

DENSO

Crafting the Core

Efforts in the Focus Fields (Electrification)

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Electrification Systems Business Group



1.

Goal and growth target

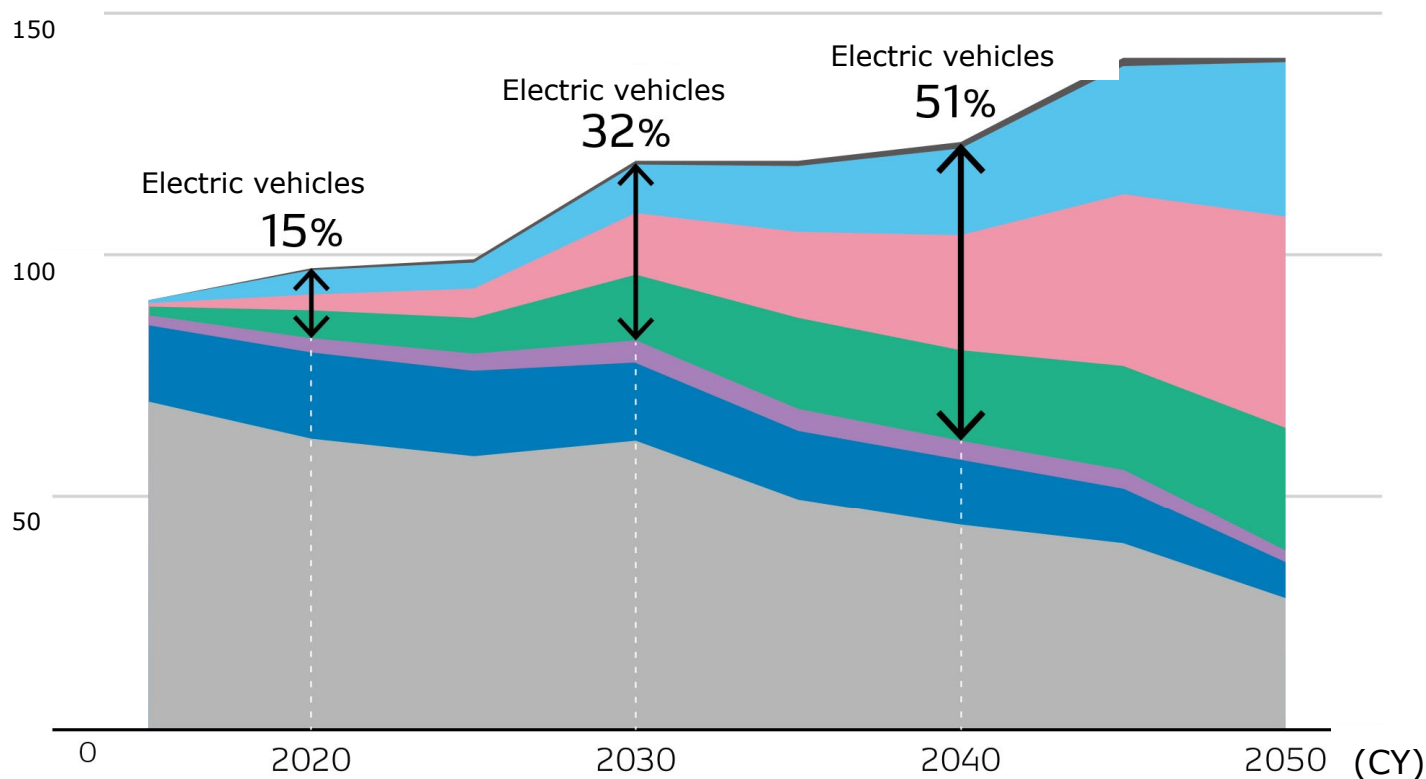
Goal of the electrification business

- Forecast of the global electrification market -

Sales of passenger vehicles (million vehicles)

- Fuel cell vehicles (FCVs)
- Electric vehicles (EVs)
- Plug-in hybrid vehicles (PHVs)
- Hybrid vehicles (HVs)
- Natural gas-powered vehicles (CNG/LPG)
- Clean diesel vehicles (D)
- Gasoline vehicles (G)

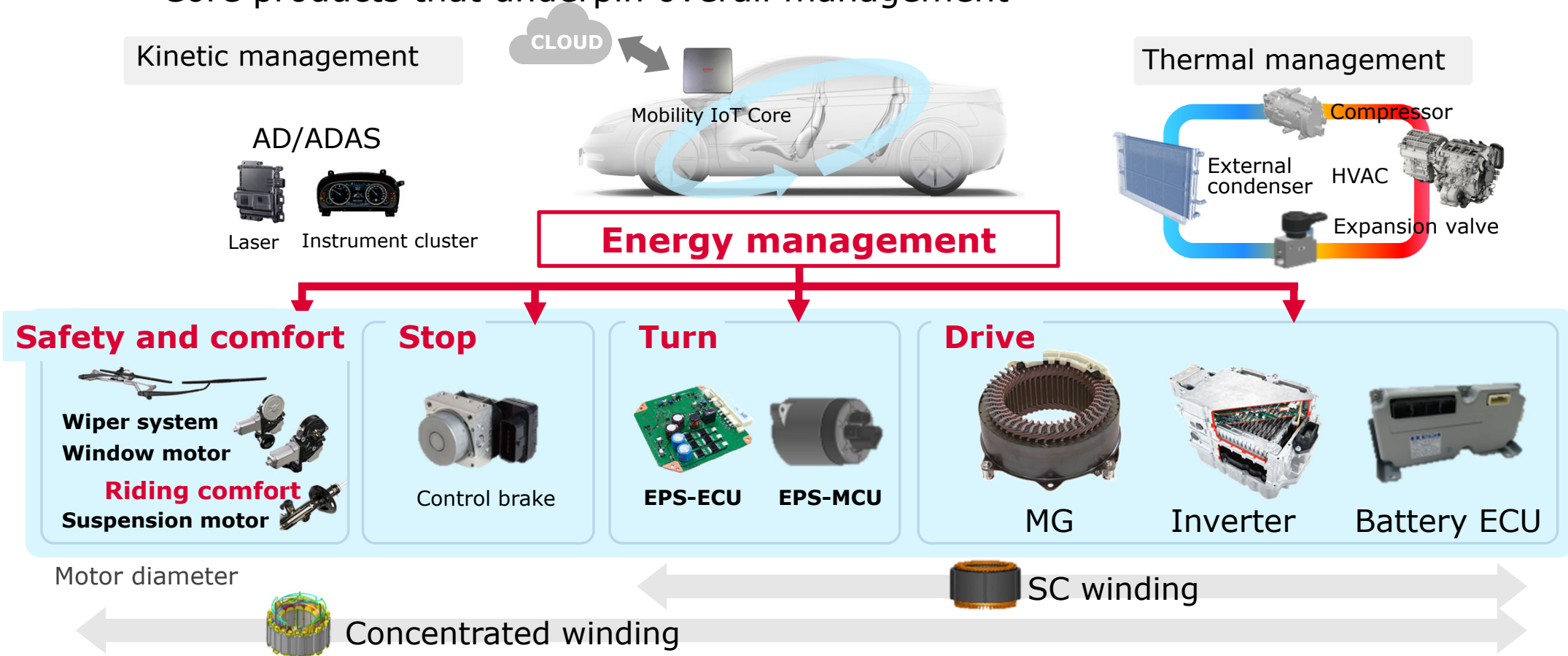
Source: Documents from the 1st Strategic Commission for the New Automotive Era, Ministry of Economy, Trade and Industry



The number of electric vehicles is expected to grow.

Goal of the electrification business

- Core products that underpin overall management -



Contribute to innovation of the automotive society through overall management

Electrification systems business Revenue target for FY2026

(billion yen)
2,000

1,000

0

(Assumed foreign exchange rate) **2019 (results)** **2022 (target)** **2026 (target)**

USD	111		100		100
EUR	128		120		120

Grow the business to more than two trillion yen by FY2026 by contributing to the spread of electrification

2.

Efforts to achieve the target

Capability to achieve electrification – Individual capability × Core technology –

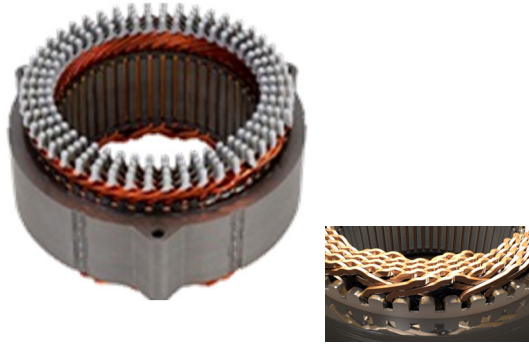
MG

Motor generator

Inverter

Battery ECU

Core products



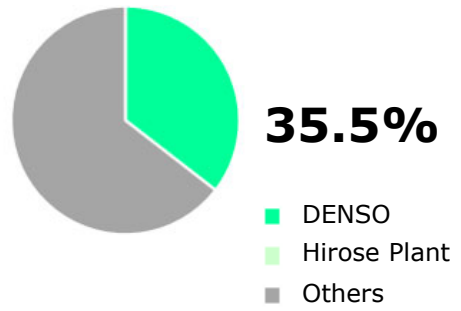
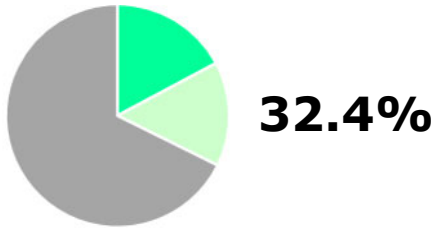
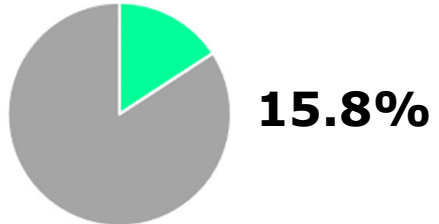
Core technologies

Press SC winding technology

Double-sided cooling

Technology to monitor many cells accurately

Global share 2018



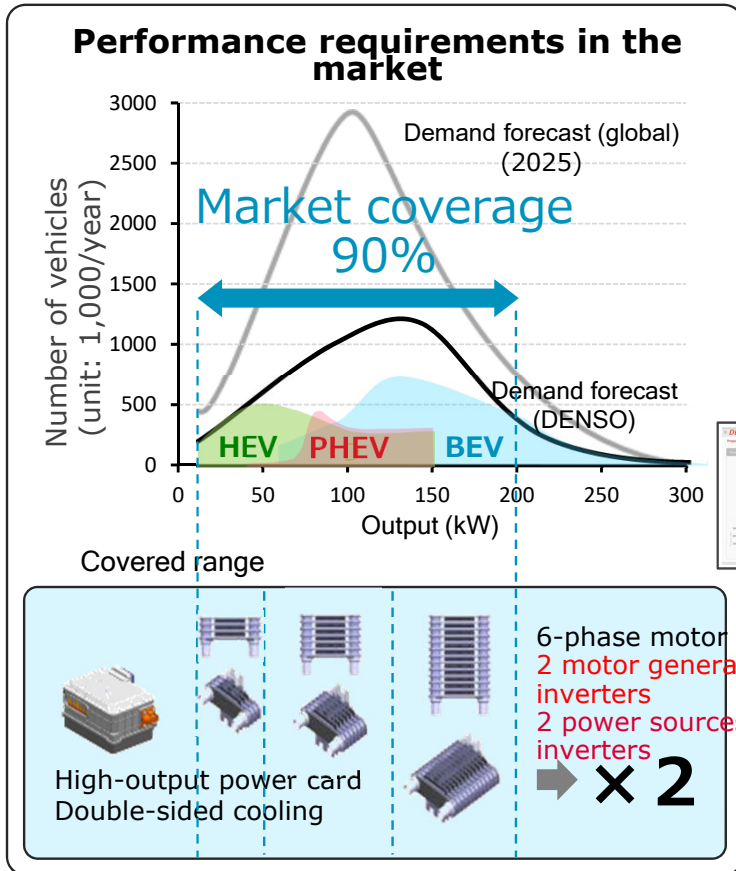
■ DENSO
■ Hirose Plant
■ Others

Competitive core technologies

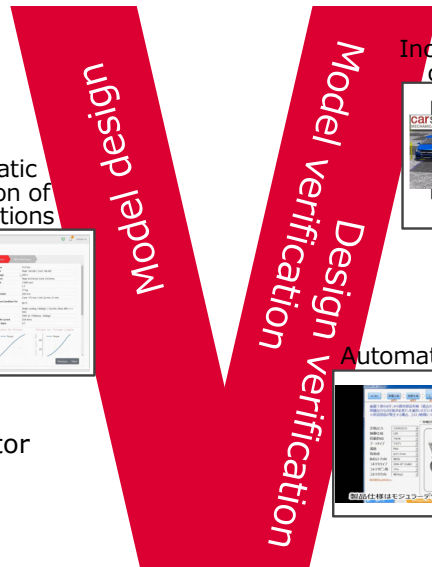
Created by DENSO based on the data of the number of units prepared by MarkLines Co., Ltd.

Capability to achieve electrification

- Goal of business and products to spread electrification -



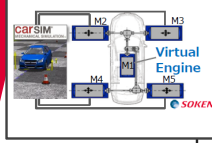
DE
Digital engineering



Automatic derivation of specifications



Increase efficiency of verification



Automatic drawing



Core & customization

Installation requirements (requirements for collision, cooling, etc.)

- Terminal block
- Connector
- Direct connection to the motor generator
- Cooling pipe

Power cards and coolers (number of stages)

Extensive product lineup covering 90% of the market

Efforts in electrification – Taking on challenges to create new value –

Neusoft

Reach DZ

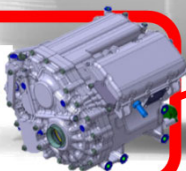


Battery pack
BMS
Charger, etc.

Power supply + Drive system

Aisin Gr.

BLU NEXUS

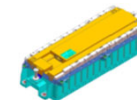


Electromechanical drive system

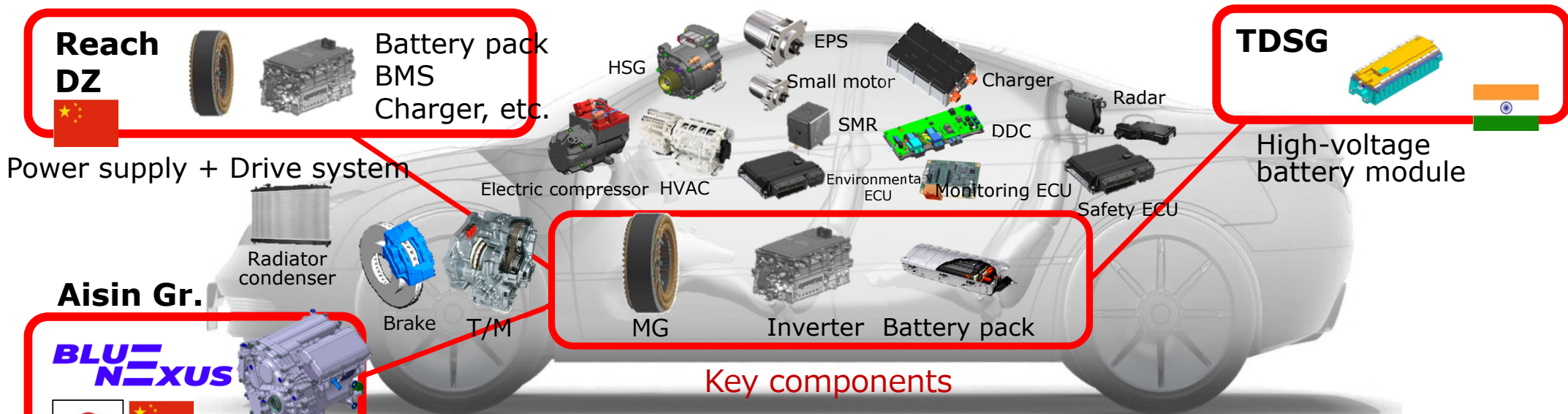
Suzuki

Toshiba

TDSG



High-voltage battery module



Key components

↑ + Engine

↑ + Fuel cell

↑ + Electric power (power plant)

(P) HEV



FCEV



BEV

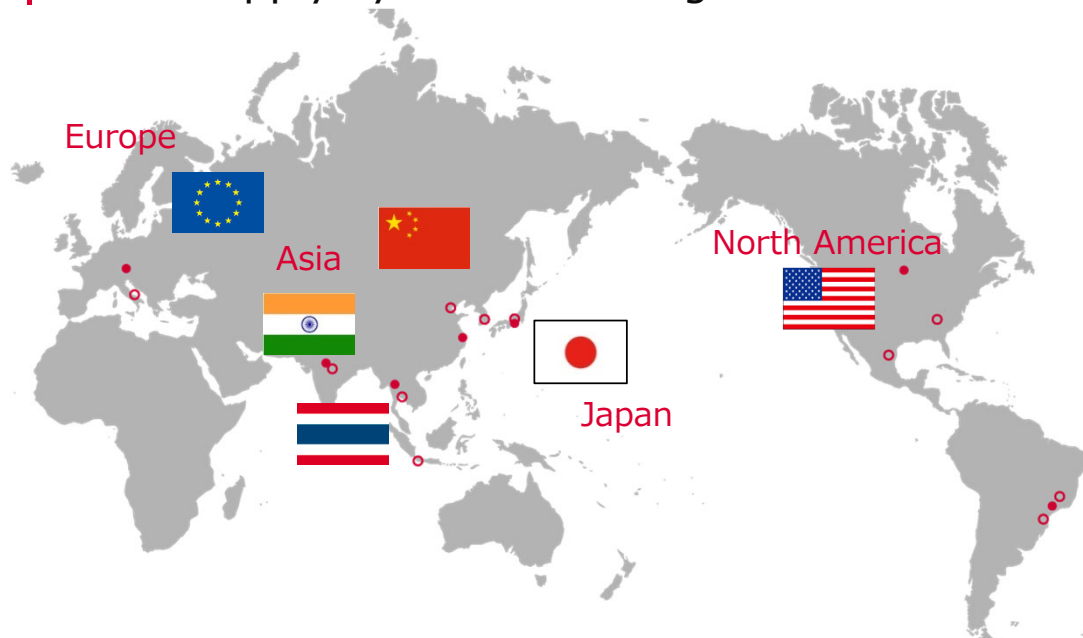


Build a broad-based alliance

Efforts in electrification

– Enhance profitability to underpin the next growth phase –

| Global supply system in six regions



● Technology Development Base
○ Production Base

| Anjo Electrification Development Center (EIC) to be established in May 2020



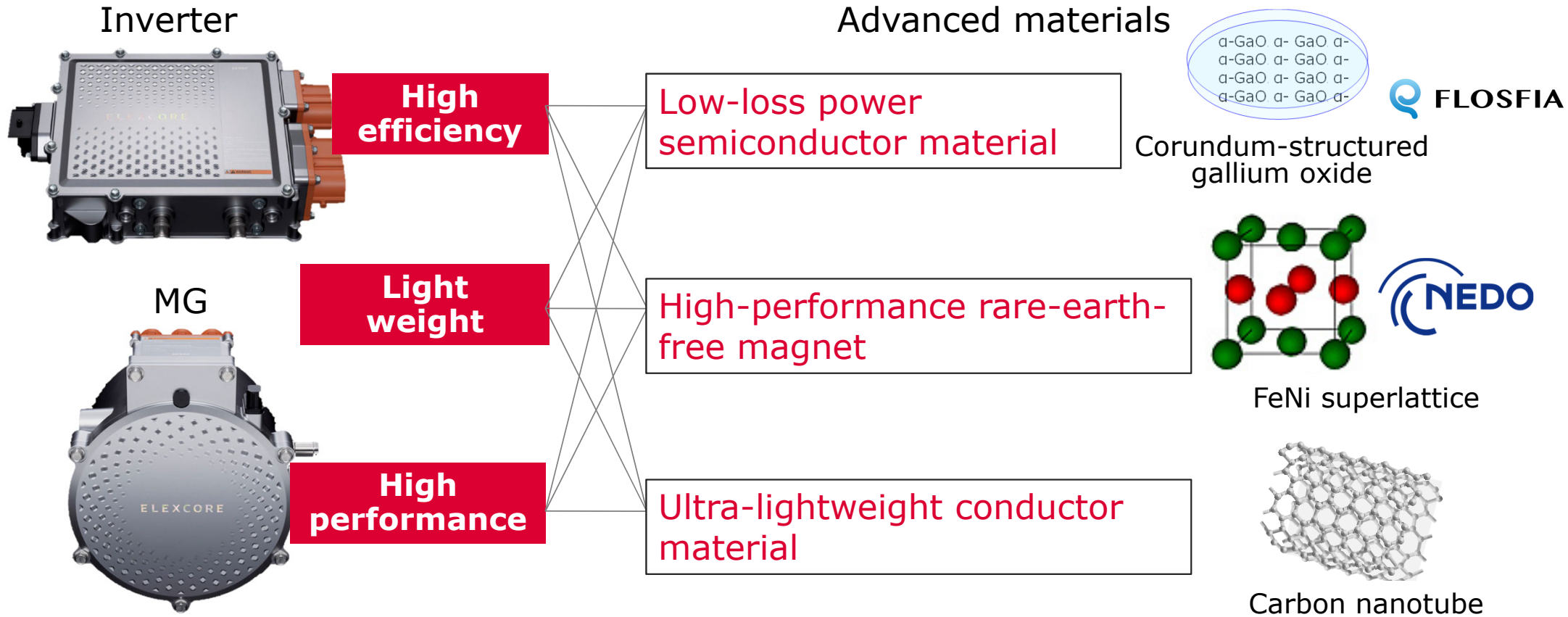
| Electronic components production business of the Hirose Plant to be transferred in April 2020

The DENSO Group will invest 180 billion yen in total.

3.

Long-term efforts

Electrification business – Efforts to enhance competitiveness



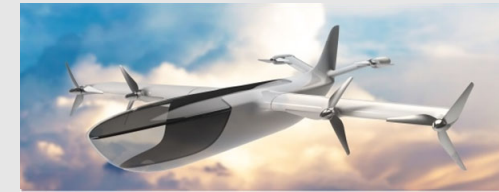
Innovative technology development

Electrification business – Long-term efforts –

Understand various mobility needs



Fields to be strengthened



New fields, quick technology development
Ultra-lightweight, lightweight, high efficiency, high quality



Complete regeneration and simplification



Expansion of vehicle value

Meet various mobility needs



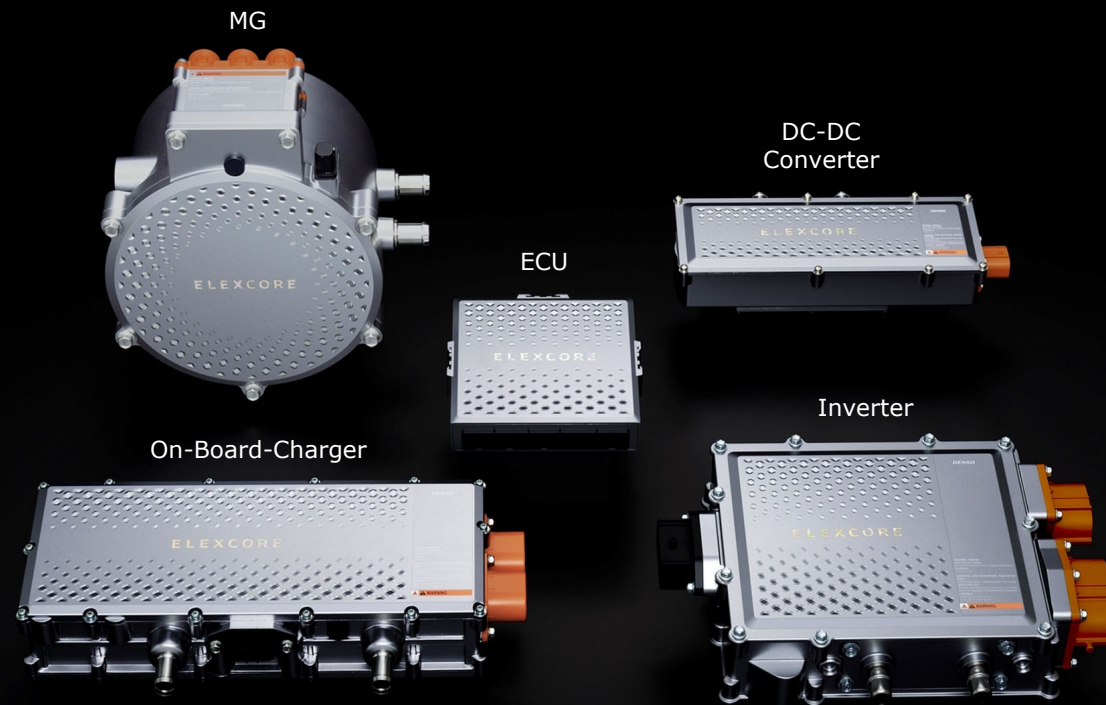
Make the sky clear using DENSO's electrification technology

DENSO

Crafting the Core

Individual capability × Core technology

ELEXCORE



Completely eliminate waste in electricity consumption to achieve comfort, improve the response, and extend the range

DENSO
Crafting the Core

Dialog day / 24th May 2019 / Yukihiro Shinohara / Electrification Systems Business Group
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