



FAW Hybrid Electric Car Technology & Production Strategy

China FAW R&D Center

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1 FAW Hybrid Car Production Strategy

2 FAW Full Hybrid Car Production Development

3 FAW Range-Extender EV Concept Plan

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2 FAW Full Hybrid Car Production Development

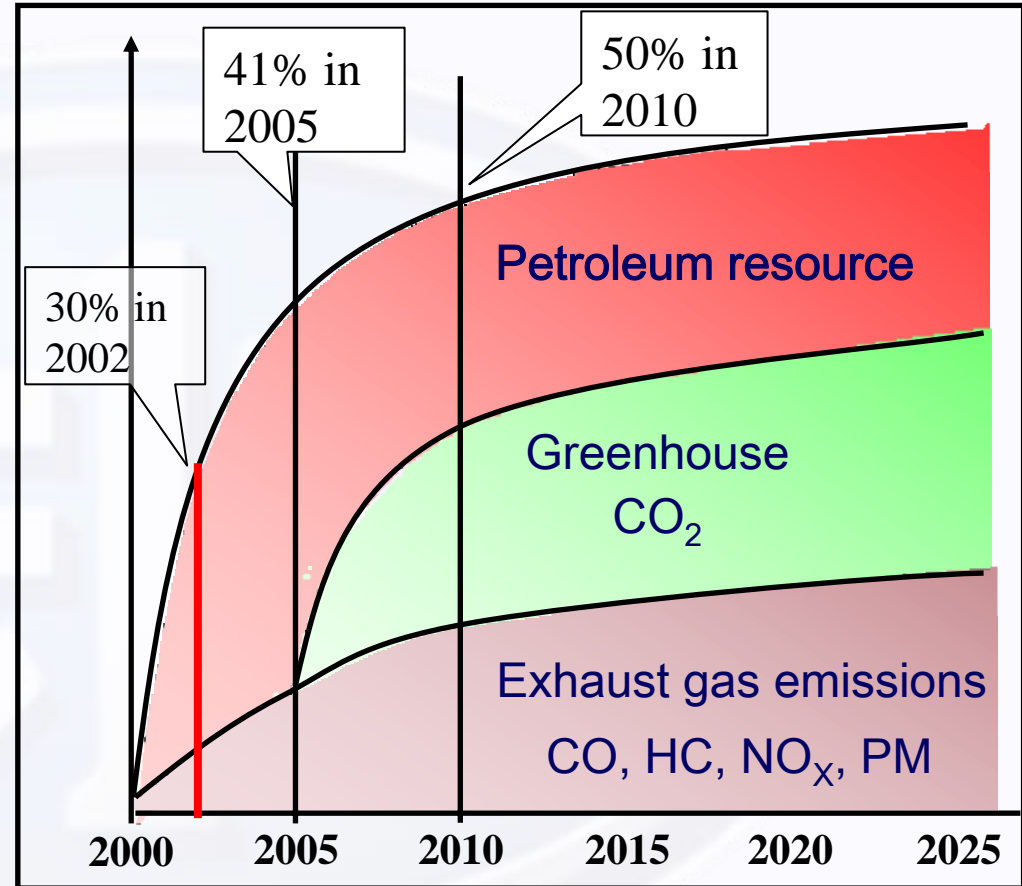
3 FAW Range-Extender EV Concept Plan

1.1 The Challenge of China Auto Industry

❑ Petroleum Resource— it depends on overseas country reach 30% in 2002 year, 41% in 2005 year, and it is forecasted to reach 50% in 2010 year.

❑ Greenhouse Gas— China also consider the emission of CO₂ in recent with world country, The severe emission law for CO₂ will be carried in recent years.

❑ Exhaust gas— The standards GB1,GB2,GB3...etc will gradually carried, and gradually consistent with international.



Auto power-train faces problems—Reduce emission, reduce energy and fuel diversification



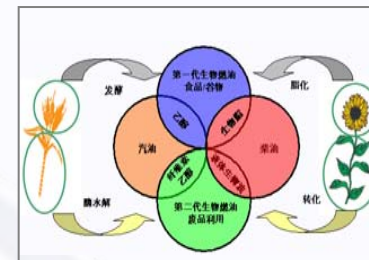
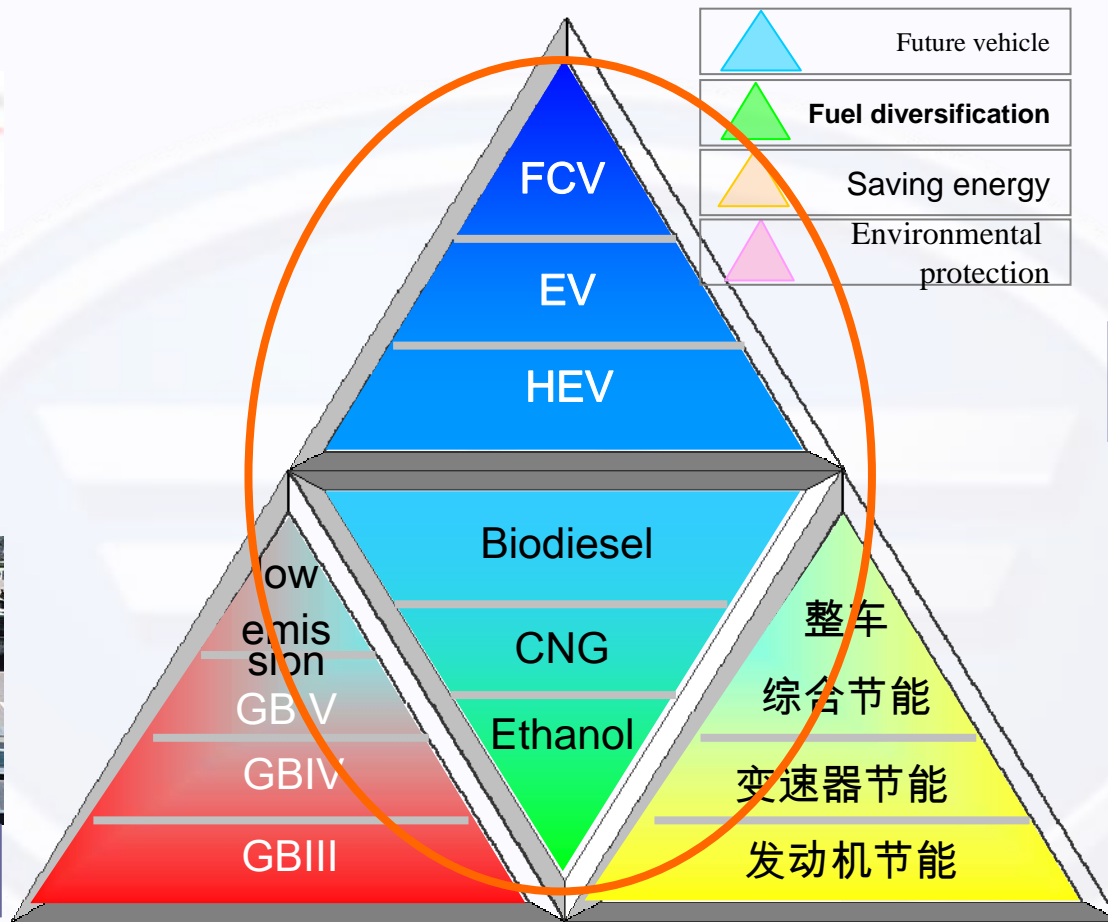
1.2 FAW's Energy and Environment Strategy



Future vehicle



Environmental protection



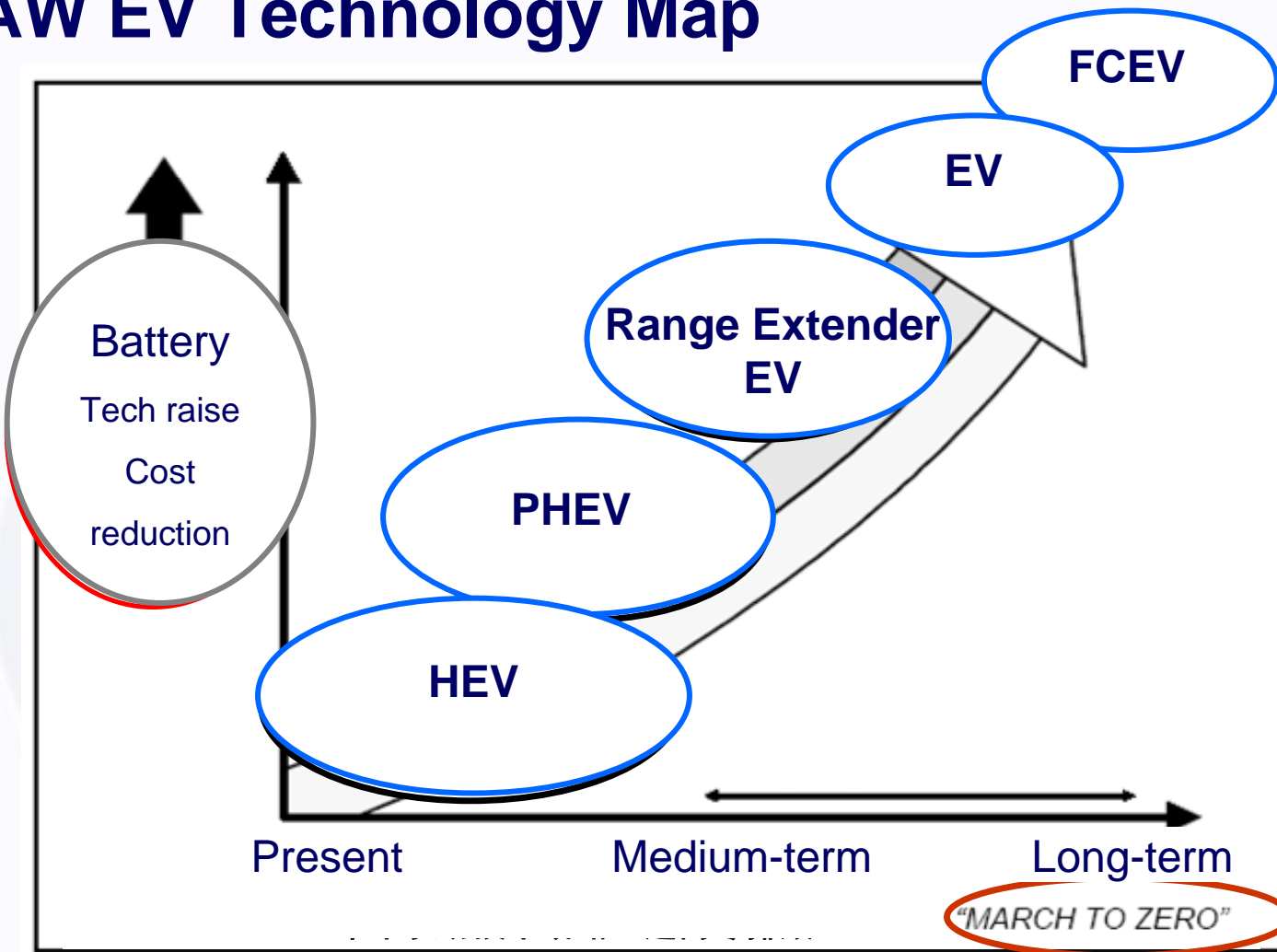
Fuel diversification



Saving energy

Integrating “Environmental protection, Energy conservation, Fuel diversification and Future vehicle” together as one strategy for new product development

1.3 FAW EV Technology Map



The EV technology map depends on Battery technology

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2.1 Betsurn(B70)HEV Definition

- ❑ Vehicle platform: Besturn(B70)
- ❑ Powertrain: Dual motor full hybrid
- ❑ Dimension Length X Wide X Height=
4705X1782X1465 (mm3)
- ❑ Curb weight:1520 kg



Market : Government and taxi

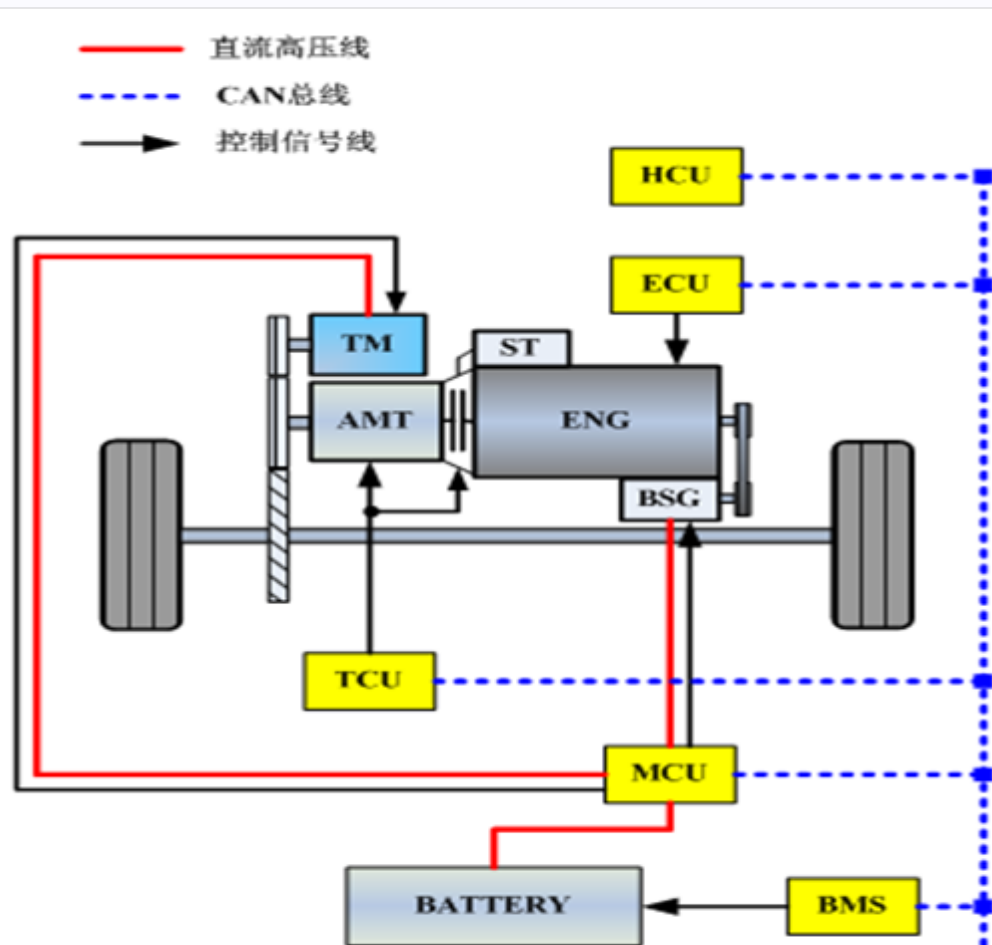
2.2 Power-train Configuration and Functions

■ Dual Electric Motor Full Hybrid

■ Features

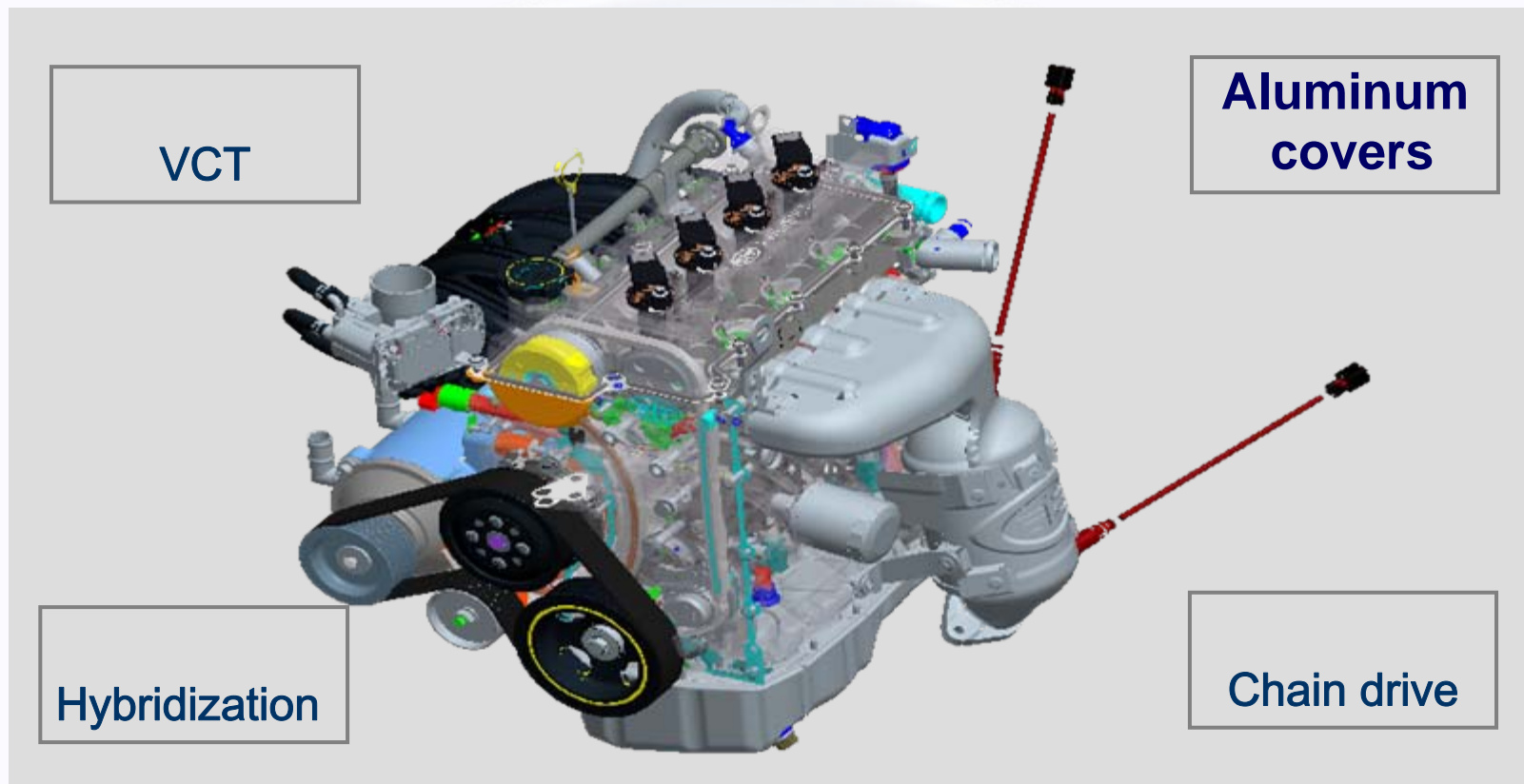
- ✓ Engine Start/Stop
- ✓ Purely Electric Driving
- ✓ Engine Only Driving
- ✓ Boost
- ✓ Regenerative

■ FAW has own property right.



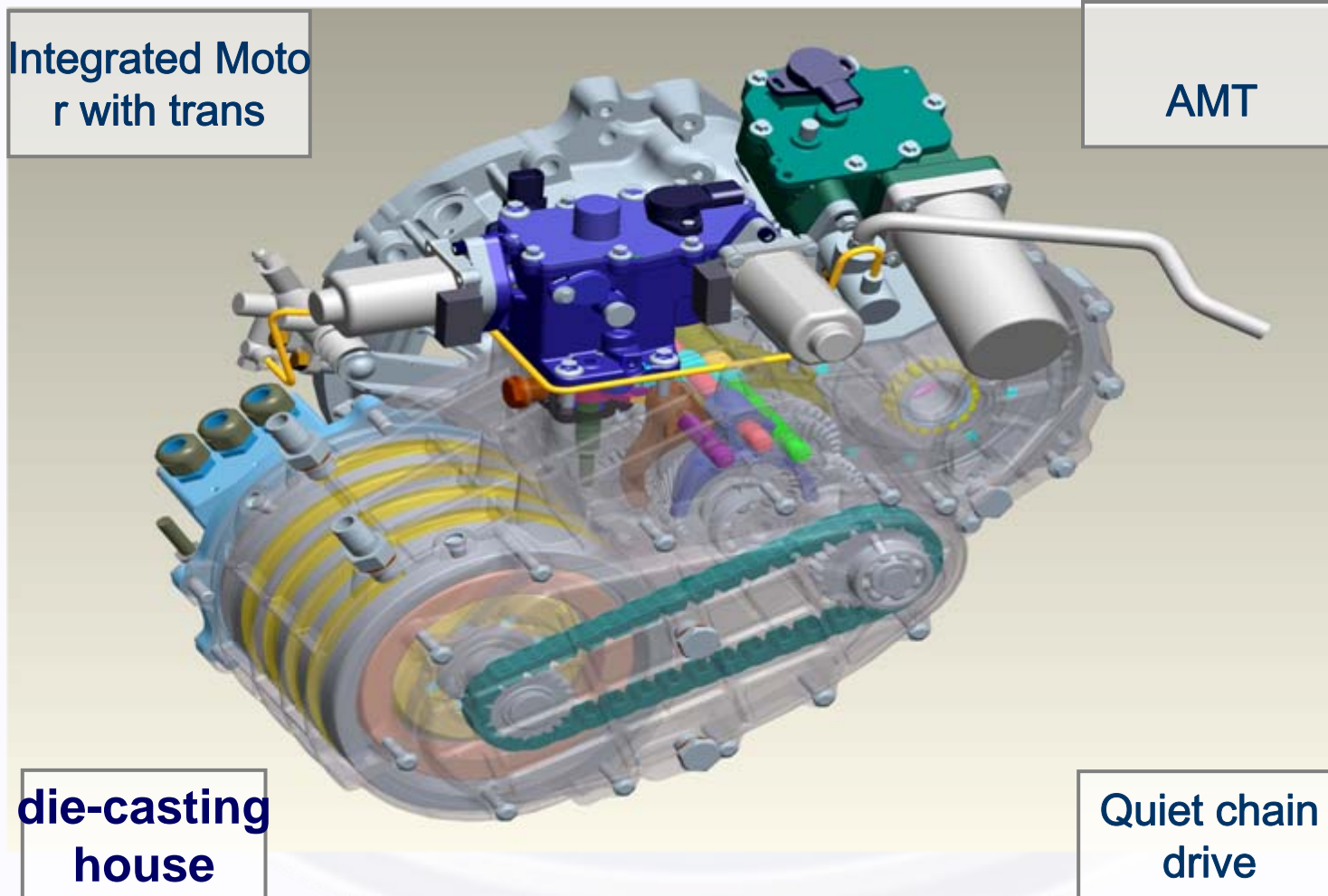
FAW full hybrid has all functions, has good fuel economy

2.3 Powertrain Platform—— engine technology



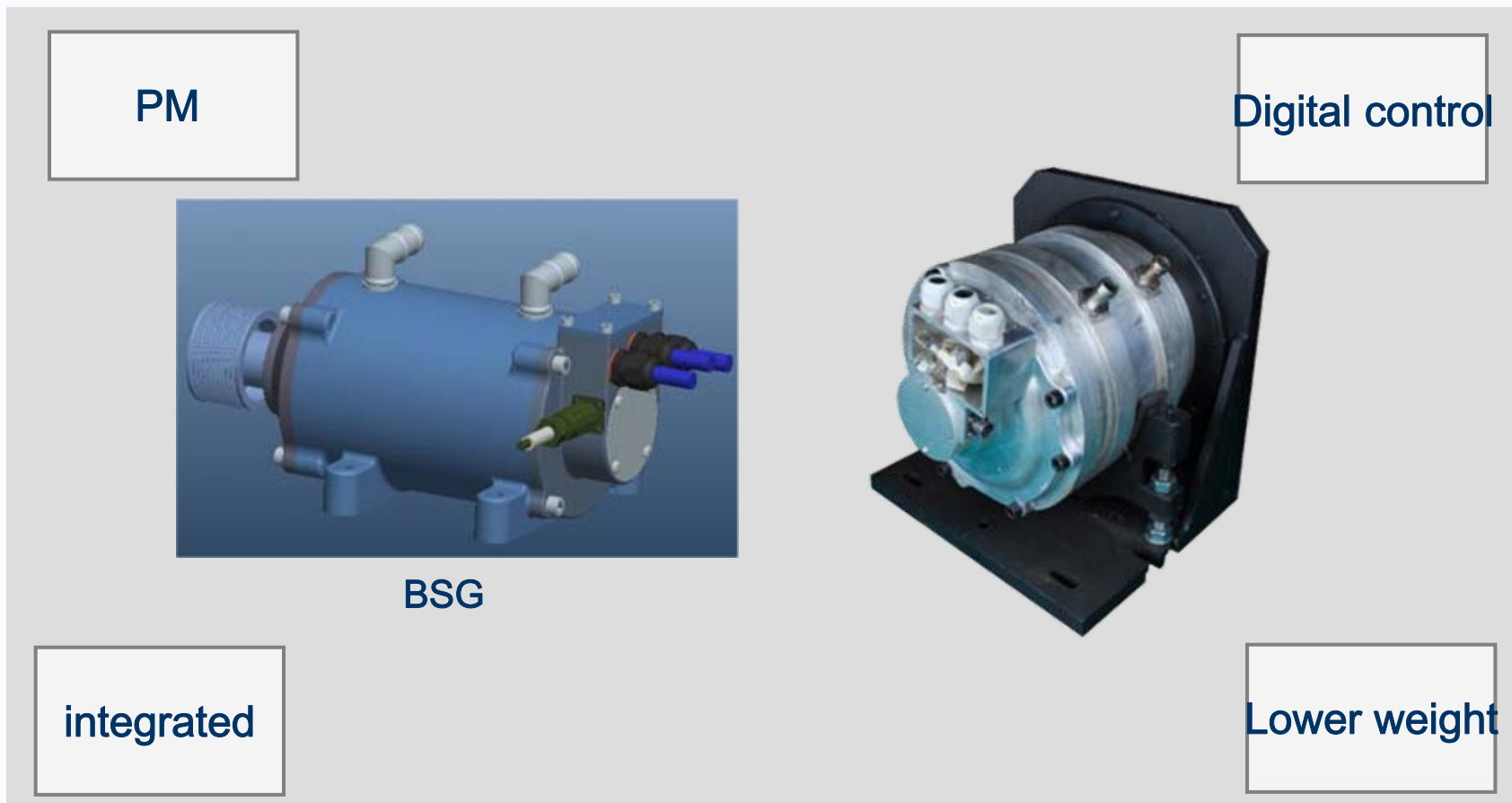
Special engine for B70HEV

2.3 Powertrain Platform—— Transmission Technology



Special transmission for B70HEV(motor integrated with transmission)

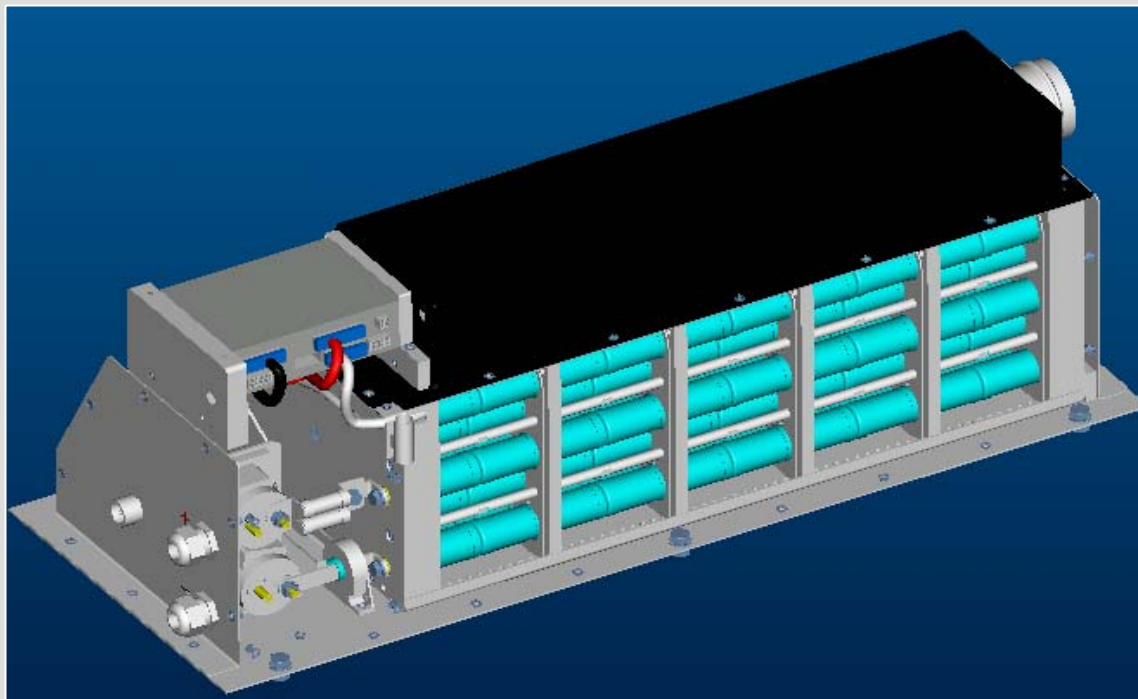
2.3 Powertrain Platform—— Motor System



Special BSG/TM for B70HEV

2.3 Powertrain Platform—— Battery System

High voltage
safety



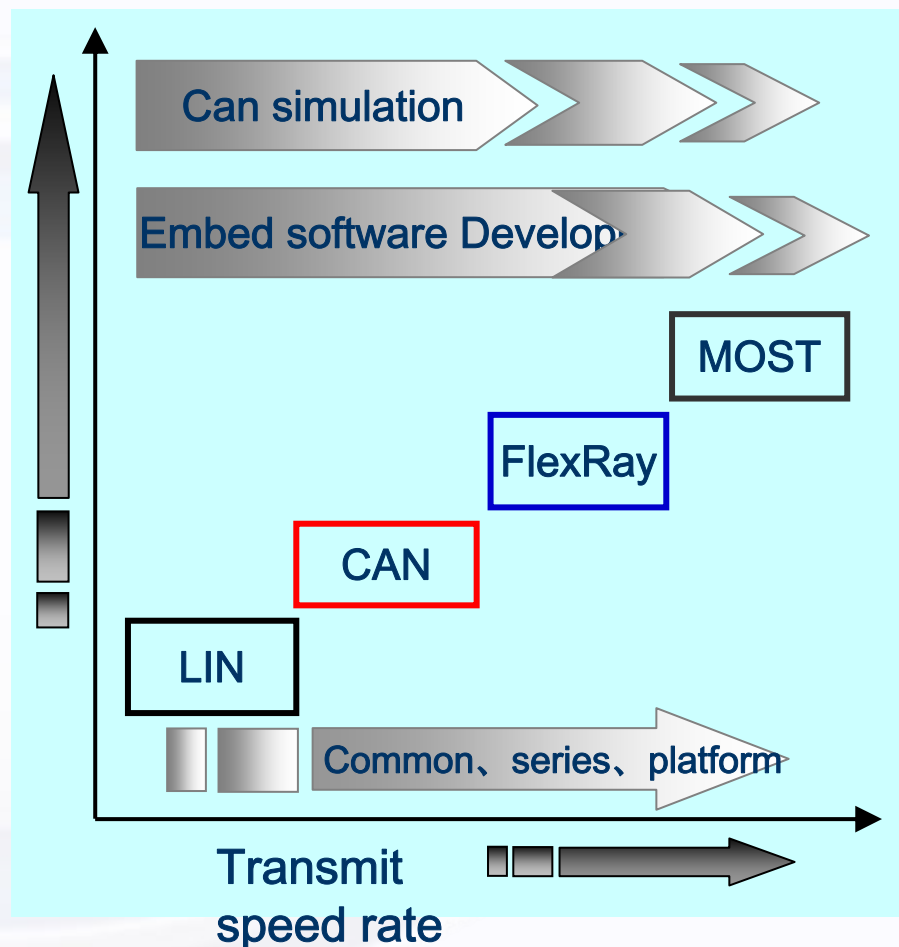
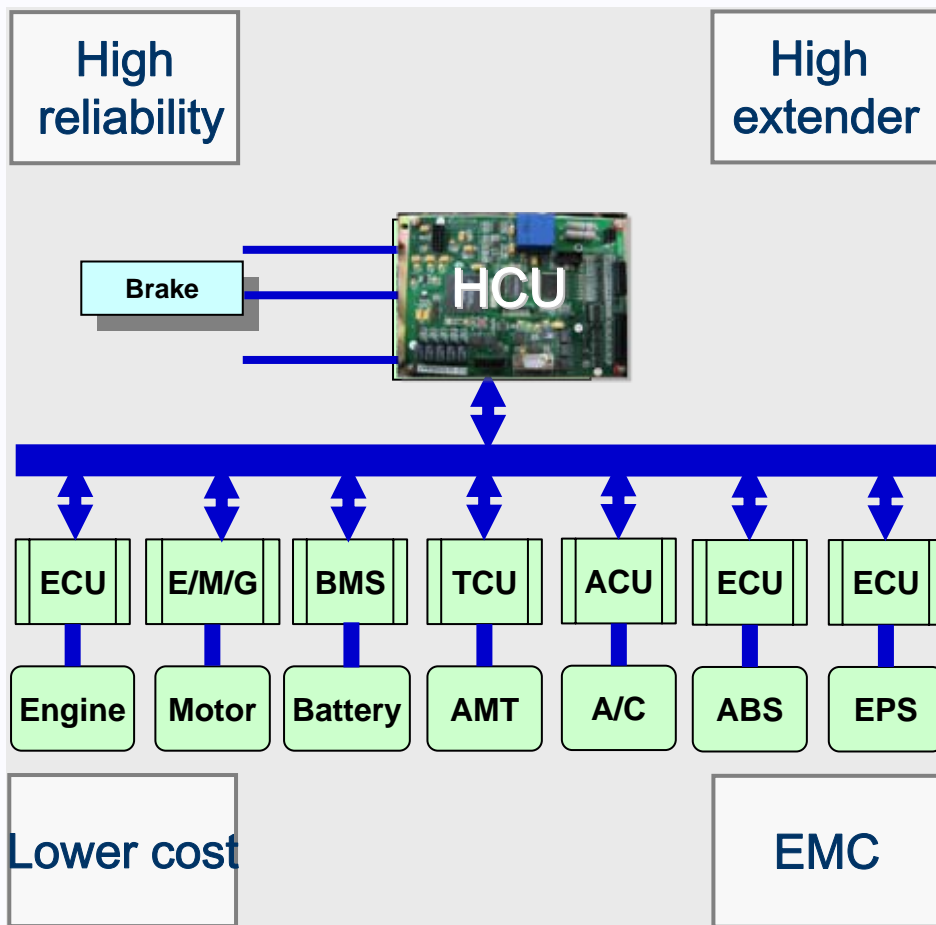
High
performance

Lower weight

Long life

Special high performance NIMH battery for B70HEV

2.3 Powertrain Platform——HCU/CAN



Special CAN and EMC technology for B70HEV

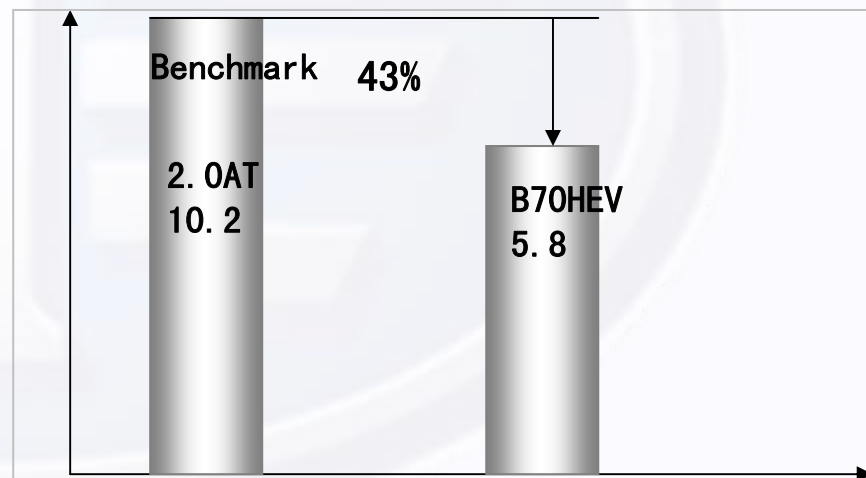
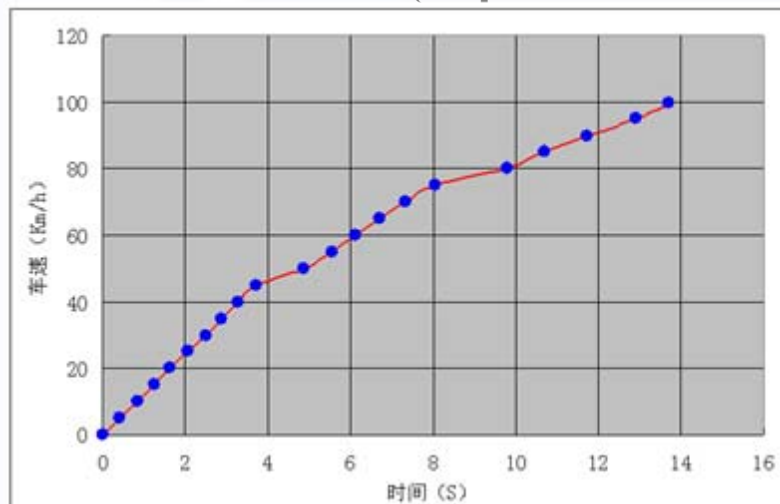
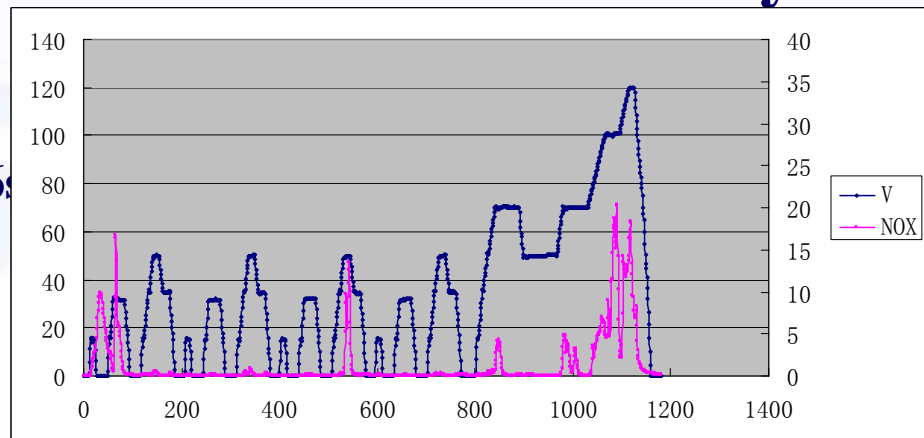
2.4 Test Results——Performance and Fuel Economy

Performance

- The time from 0 to 100km/h is 13.6s
- Max speed 183km/h

Fuel economy

- 5.8L/100km(improved 43% under NEDC)



B70HEV has good performance and advanced FE

2.5 Demonstration—Olympic Games in 08

- FAW supplies 6 B70 HEV cars to service for 2008 Beijing Olympic Games demonstration.
- Total driving distance of 6 B70HEV is 15.6 thousand kilometer, the average is 30 thousand .
- The real road fuel consumption is 7.9L/100km.



B70HEV success for Beijing Olympic Games in 2008

2.6 Further Production Development

Contents

- Powertrain optimization
- Reliability for system
- Lower cost
- Cooperation with motor and battery suppliers

Milestone

- Demonstrate in 2009
- SPP in 2010
- SOP in 2011

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3.1 Market and Production Orientation

❑ Technology development trend

- ❑ Especially, the battery technology has great improvement
- ❑ Plug-in and pure EV are considered more and more

❑ Market

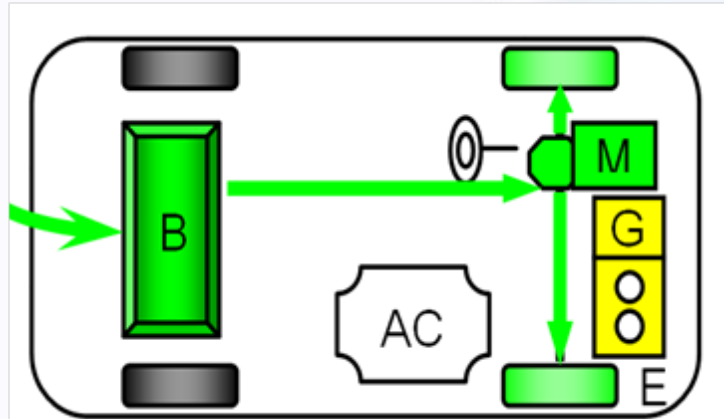
- ❑ The biggest market for car focus on big city in China.
- ❑ About 30-50km distance for most people.
- ❑ The second car is entered into family more and more.

❑ Production orientation

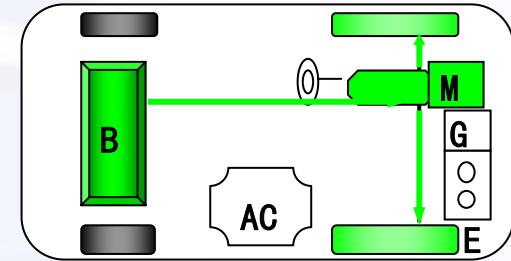
- ❑ Small FE car is as second car for city family or specially market more and more.
- ❑ The requirement of EV distance is short, at the same time, the performance is NOT high for special market.
- ❑ The GVW is no more than 1100kg,namely, A class and A0 class vehicle

3.2 Powertrain Configuration and SPEC

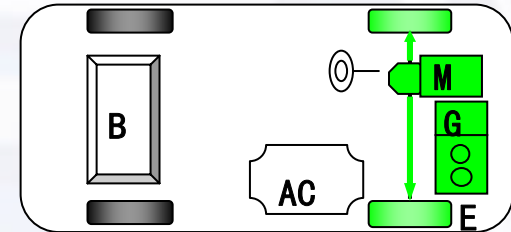
powertrain: Range-Extender EV



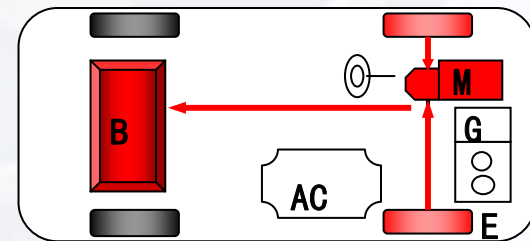
AC—Air Condition; B—Battery; E—Engine; G—Generator; M—Motor



Electric drive mode



series



Braking Generative

Operation model

- Electric drive mode
- Series
- Braking Generative

3.3 Key Technology Analysis

- Vehicle integrated technology.
- Plug-in control strategy.
- Special engine (lower NVH, lower cost) development.
- Integrated motor and reduction gear technology.



中国第一汽车集团公司
China FAW Group Corporation



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