



MiEV - the product

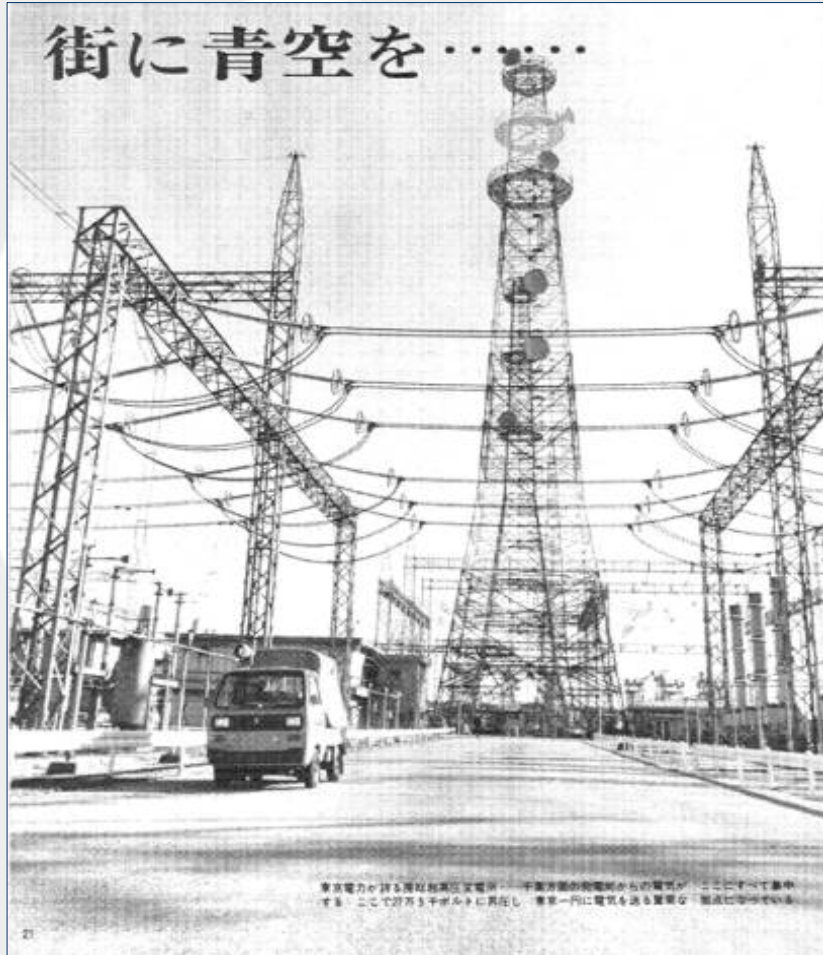


March 2009

Mitsubishi electrical vehicle history



- ❶ First Mitsubishi Electrical vehicle was built in 1971
- ❷ We provided 150 EV's to power companies and the government



MINICAB EV

Mitsubishi Group's PR magazine; issued in 1972



MINICA VAN EV



Mitsubishi electrical vehicle history



1970

1980

1990

2000

2005

2010

Response to oil dependency

Response to Global warming

Response to Air Pollution



Minica EV



Mini Cab EV



Libero EV
(Lancer Estate)

FTO EV



Colt EV



ECLIPSE EV



Preparation for mass production

Delica EV



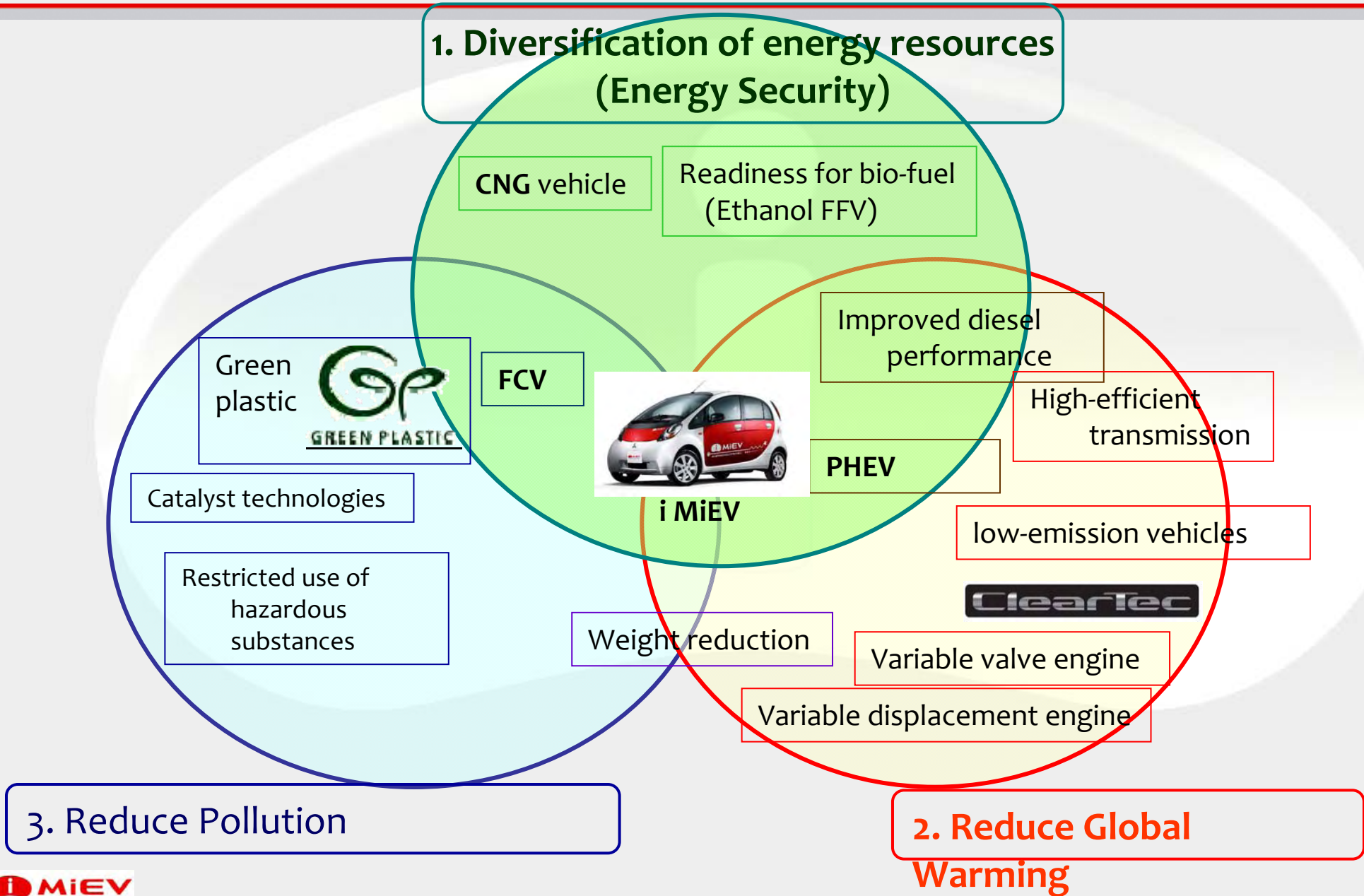
Minica Econo EV



Lead-acid Battery

Lithium-ion Battery

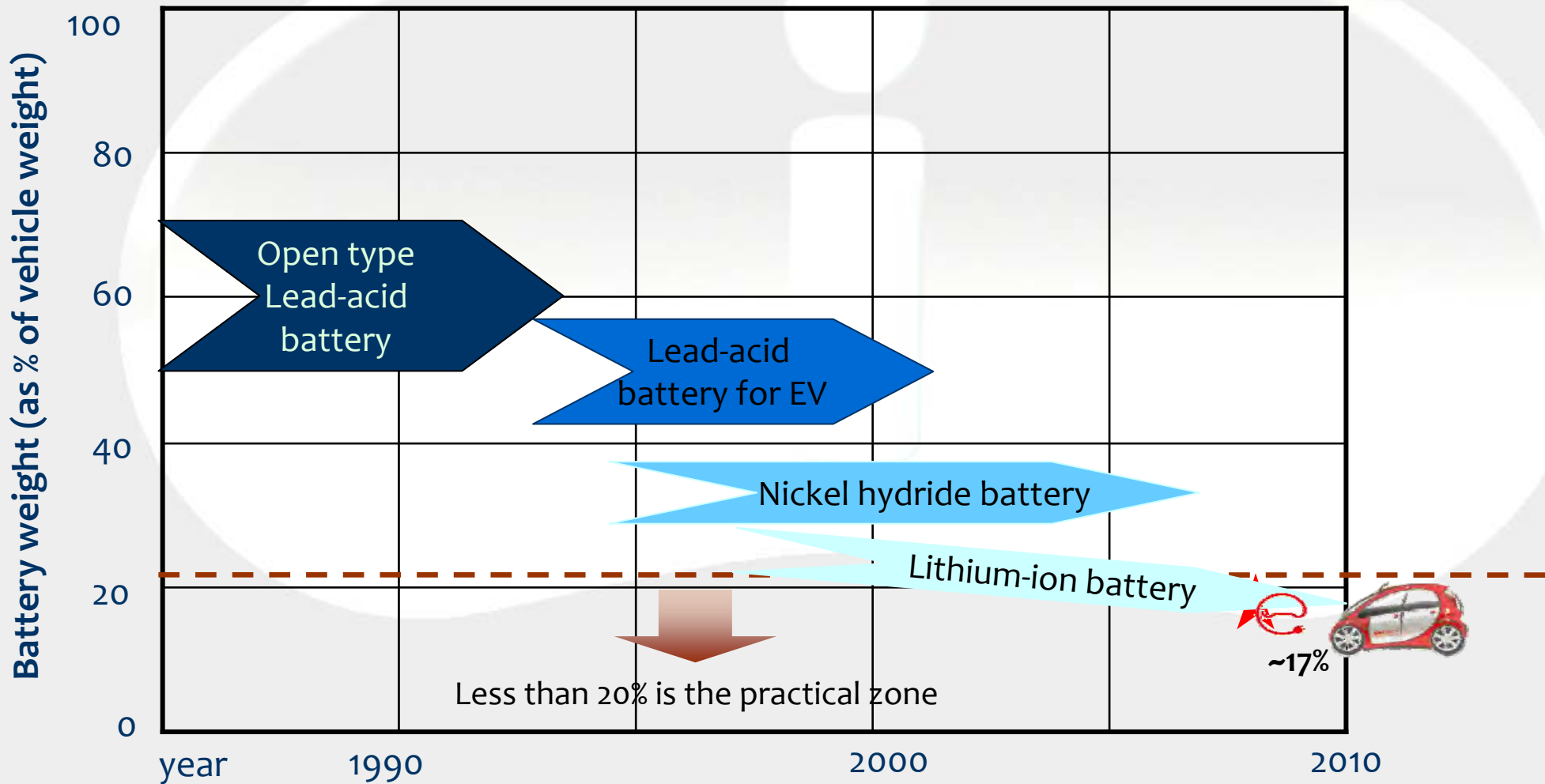
Environmental strategy Mitsubishi



Battery development



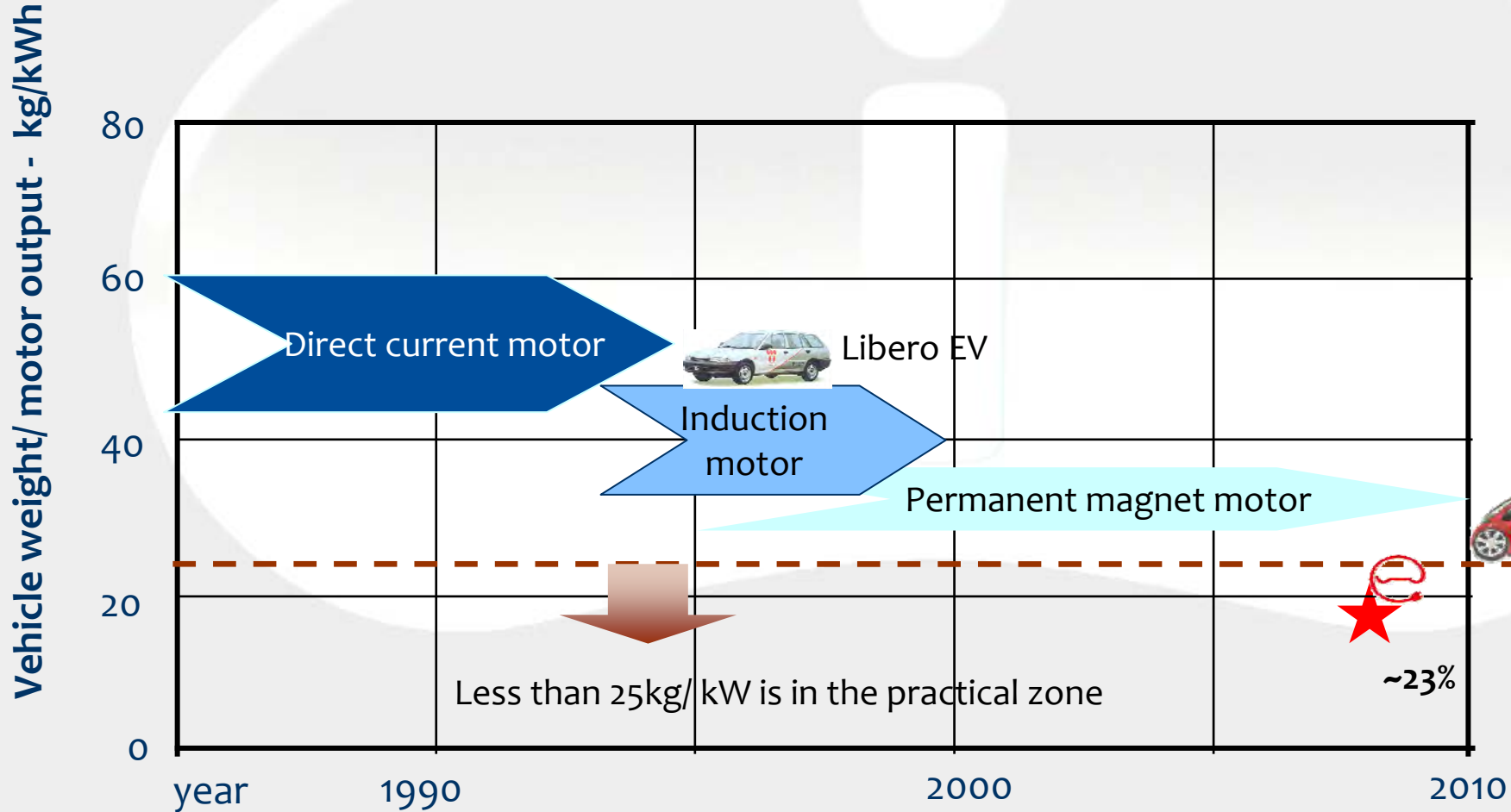
i Battery weight as a percent of vehicle weight when calibrated for a driving range of 200km*



Engine development



Power to weight ratio



Energy efficiency



Well to wheel

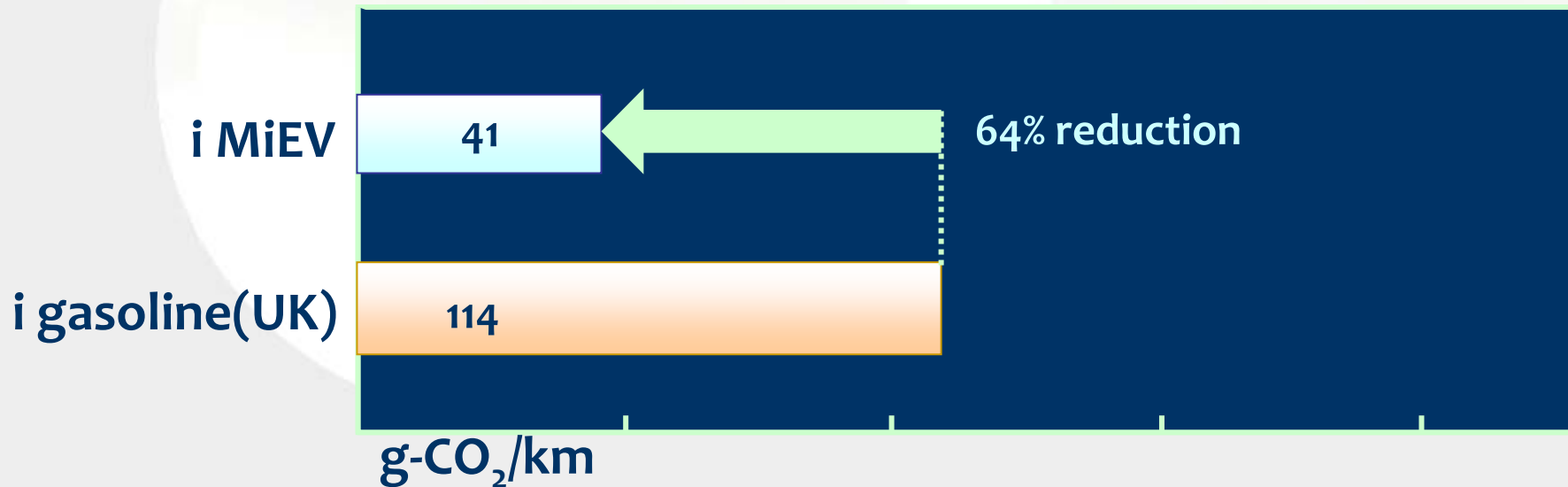
	Well to tank	Tank to wheel						Overall
EV	42.9%*	Charger 90%	Batt. 92%	Inverter 96%	Motor 91%	Mechanical 92%	66,5%	28.5%*
HEV (Gasoline)	82.2%	30.2%						24.8%
Diesel	88.6%	17.8%						15.8%
Gasoline	82.2%	15.1%						12.4%



CO₂ emission

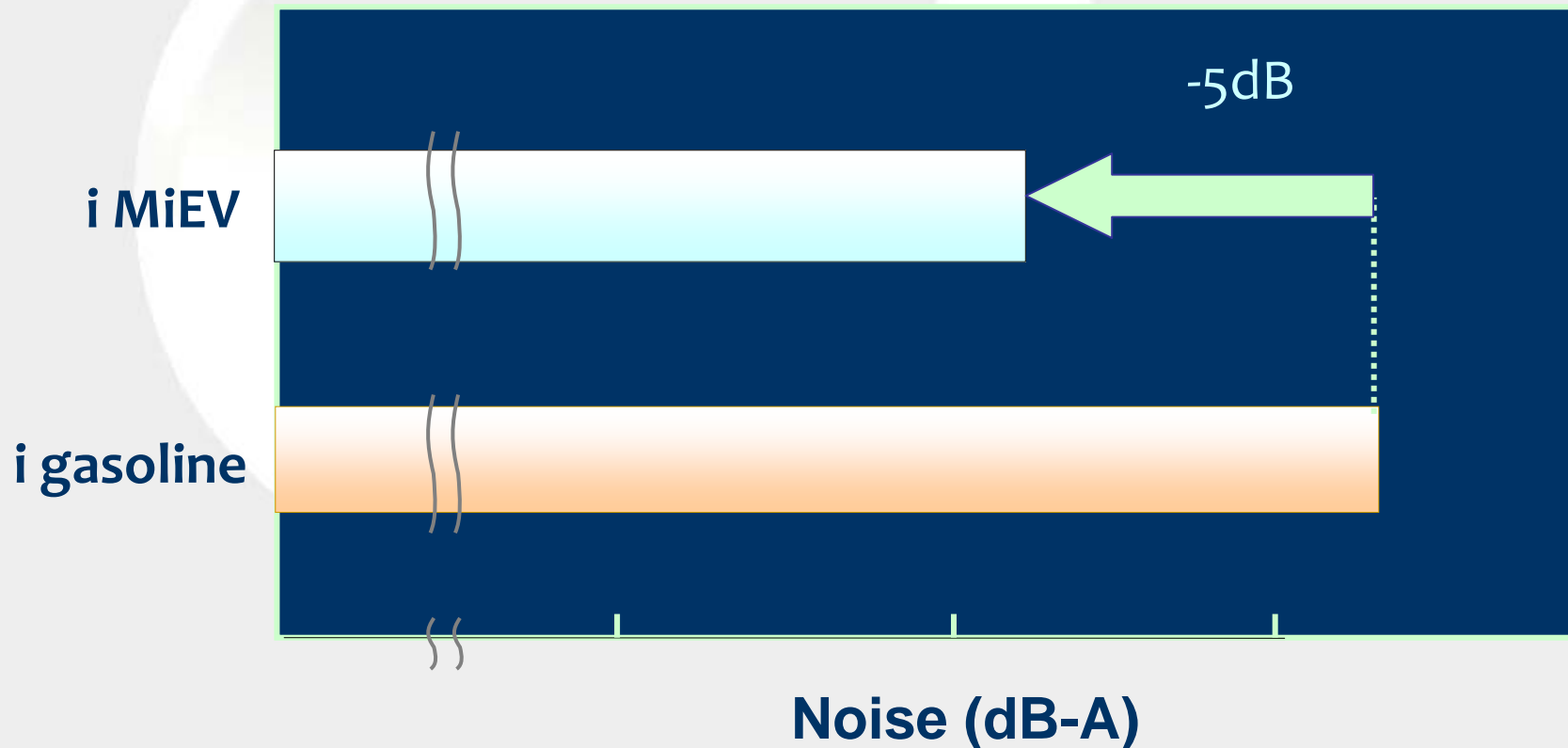
- ❶ CO₂ value of electrical vehicles is officially 0 g/km in Europe
- ❷ Electricity production does however create CO₂
- ❸ Given Japanese energy mix, net CO₂ reduction is 64%*
- ❹ Driving 10.000 km per year > 0,73 ton CO₂ reduction

Well to wheel emission (Japanese 10-15 mode)



Noise level – outside vehicle

- ❗ Noise level decrease with 5 dB
 - When fully accelerating from 50 km/h
 - A 100% increase of sound volume equals (=) 3dB increase
 - EV can contribute to lower the sound pollution in big cities in Europe

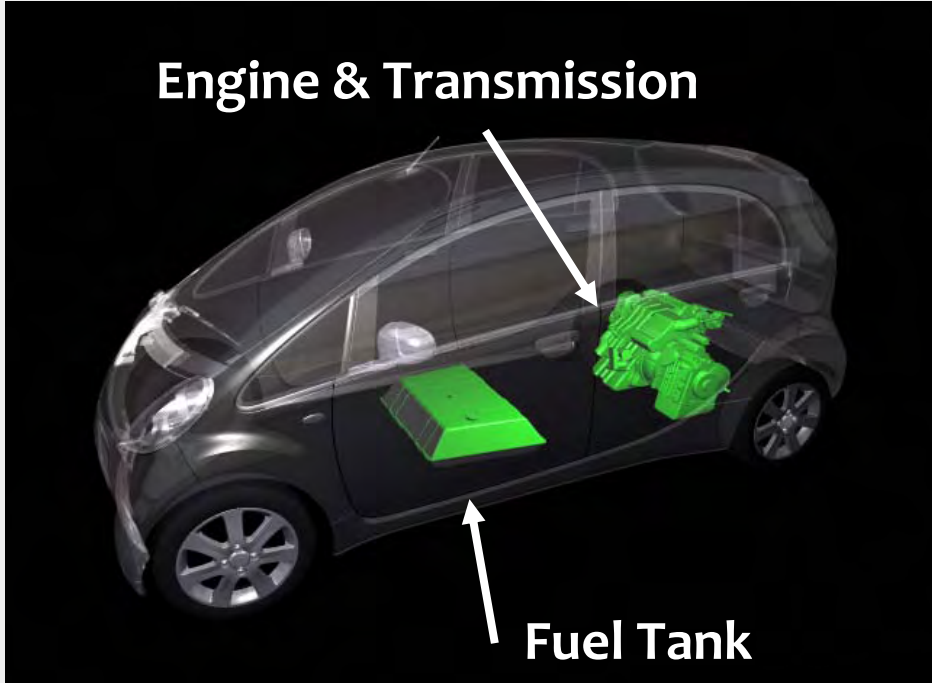


MiEV Packaging



All EV components can be installed under the floor

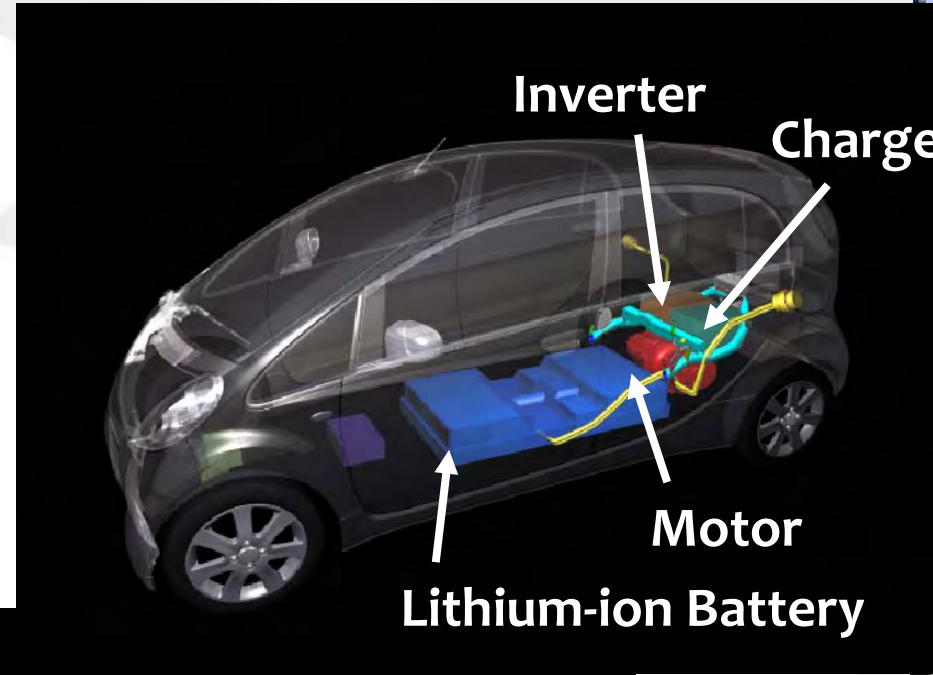
Engine & Transmission



Fuel Tank

Inverter

Charger



Motor
Lithium-ion Battery



- Four adults can be seated
- Cargo space is same as Gasoline i

Lithium-ion Battery

- ❶ Battery module of 16KWh can be placed under the floor panel without further modification



88 x Cell



22 Modules



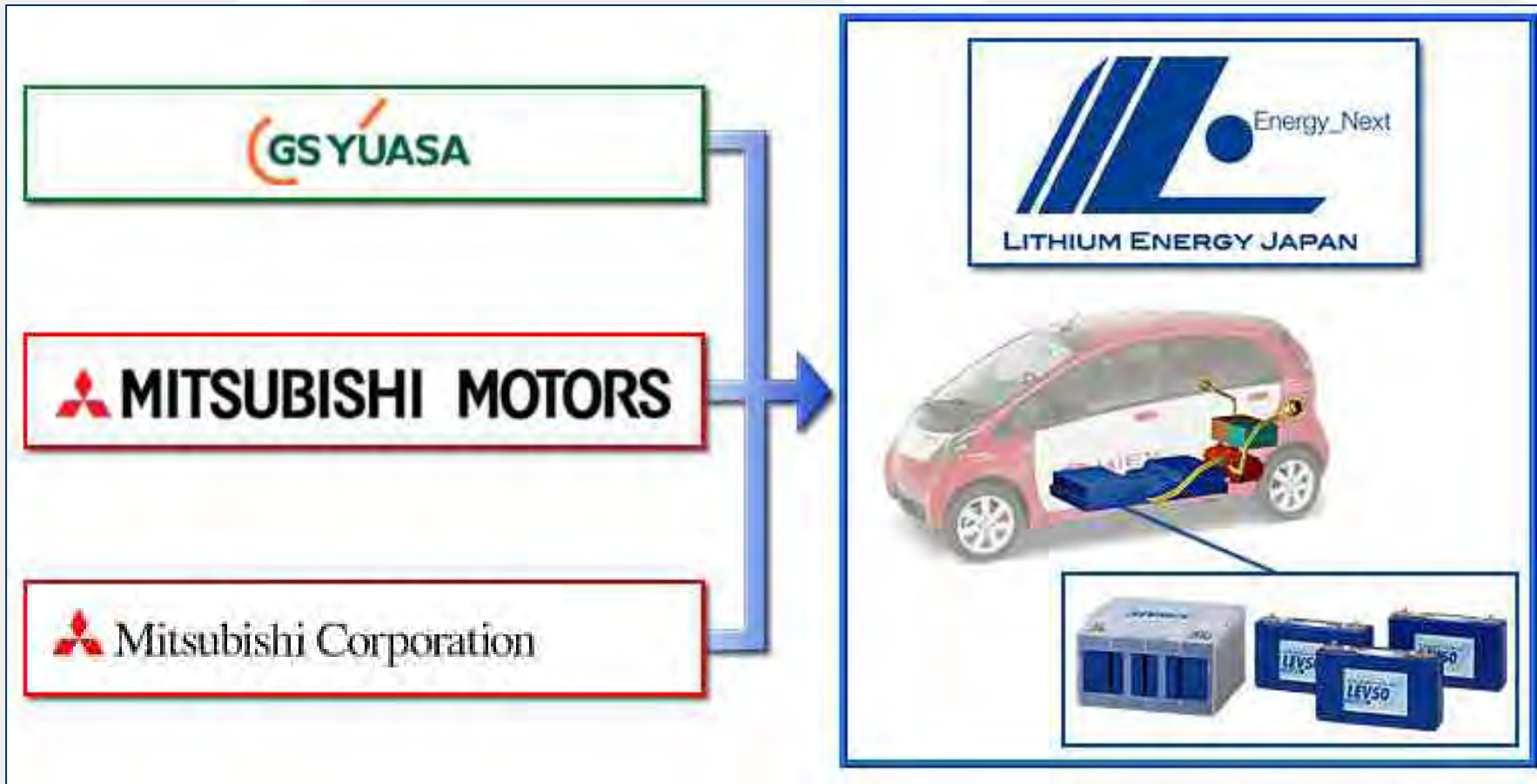
1 x Battery Package



Battery origin



- GS Yuasa, Mitsubishi Corporation, and Mitsubishi Motors Corporation established a Battery Manufacturing Company (Lithium Energy Japan) in December 2007.



Motor



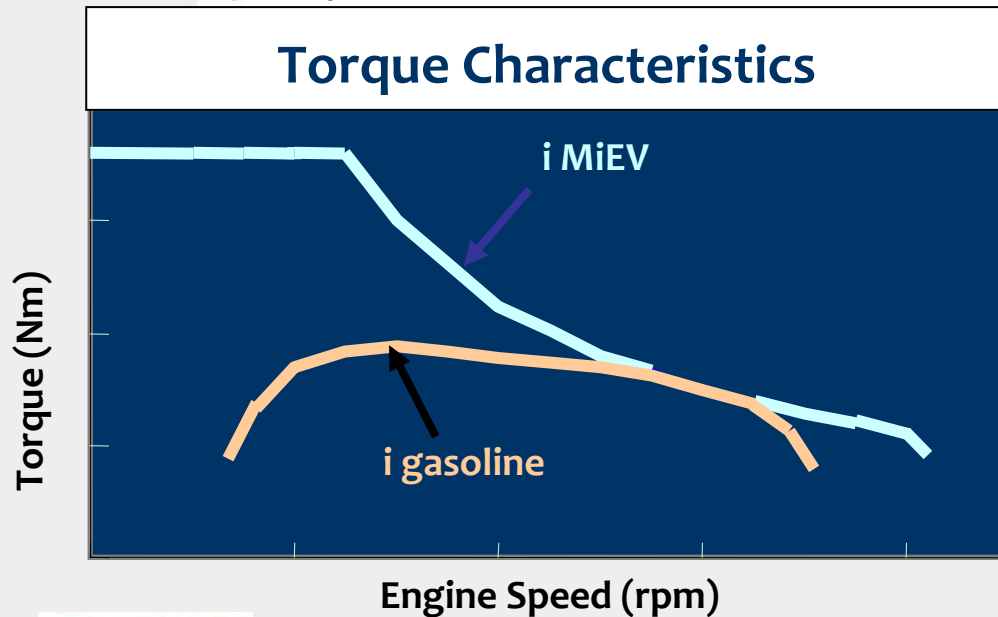
Small and quiet engine



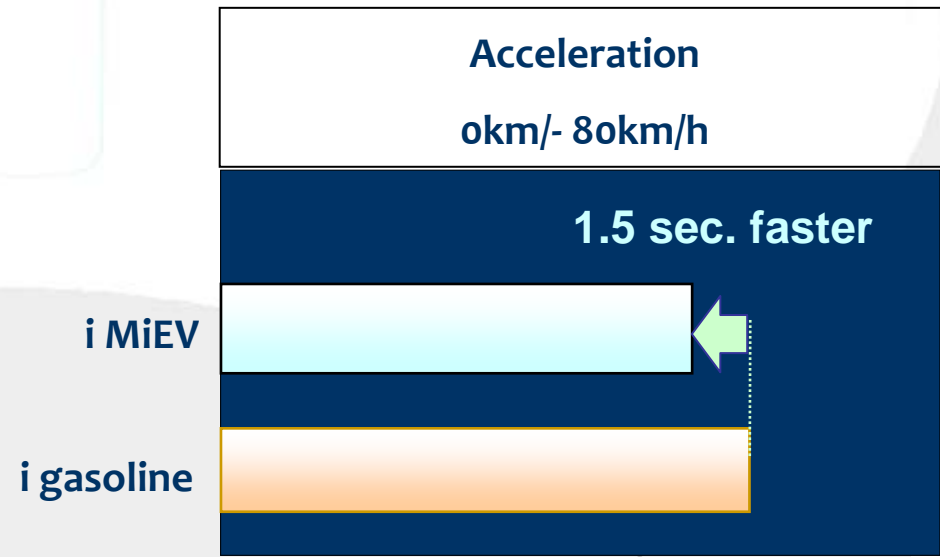
More torque

Data/ type	i MiEV	Gasoline
Max.Output	47kW	47kW
Max.Torque	180Nm	94Nm
Max.Speed	8500rpm	7500rpm
Type	Permanent magnet synchronous	Turbo-charged

Sporty character



Quicker acceleration



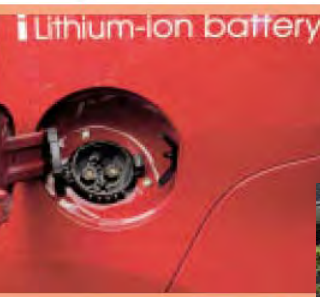
Charging



- ❶ Two ways of charging – quick and normal
- ❷ Normal charging at any regular plug in Europe
- ❸ Quick charging developed by Tokyo Electric Power Company (TEPCO) and Subaru, Nissan and Mitsubishi.
 - under development for Europe
 - Many manufacturers
 - Many electrical companies

Charging time	Power supply	Charging time
Quick charger	Three-phase 200V, 50kW	Approx. 30 min. (80%)
Household charger	230V (15A)	6+ hours(Full)

Normal socket



Quick charger socket



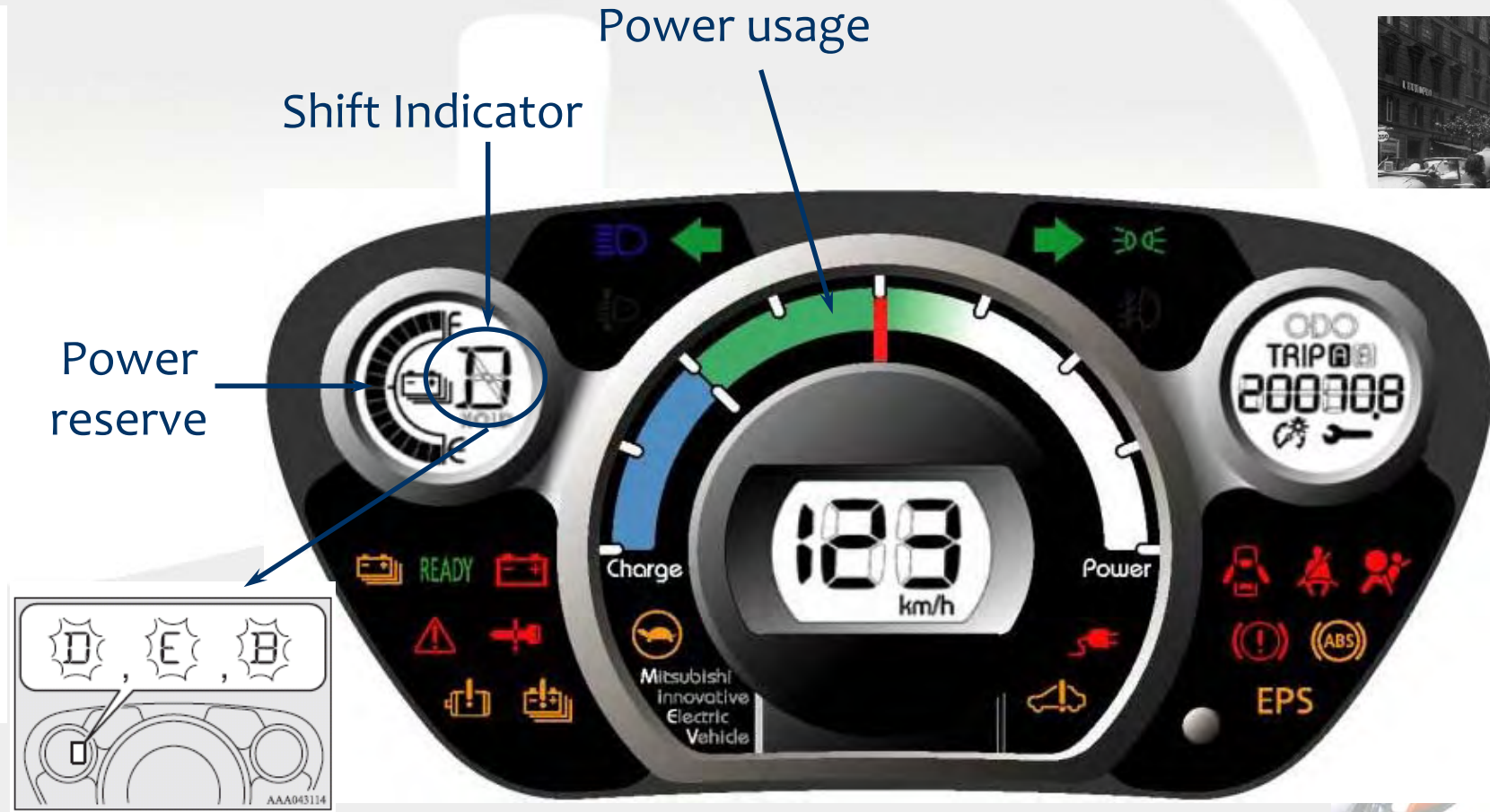
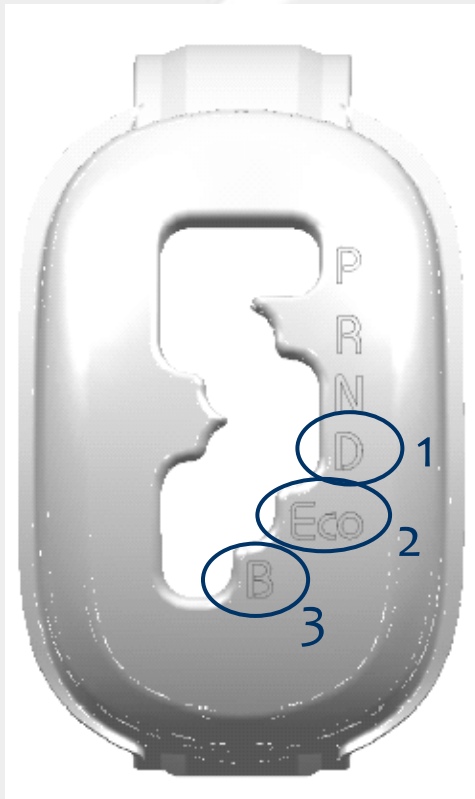
TEPCO Quick charger



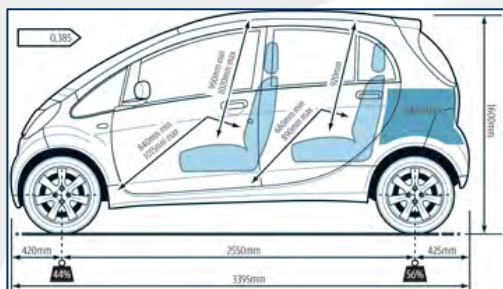
Instrument panel & controls

3 positions for gear lever

1. Drive – car functions as normal
2. Eco mode – limits power output >> limits consumption. Light regenerative braking
3. Brake – Strong regenerative braking – used for downhill driving



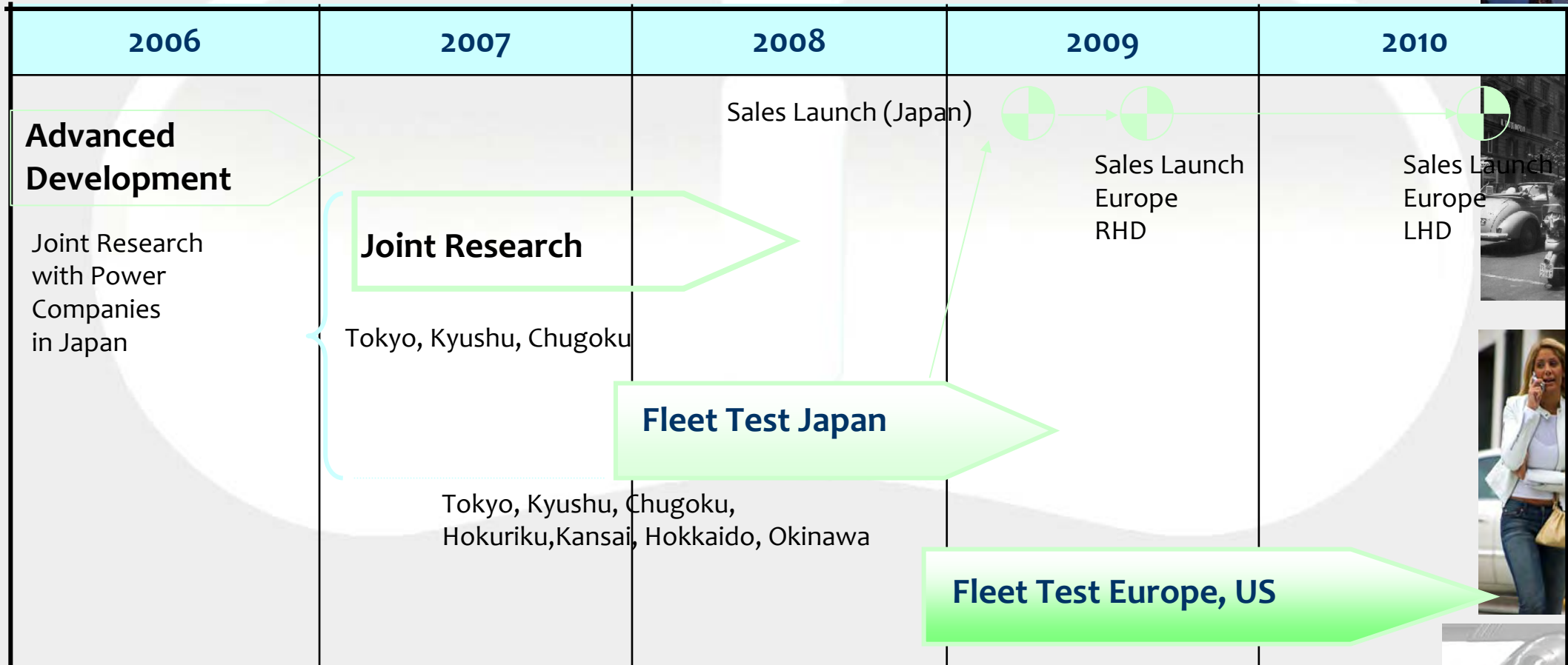
Specifications



Overall Length x Width x Height		3395 x 1475 x 1600 mm
Curb Weight		1080 kg
Seating Capacity		4
Max. Speed		130 km/h
Range (European cycle)		144 km
Motor	Type	Permanent magnet synchronous
	Max. Output	47 kW
	Max. Torque	180 NM
Drive System		Rear wheel drive
Battery	Type	Lithium-ion
	Total Voltage	330 V
	Total Energy	16 kWh



Road map of development



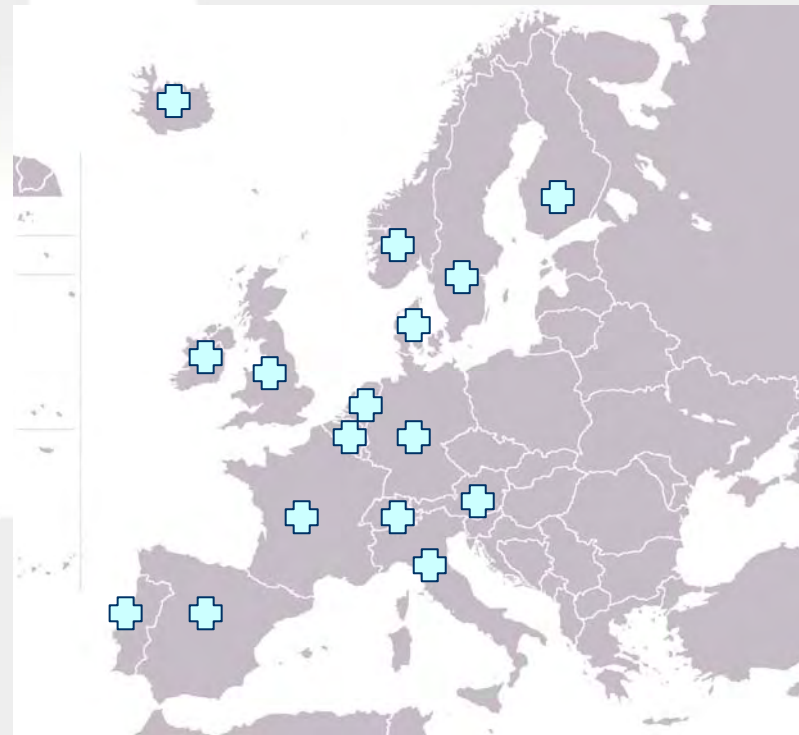
European fleet test



- i** 11 vehicles
- i** Used for fleet test in several countries throughout Europe
- i** Several vehicles for a few months per country
- i** Preparation for launch I MiEV
- i** Proto types
- i** Objectives
 - Promote Electrical vehicles
 - Test drives for
 - Governmental parties
 - Business customers
 - Consumers
 - European conditions
 - Driving style
 - Weather
 - Road
 - Reliability



x11



Collaboration with Utilities in USA



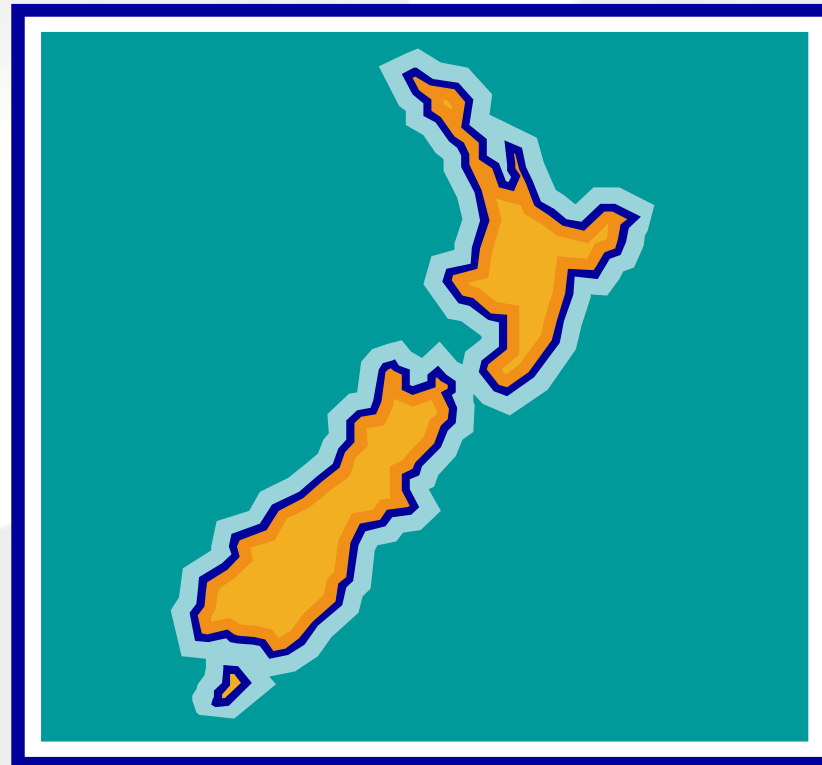
- Mitsubishi Motors Corporation to provide i MiEV Electric Vehicles to “Southern California Edison” and “Pacific Gas and Electric Company” for Joint Testing and Evaluation



Collaboration with Meridian Energy in New Zealand



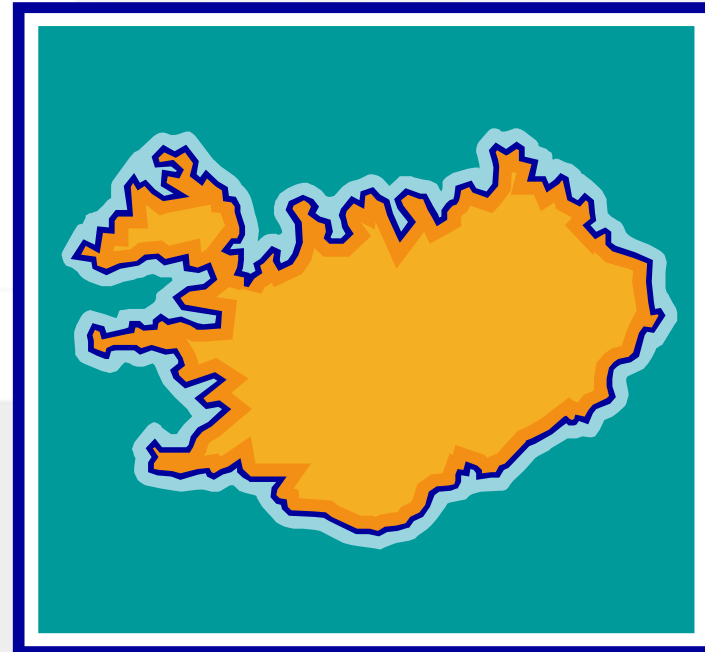
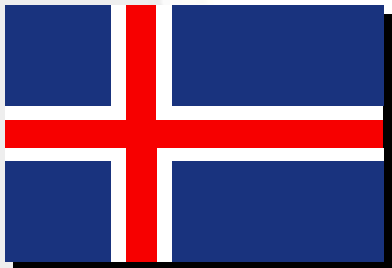
- Agreed with Meridian Energy Limited, which is the largest power company in New Zealand, to promote and demonstrate pure electric vehicle named as i MiEV on September 16th .



Collaboration with Iceland



■ Agreed with Iceland, which is mainly utilized for geothermal energy in the country, to promote and demonstrate pure electric vehicle named as i MiEV on September 19th 2008.



END

