Ion)	Power (cont./peak): 24 / 30 kW Capacity: 6,8 Ah, 1,4 kWh

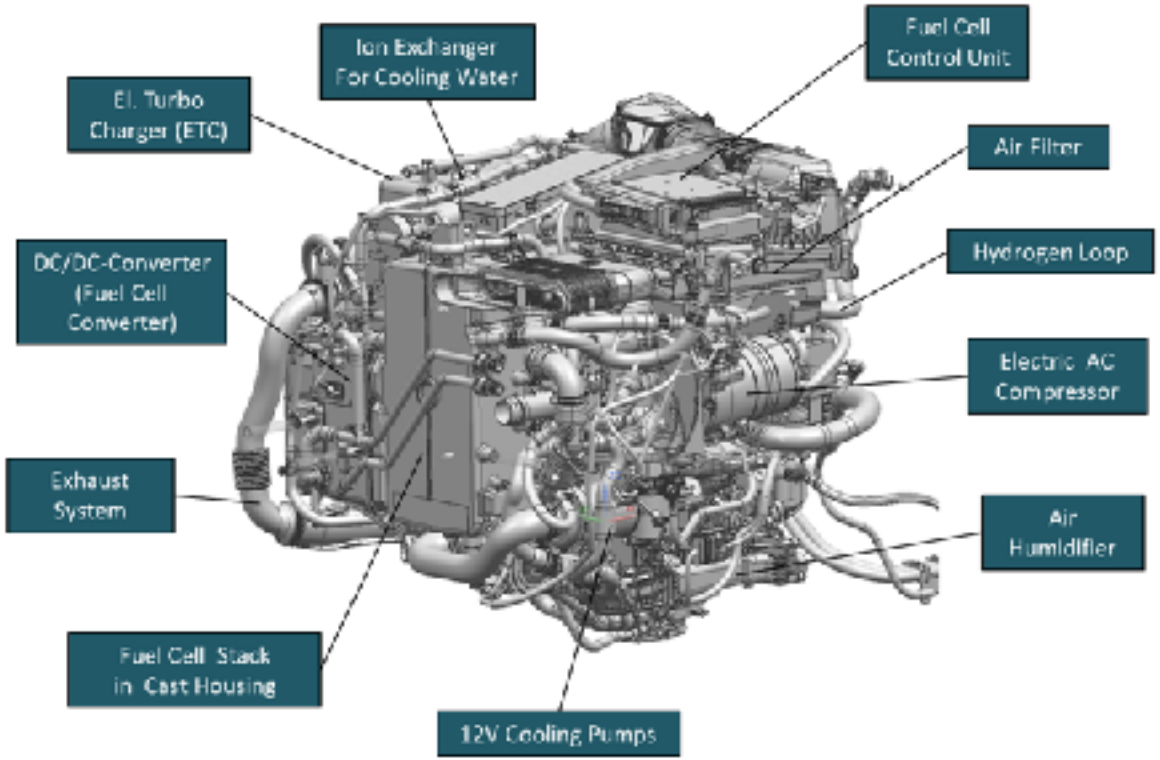
Next Generation Fuel Cell Vehicle: „The Fuel Cell gets a Plug!“

- Increase in range to 437 km on hydrogen and 49 km on HV-battery
- Driving power: 147 kW
- Volume of fuel cell unit: - 30 %
- Reduction of the amount of platinum in the fuel cell stack: - 90 %
- Switch to plug-in-battery in order to satisfy the gradual built up of H_2-infrastructure
- Cost efficient carry-over of various high voltage components from the Mercedes-Benz modular system

Next Generation Fuel Cell Powertrain

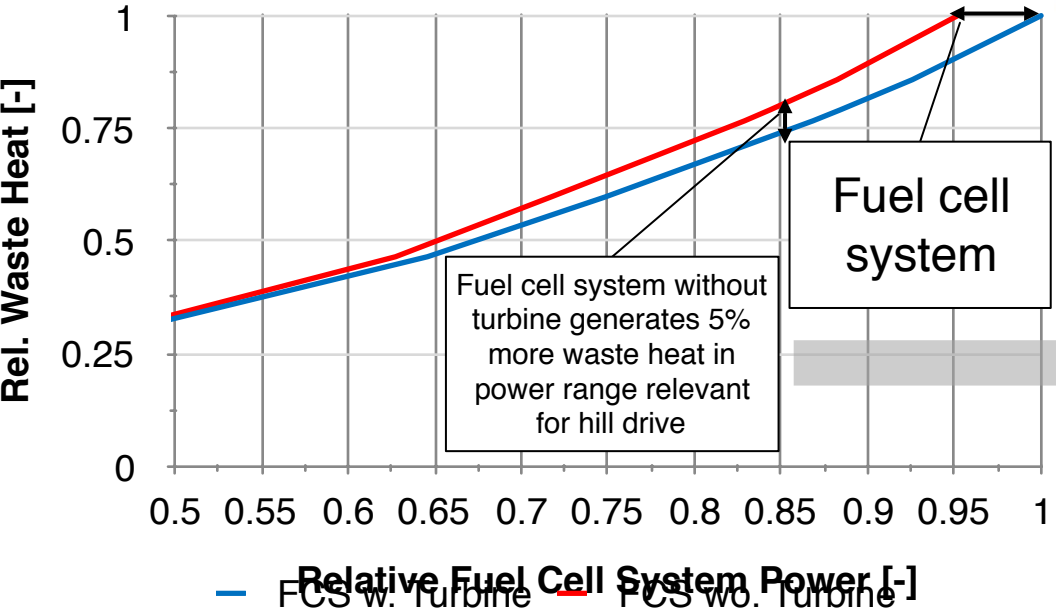


Daimler‘s Next Generation Fuel Cell Engine



- High level of component integration
- Increase in fuel cell stack power density by ~ 100 % compared to B-Class F-CELL
- Introduction of electric turbo-compressor for air supply
- Absolute platinum content in fuel cell stack reduced by 90% compared to B-Class F-CELL
- Increased amount of series-produced carry-over parts (e. g. air filter, coolant pump)

Energy Regeneration by Air Supply Turbine Ends Up in a 15% Saving of Fuel Cell Stack Active Area



Fuel cell system without turbine would need an increase of **5%** in fuel cell stack active area to achieve same max. power

Fuel cell system without turbine would need an increase of **~15%** in fuel cell stack active area to reduce its waste heat at hill climb operating point by 5%.

Turbine energy regeneration reduces electrical load of fuel cell stack and therefore decreases waste heat and increases available fuel cell system maximum power output

Worldwide Fuel Cell Competence of Daimler AG

- Fuel cell stack development at AFCC, Vancouver, Canada
- Fuel cell stack production at MBFC, Vancouver, Canada
- Fuel cell engine and hydrogen storage system are developed by NuCellSys GmbH, Nabern, Germany
- Production of fuel cell engine and hydrogen storage in Daimler plants of Untertürkheim and Mannheim

Thank you for your attention!