

Featured Topic: Automotive Business towards the Goals of VISION 2017



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1. Changes in the Automobile Industry

(1) Environment

As a part of global warming countermeasures in Japan, the U.S., Europe, and China, fuel economy standards will continue to be tightened until 2025 (Fig. 1).

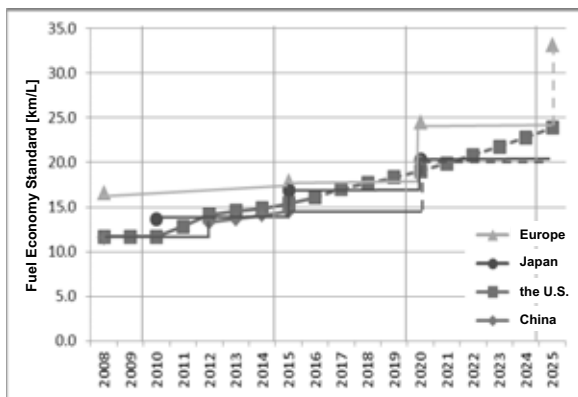


Fig. 1. Tightening of Fuel Economy Standards in Japan, the U.S., Europe, and China

There is a limit to what conventional methods of engine efficiency and aerodynamic improvement as well as vehicle weight reduction can achieve in order to respond to these fuel economy standards. Automobile manufacturers are therefore seeking new cost-efficient technologies to adopt from among all the available expertise lowering fuel consumption.

Hybrid electric vehicles (HEV) are spreading widely throughout Japan, the U.S., and some European countries, with the sales ratio of HEV in Japan now marking about 40%. However, the emerging countries that lead the global sales of automobiles are unable to sell expensive HEV. Further, HEV will be excluded from cover under the Zero Emission Vehicle (ZEV) regulations in California, U.S., in 2018, and this in turn requires automobile manufacturers to make greater use of the idle-stop system (ISS) + a regen-

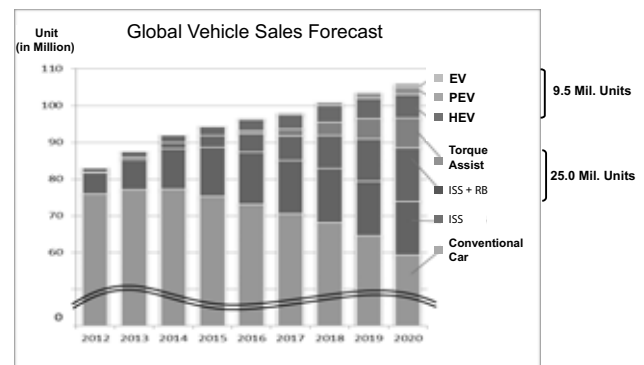


Fig. 2. Market Trends of Low/Zero Emission Vehicles

erative brake (RB), and the torque assist function in their vehicles (Fig. 2).

(2) Safety

According to the road traffic accident statistics for Japan published by the National Police Agency, the number of deaths in 2012 was 4,411, remaining high, although the number has continued to decrease since 1970. The government has specified realization of safe and comfortable transportation of people and goods utilizing driving safety support systems and devices, as well as automated driving systems, all to be realized through between-vehicles and vehicle-and-roadside communications, as a national project. It has also set up the targets to reduce traffic congestion by 50% by 2020 compared to the figure in 2010, and reduce the number of road traffic deaths to less than 2,500 by 2018. Further, the government established the Automated Driving System Preparatory Committee as a joint government-private sector project under the Council for Science, Technology and Innovation. The Committee started discussions to realize the system by 2020, the year of the Tokyo Olympics and Paralympics.

(3) Convenience – Networked Vehicles

On May 24, 2013, Prime Minister Shinzo Abe announced his IT strategy with focuses on the following: Promotion of public data accessibility and big data utilization; Realization of world's safest and most disaster-proof society; and Realization of a society with the world's safest, eco-friendly, and economic transportation. At the same time,

we can observe the following trends in the domestic Intelligent Transport Systems (ITS).

[1] Vehicle Information and Communication System (VICS)

Total of 36 million navigation systems that support VICS have been shipped to date. VICS's capability of providing real-time traffic information contributes to drivers' convenience, smooth traffic, and CO₂ emissions reduction by more efficient fuel consumption.

[2] Universal Traffic Management System (UTMS)

This system is designed to dynamically control the traffic flow through bidirectional communications between vehicles and a traffic control center using infrared beacons, with the aim of achieving safe and smooth traffic as well as preventing road traffic pollution. The number of prefectures that are employing UTMS is gradually increasing.

[3] Development of the probe system and related technologies, which collect information of vehicles' position and speed by using in-vehicle sensors and wireless communications are also accelerating towards 2020.

2. Trends of Automobile Manufacturers

(1) Component Sharing and Modularization of Mega Platform

The automobile market is now led by the rapidly developing emerging countries, and diversified models at low prices are in demand. At the same time, automobile manufacturers' development costs are increasing due to the required compliance with a range of environmental regulations, including CO₂ emissions reduction. Cutting capital investment is indispensable for reducing development costs. One solution is platform modularization in mega platforms, through which more than a million cars are produced. Platform modularization uses a single body structure to cover different classifications of cars and is now in wide practice. Although it is necessary to adjust body width and wheel base, sharing major components among different models drastically reduces the capital investment, while improving productivity. Prime example of platform modularization is Modularer Querbaukasten (MQB, Modular Transverse Matrix, in English) carried out by Volkswagen. The Audi A3, Golf VII, two different size of the Polo, and the Passat are produced using MQB, and total production by MQB is expected to reach four million in the next 10 years through global application of the system.

(2) Trends in Domestic Automobile Manufacturers

Toyota has published the Toyota New Global Architecture (TNGA) Plan to improve their cost competitiveness, product quality, and development efficiency. Nissan announced the Common Module Family (CMF) design technology, where the concept of vertical component sharing was introduced to supplement their conventional horizontal component sharing. Honda also integrates their platforms for the Civic, CR-V, and Accord, sharing 40 to 50% of components across the three models. Further, Honda plans to increase their component procurement ratio from major suppliers to 40% by 2020 compared to 16% in 2011. Some component units will be completely outsourced, including design, development, and manufacturing with Honda only presenting specifications to the outsourcers.

3. FY2014 Automotive Business Unit Policy

(1) Automotive Business Unit, Sumitomo Electric Industries, LTD.

In order to achieve the VISION 2017, the Unit aims to become a "comprehensive automotive parts supplier"

grounded on the resources acquired through development of wire harnesses. Individual strategies are as follows:

[1] Expand the share in non-Japanese markets: harnesses, connectors, and vibration-proof rubber

[2] Accelerate development of new products with "decisively leading technologies"

Weight reduction, modularization, expansion of electronics products, and supporting next generation & eco-friendly automotive technologies

[3] Propel cost reduction

Pursue optimum production locations and reinforce intelligent automation technology development

(2) Sumitomo Wiring Systems, LTD.

In response to the mega-platform strategies by the automobile manufacturers:

[1] Further reduce costs

Revise production layouts, including logistics, develop partial/full intelligent automation facilities, revise production methods, and expand local procurement of part materials

[2] Reinforce and speed up expertise in development & solution suggestions

Introduce new products and technology in a fast and timely manner, utilize our group's technologies, and commercialize high added-value products and technologies

[3] Reinforce global marketing skills

Form and reinforce global organizations and systems, and emphasize the employment and training of local human resources

[4] Eliminate quality deficiencies and refine quality assurance process activities

Act 1: Create designs and procedures that make quality deficiencies impossible

Act 2: Frontline quality assurance management that does not permit or overlook quality deficiencies

4. Promoting Development of Decisively Leading Technologies

The following are the "decisively leading technologies" that are being specifically promoted for the VISION 2017 based on social and automobile industry trends and Business Unit policy:

(1) In-vehicle power units and information networks

[1] Central gateway

[2] Regenerative braking controller

[3] Semiconductor fuses

[4] Reactors

[5] Power Line Communication (PLC) units

(2) Harnesses

[1] Aluminum wiring harnesses

[2] Aluminum pipe shielded high voltage wiring harnesses

Most of the important technologies are covered in this featured topic, although some could not be included due to the publication timing. The topic also mentions the vibration-proof rubber and sound proof technologies of Sumitomo Riko Co., LTD., our group company. I hope that this topic will find a wide audience and we look forward to receiving your constructive comments and opinions.

Reference

- Toshimichi Hanai. "Intelligent Transport Systems", Journal of Society of Automotive Engineers of Japan, vol. 67, pp.170-174