



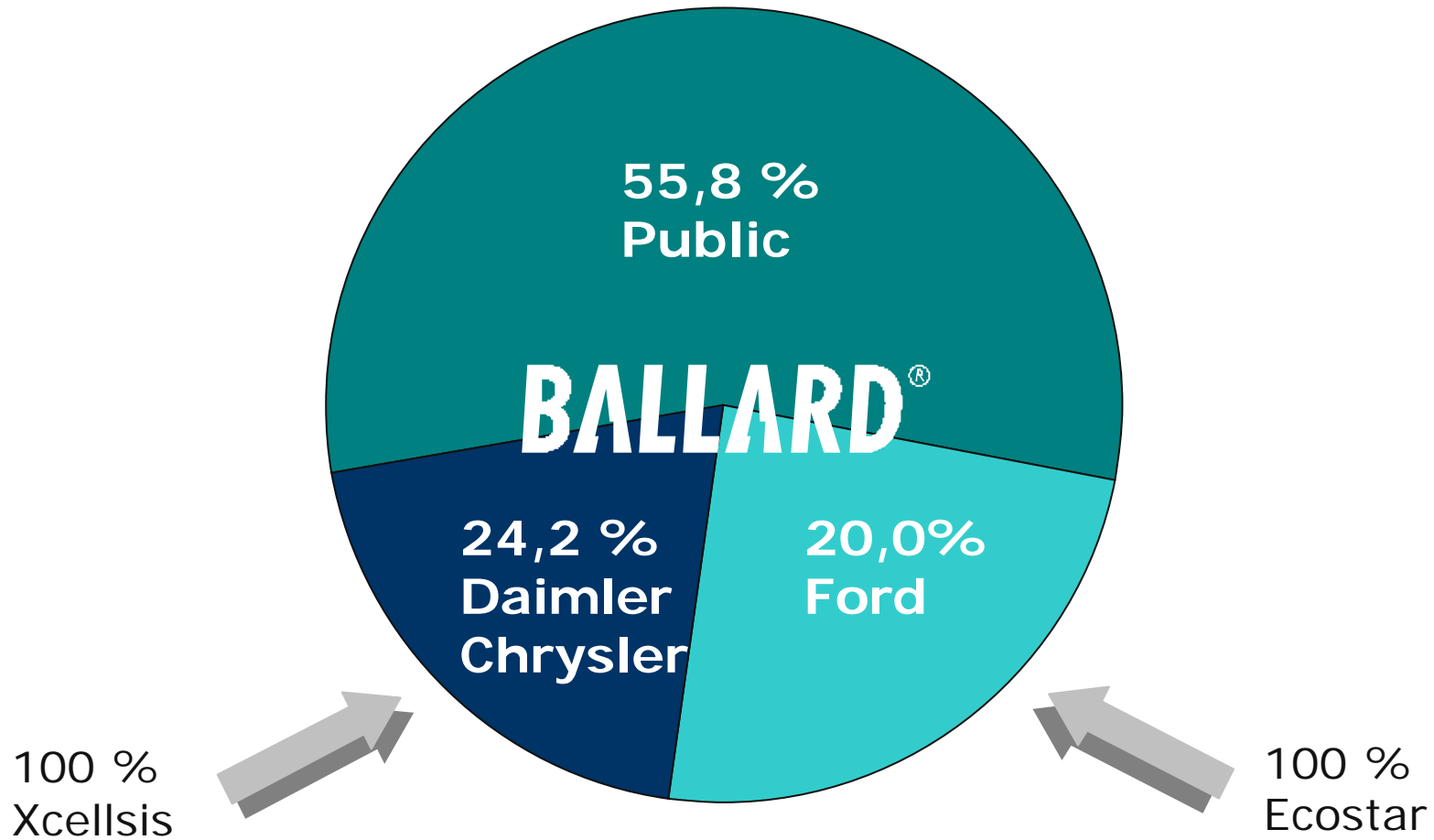
power to change the world®

Ballard Power Systems

BALLARD®

Welcome to
BALLARD
Power Systems AG

The New Ownership Structure



Global Locations



Vancouver, Canada
HQ, R&D, Mfg.
Power Generation



Lowell,
Massachusetts
Material Products

ALSTOM
BALLARD



West Sacramento,
California Fuel Cell
Partnership



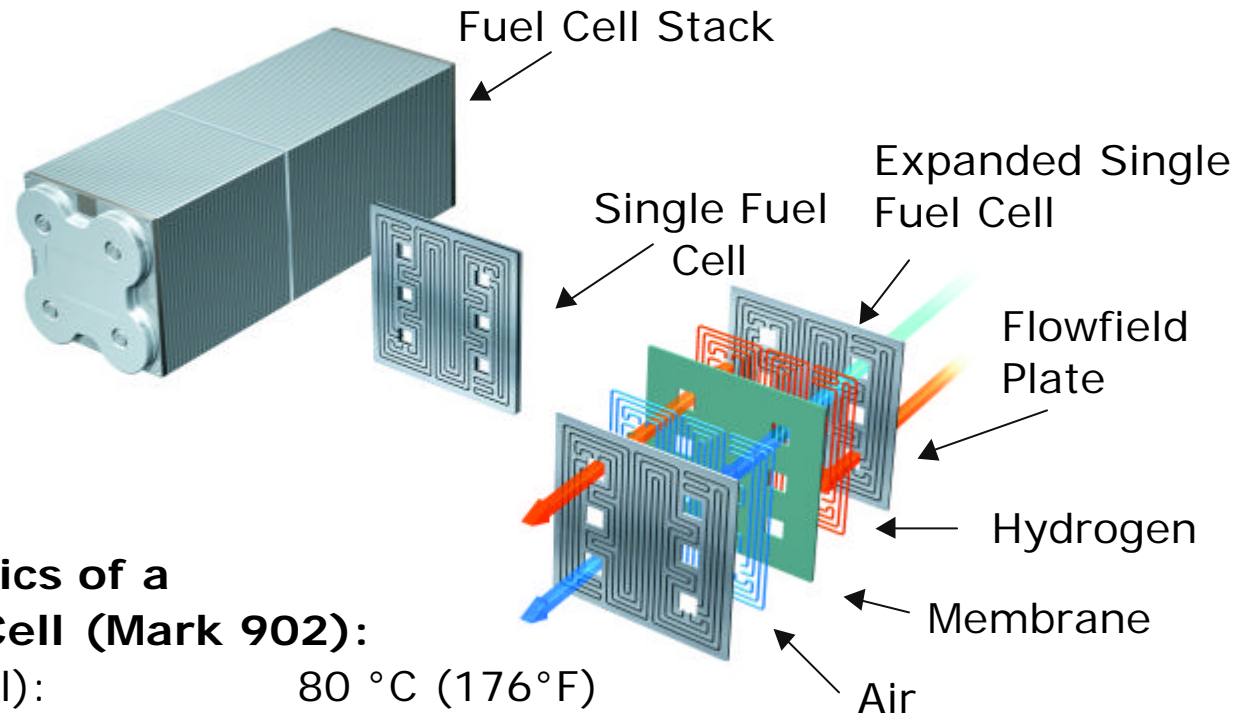
Dearborn, Michigan
Electric Drives and
Power Conversion



Nabern, Germany
Transportation

EBARA
BALLARD

PEM Fuel Cell



Typical characteristics of a Ballard® PEM Fuel Cell (Mark 902):

Temperature (nominal): 80 °C (176°F)
Fuel pressure (nominal): 1- 2 barg

Rated net output (continuous): 85 kW
Current (max.): 300 Amps
DC voltage (min at rated power): 280 Volts

Transportation Division

BALLARD®

Ballard Power Systems Inc.

Electric Drives &
Power Conversion
Division

Transportation
Division

Power Generation
Division

Material Products
Division



Fuel Cell
Power Module



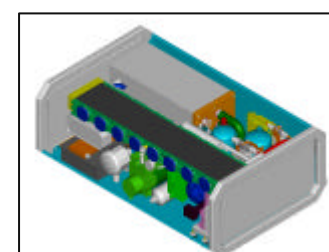
Heavy-Duty Fuel
Cell Engine



Light-Duty Hydrogen
Fuel Cell Engine

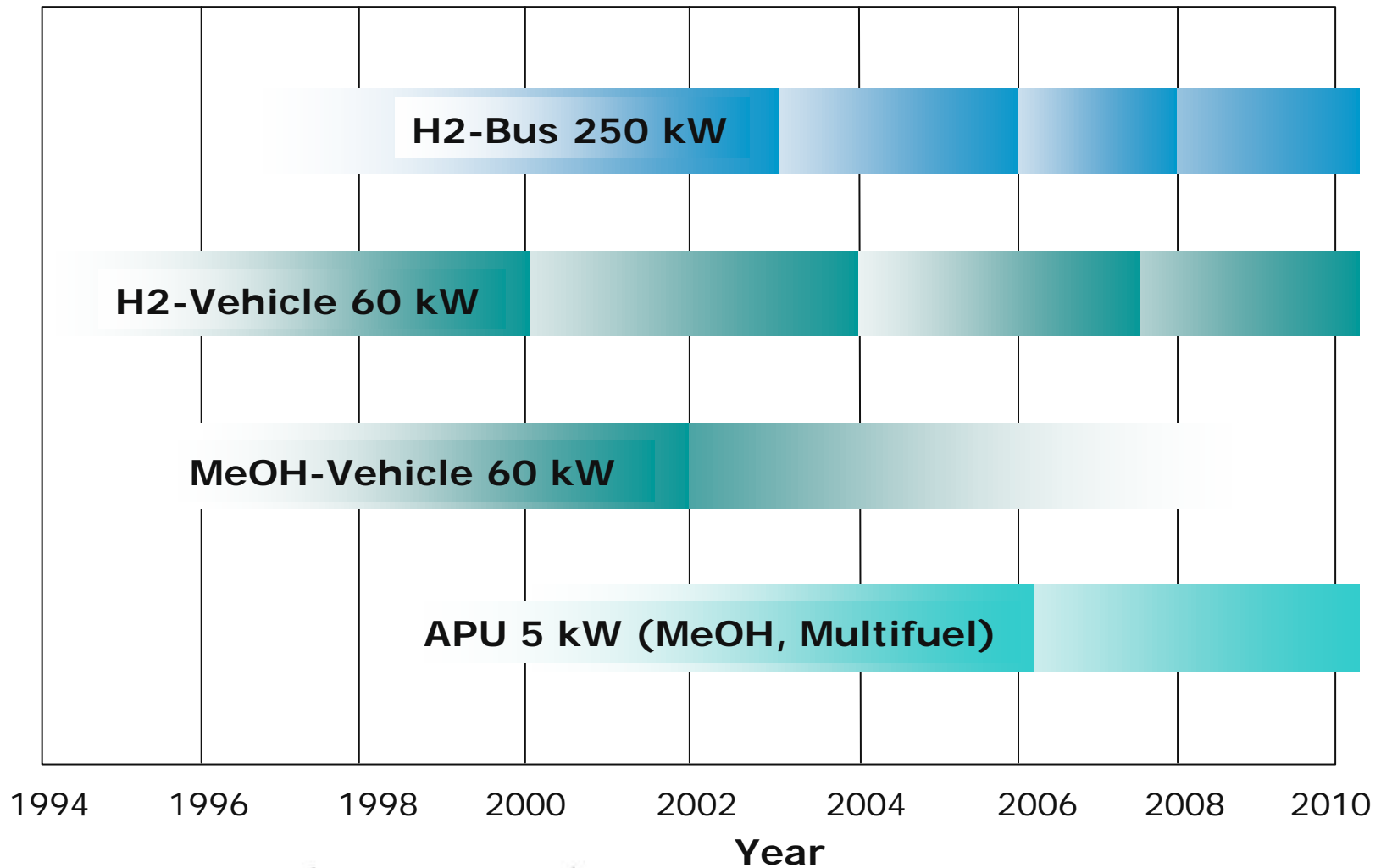


Light-Duty
Methanol
Fuel Cell Engine



Auxiliary Power
Unit

Fuel Cell System Programs





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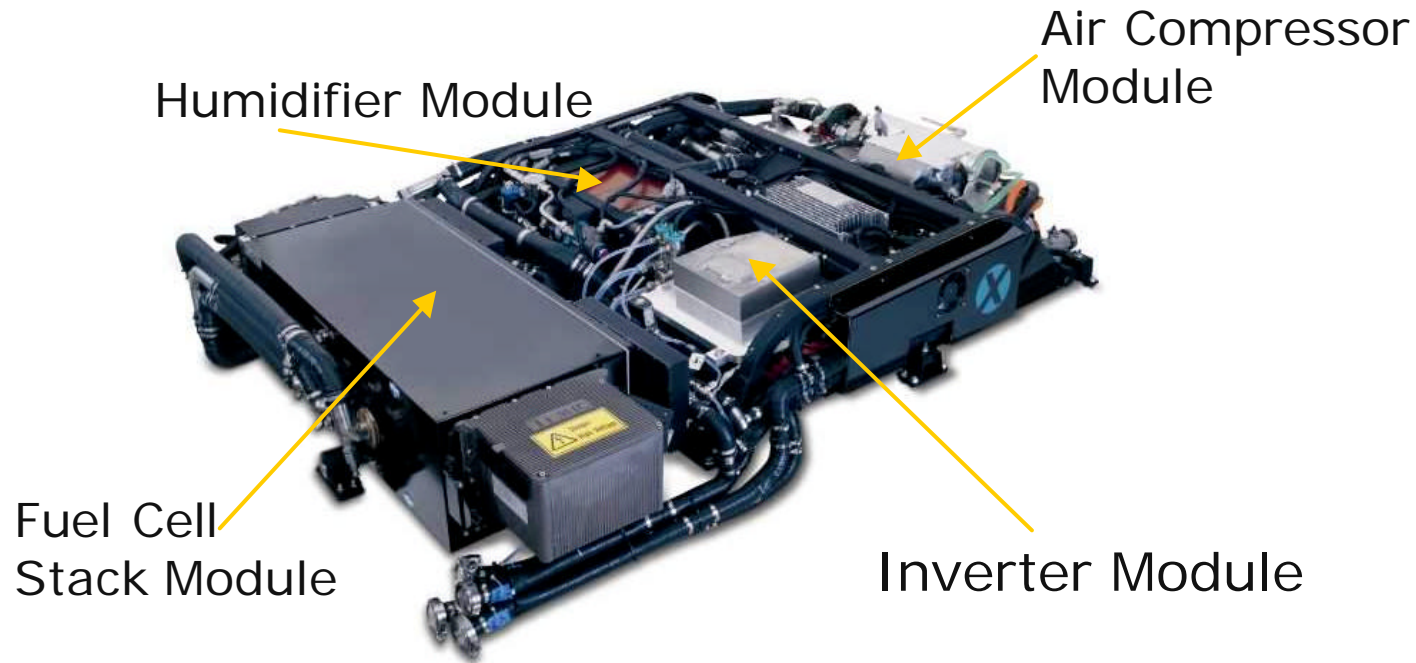
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Ballard® Light-Duty Engines

Hydrogen Engines

Xcellsis™ HY-75-4a Fuel Cell Engine

BALLARD®

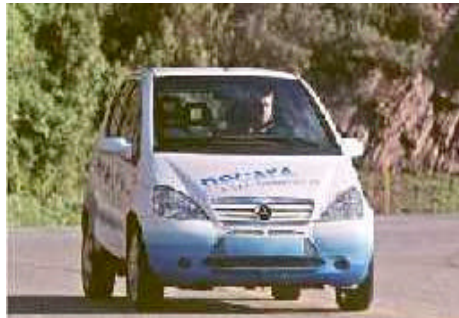


stack gross power:	85 kW
system net power:	68 kW

Passenger Cars Equipped With Ballard® Hydrogen Fuel Cell Engines

BALLARD®

1998



Necar 4

1999



Ford P2000

2000



Necar 4 Advanced

2000



Ford Focus FCV

2001



Sprinter

2001



Nissan Tino

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06.06.02

Xcellsis™ HY-80 Fuel Cell Engine

BALLARD®

DaimlerChrysler F-Cell Packaging

System Module
Fuel Cell Stack Module

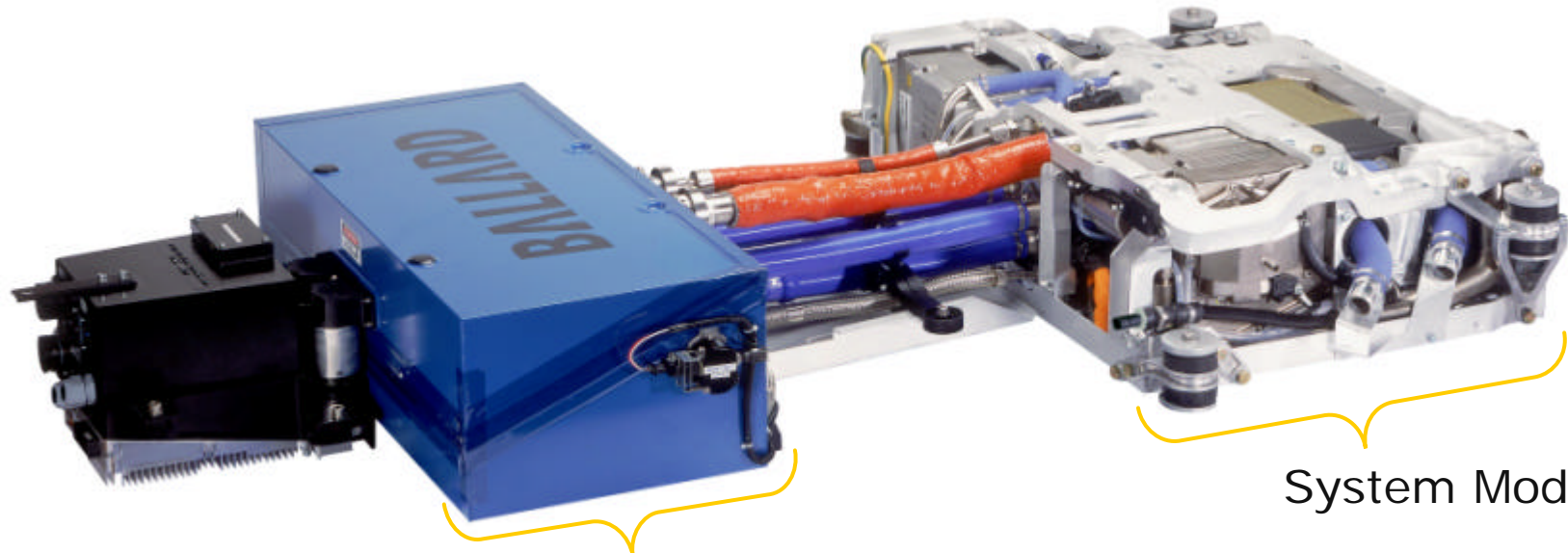


Stack gross power:	85 kW
System net power:	68 kW

Xcellsis™ HY-80 Fuel Cell Engine



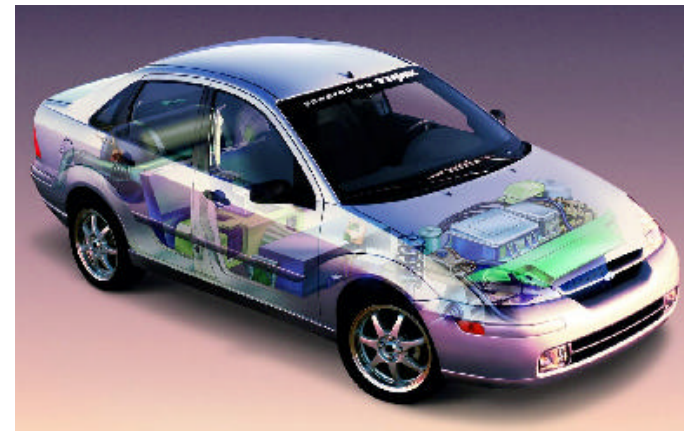
Ford Focus FCV Hybrid Packaging



Power Distribution Unit (PDU)

Fuel Cell Stack Module

System Module



Stack gross power: 85 kW

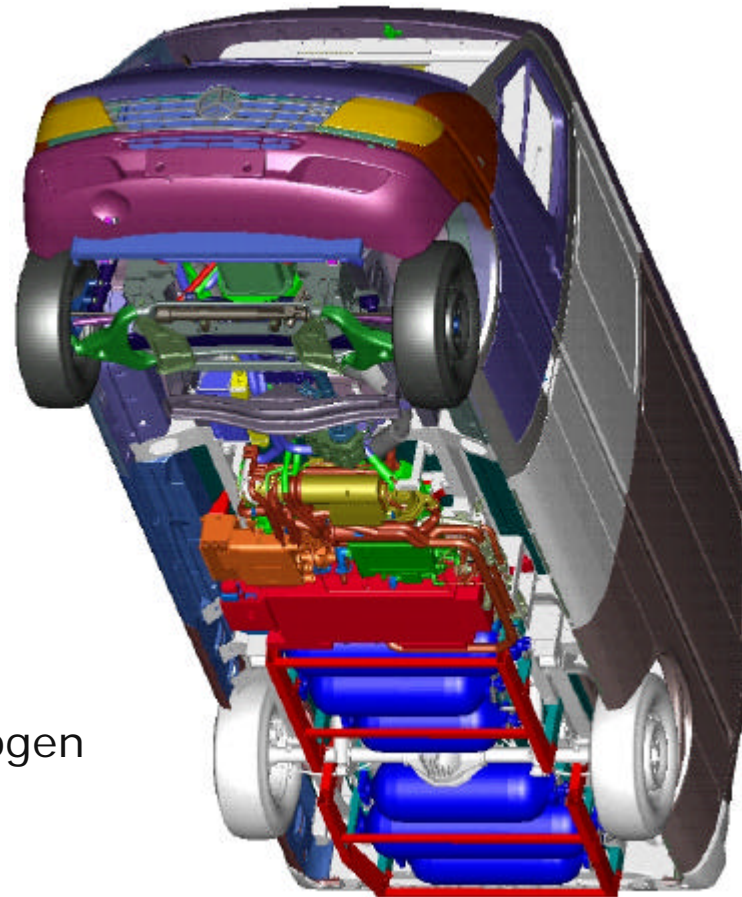
System net power: 68 kW

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Mercedes-Benz FC Sprinter

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Stack power	75 kW
Fuel	Gaseous Hydrogen
Emissions	ZEV



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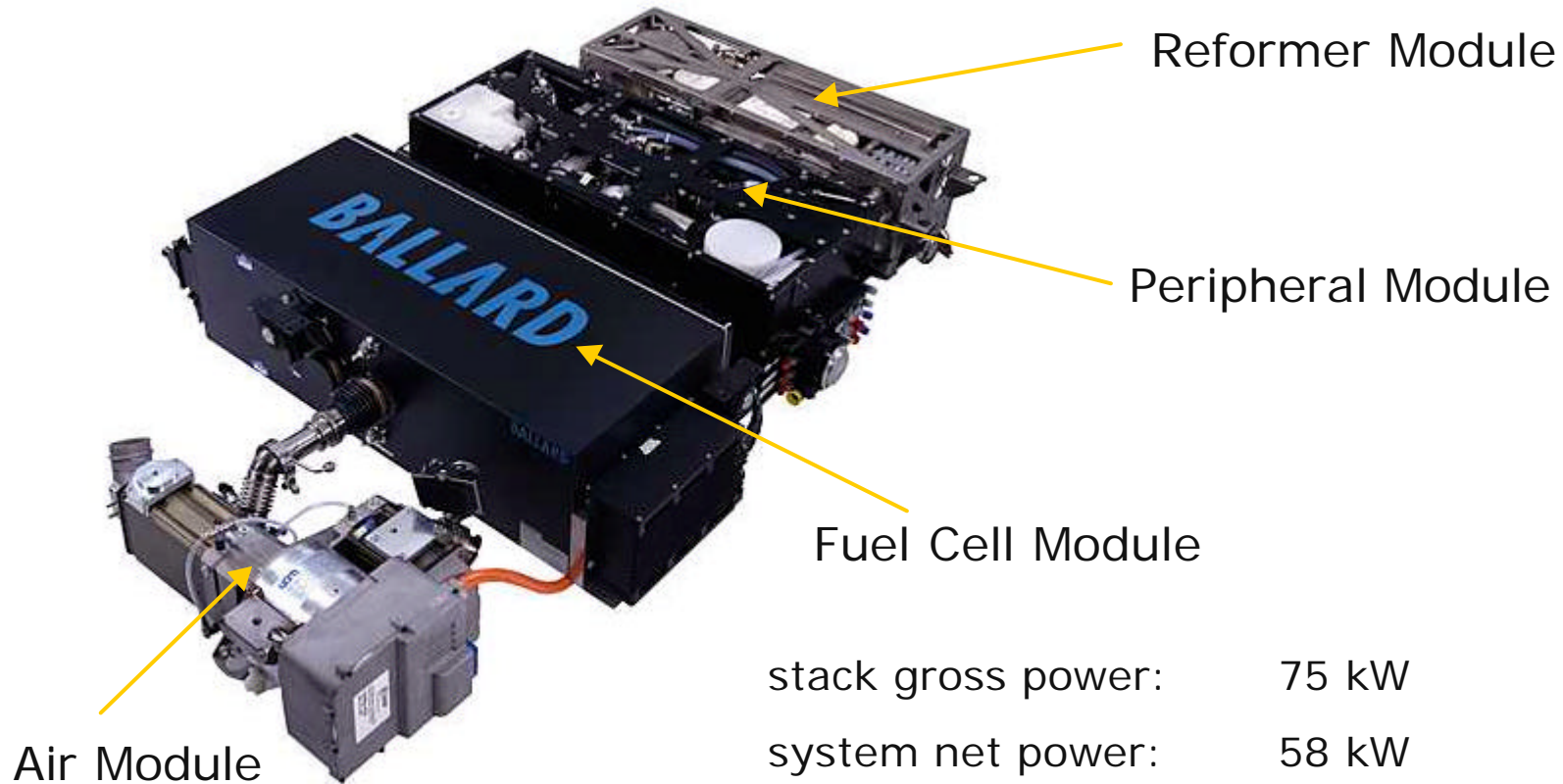
BALLARD®

Ballard® Light-Duty Engines

Methanol Engines

Xcellsis™ ME-75-6 Fuel Cell Engine

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Passenger Cars Equipped With Ballard® Fuel Cell Engines

BALLARD®

1997



Necar 3

2000



Chrysler Jeep
Commander 2

2000



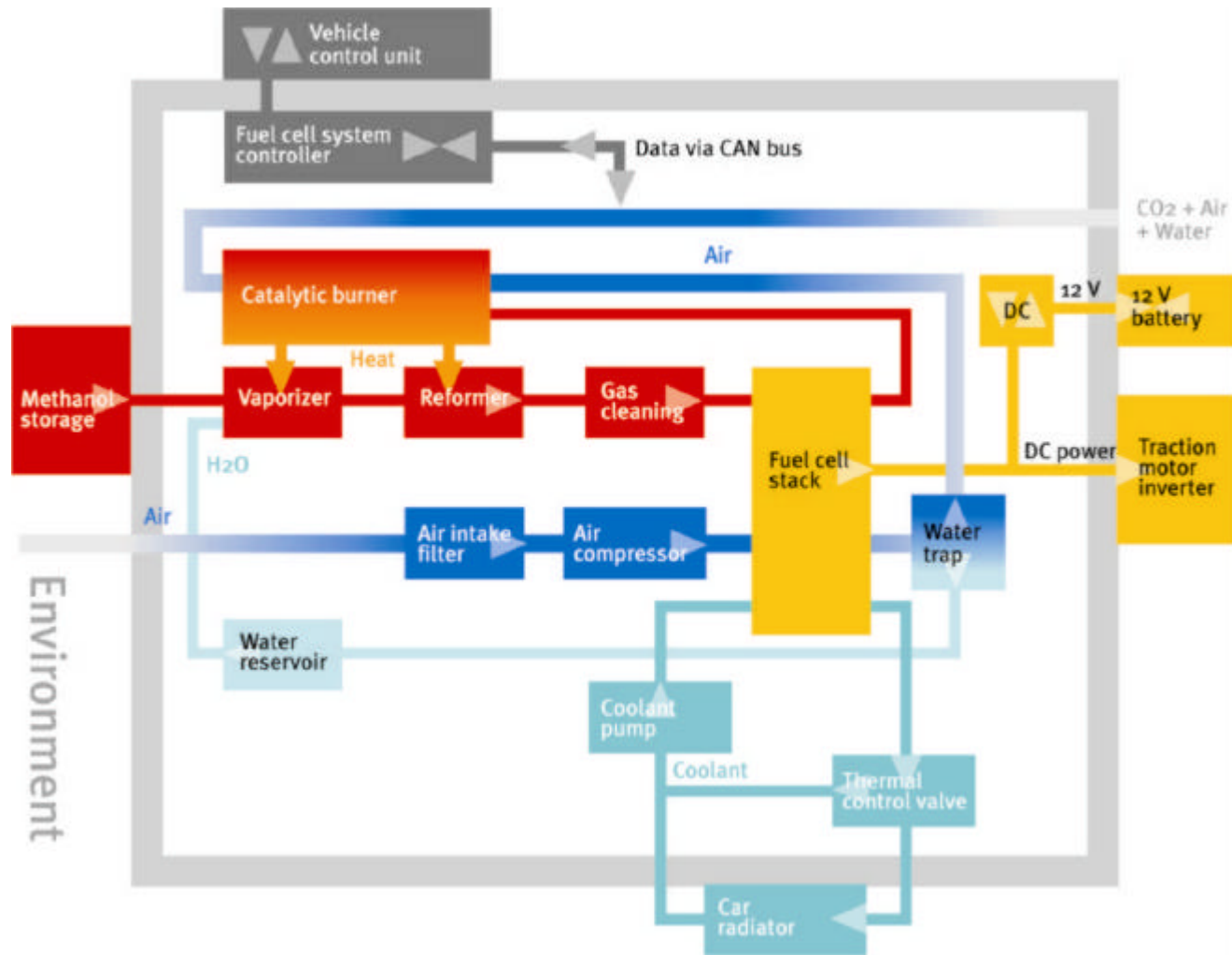
Necar 5

2001

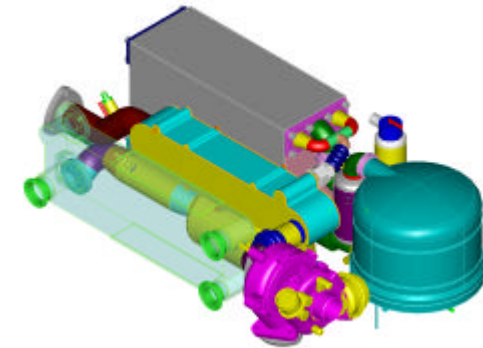
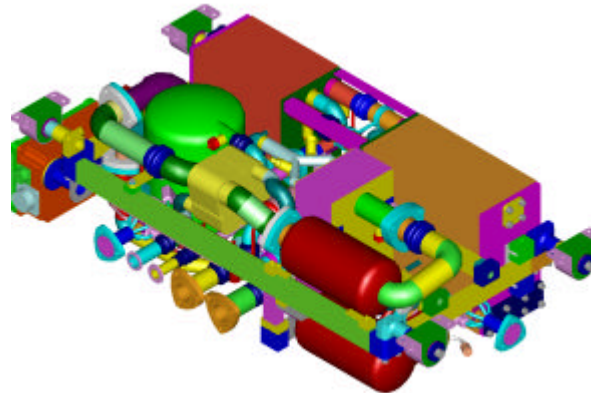
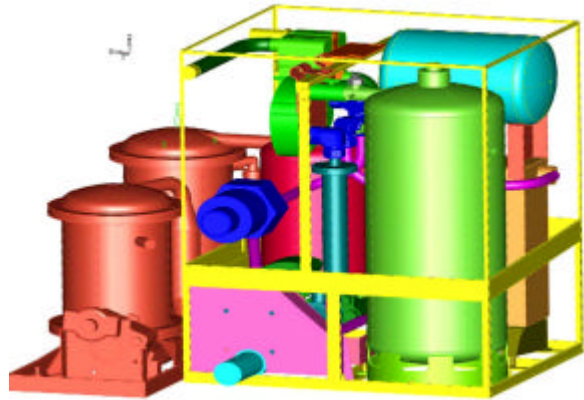


Mazda Premacy
FC-EV

Principal Function of a Methanol Fuel Cell Engine



Comparison of H₂ Production Unit ME-50-3, ME-75-5 and ME-75-6



	ME-50-3	ME-75-5	ME 75-6
model year	1997	1999	2000
gross power	50 kW	75 kW	75 kW
packaging volume	225 l	110 l	64 l

Necar 5 Coast to Coast Trip



- 3.262 mi - from San Francisco to Washington, D.C.
- 13 states in 12 days
- all kinds of weather conditions (snow, rain, hail)
- highest elevation 8.640 ft
- 800 mi above 6.000 ft
- no spare parts needed for fuel cell system



The first ever coast-to-coast trip of a fuel cell vehicle