

For the Special Issue of “Auto Electronics”

Norihide Sakai*

It is about 120 years ago that automobiles were invented. Through this time, the demands for automobiles have been becoming diversified.

These demands are for: “comfort and convenience” which looks for faster and more comfortable space, “safety” which has evolved from the safety of the passengers in accidents to the prevention of the accidents, “the overcoming of environmental problems” including sustained air pollution and recent global warming, “overcoming of energy problems” which are caused by oil depletion and escalation of oil prices, “overcoming of resource problems” namely rare metals.

To specifically address environmental and energy problems, various auto manufacturers have started to launch vehicles with high fuel-efficiency, hybrid vehicles and electric vehicles.

On the other hand, in developing countries such as in BRICS, the demands for lower-cost automobiles have been expanding. Therefore, current automobiles need to meet demands for a low cost and the five demand aspects which were stated above simultaneously.

Furukawa Electric Group has been developing technologies and products based on a wide range of materials since its foundation in 1884. The examples are: material technologies focusing on copper alloys, aluminum alloys and polymer materials, communication technologies using electricity, radio transmission and light, heat solution technologies such as heat dissipation, heat transport and heat storage, electricity infrastructure technologies which transmit, store and convert electricity.

The three-year middle term plan of Furukawa Electric Group for the fiscal year 2013-2015 contains the auto market as one of the markets which need to be focused on.

This special issue introduces the technology and the product developments of automobiles we have been working on.

We are confident to make a large contribution to the achievement of ideal automobiles by developing and combining the technologies our group have.

We do hope you will give us further guidance and encouragement.

What is needed for the next generation, the technologies we can provide

Automobiles which reduce CO₂ emission significantly with using least fossil fuels.

- Reflective board for in-vehicle lighting and instrument panels
- Diffuser panel
- Power Board, a large-current circuit board
Metal core circuit board
Thick copper foil
- Super tough wire
Thin rectangular enamel wire
Magnet wire for relays
- Ultra wide band (UWB) radar
- Heat pipe
Peltier device
High-heat dissipation ECU box
LED headlamp chiller
Battery chiller component
Thermal design simulation technology
- Siloxane-free thermal conductive sheet

Improvement in fuel efficiency, reduction in CO₂ emission

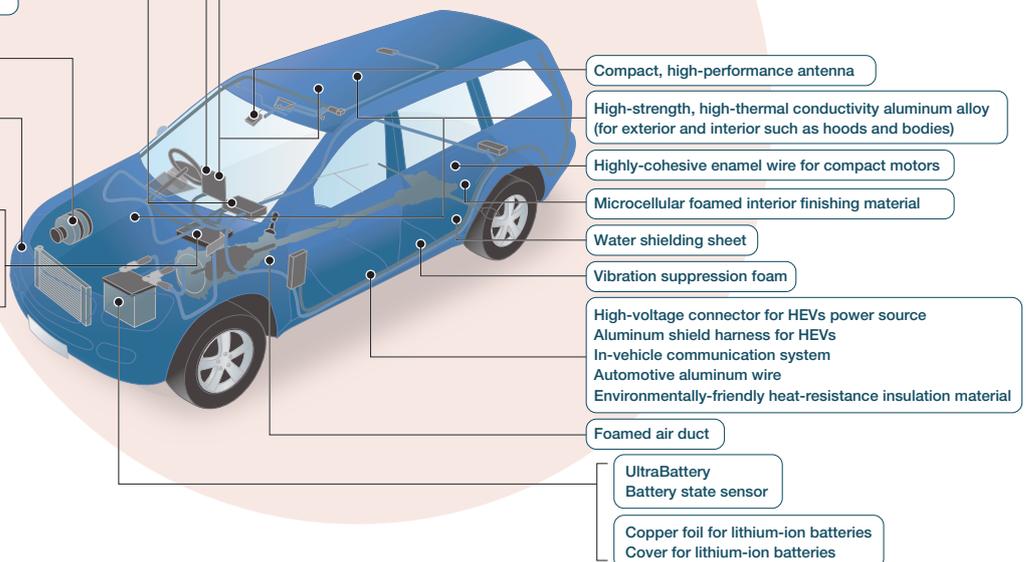
- Aluminum body
- Resin foamed lightweight interior and exterior materials
- Aluminum wire

Performance upgrade in HVs and EVs

- Capacitor hybrid type
- UltraBattery
- Magnet wire for alternators
- Magnet wire for motors
- Hybrid circuit board
- Copper foil for a negative electrode in lithium-ion batteries
- Heat dissipation by a heat pipe, etc.

Safety and security

- Small and high-performance antenna
- Ultra wide band (UWB) radar
- Halogen-free wire



* General Manager, Automotive System & Device Laboratories, Research & Development Division