

MOBILITY ELECTRONICS

Realizing a society in which all people can move comfortably and with peace of mind (Quality of Mobility)

DENSO helps realize zero traffic fatalities and carbon neutrality by continuing to introduce products in tune with the times, using its software and electronics technologies (sensors, semiconductors, ECUs), while precisely understanding the needs of users and advances and changes in society brought about by the CASE revolution.



Shinnosuke Hayashi
Head of Business Group

Business Strengths

Ability to Create Large-Scale Integrated Systems from an All-Vehicle Perspective

Needs for electronic systems in the CASE era are evolving into large-scale systems that integrate and coordinate power-trains, bodies, chassis, cockpits, advanced driver assistance systems (ADAS), and other single-domain control systems. DENSO has experience in all of these systems. We create compelling products from an all-vehicle perspective with a broad range of technological capabilities.

Product Development Capabilities with Reliability and Sophistication Accumulated in Automotive Products

Automotive products must feature high quality and performance in order to be able to operate in harsh environments under various constraints. We have been engaged in the automotive electronic products business for many years, ever since vehicles began to become more electronic, and we have accumulated extensive knowledge of vehicles as a result. DENSO develops competitive products through a combination of this knowledge with the latest electronics and software technologies.

Global Network

DENSO has honed its human capital, intellectual assets, and a global production structure by overcoming numerous obstacles with automakers around the world. Using these strengths, we provide various solutions to automakers while refining our CASE-related technologies, moving the world one step closer to a safe and secure mobility society that is easier on the environment.

Business Strategy for 2022

DENSO helps realize zero traffic fatalities and carbon neutrality with its capabilities in electronics and software, aiming for a safe and secure mobility society that is better for the environment.

Growth Strategy	Through “green” and “peace of mind,” DENSO aims to balance business growth with efforts to resolve social issues by providing high-value vehicle integration applications for users, while refining ADAS and electronic control systems that are becoming increasingly important amid the CASE revolution. The Company is solidifying structures resilient to change by delving deeper into reforms to work processes through DX that was kicked off with “Reborn21.”
Strategy for Businesses Nearing Final Stages	We are devising strategies for businesses nearing their final stages while fulfilling our obligations to our customers, identifying businesses that fall outside our creed of “green” and “peace of mind” as a part of portfolio management, and products with singular functionality that are becoming commodities. Using the capabilities derived from these strategies, we are shifting power to business domains with excellent growth prospects and profitability with even higher value for users.
R&D	DENSO is accelerating the development of electronic platforms to make software-defined vehicles (SDVs) a reality in the CASE era, by thoroughly refining omnidirectional sensing technologies, algorithms, and control technologies to improve the user experience (UX). We are developing highly competitive products, such as systems and components for self-driving cars, in preparation for an advance into the self-driving car market, and reinforcing our development processes with DX and automation on both the software and hardware fronts.
Monozukuri	DENSO is reinforcing its competitiveness in <i>Monozukuri</i> with a lean and flexible structure that features digital-twin plants and multi-generation, high-speed mixed production lines. DENSO is building an optimized supply structure around the world that facilitates the movement toward carbon neutrality, while responding to rapidly expanding production volume globally as automotive electronics become more sophisticated.
Hitozukuri	We are developing our human resources with the aim of grooming professionals with the ability to turn ideas into reality, raising individual abilities through innovative careers for employees who are experts in software and electronics. We aim to sharpen our technological capabilities across control functions and rapidly maximize performance. Our career support systems for individual employees facilitate the reallocation of personnel across organizations through human resource visualization.

Outcome of Green and Peace of Mind Strategy

	Objectives	Results
Green	Develop electrical, low-power consumption control systems for achieving carbon neutrality	Ramped up development of low-power ECUs and electronic control systems that help lower power consumption, and electronic platforms that minimize energy usage by optimally integrating controls of all vehicle systems
Peace of mind	Develop advanced driving support technologies with the aim of zero traffic fatalities	Developed and brought to market Global Safety Package 3, a concept that balances compactness and low costs, with expansion in accident prevention and driving assistance functions

Efforts toward Quality

Automotive software is becoming more expansive, sophisticated, and complex following the advancement of the CASE revolution. Under these circumstances, we aim to realize a more robust quality control structure by reforming processes at the initial development stages for large-scale software development, leveraging synergies within the Mobility Electronics Business Group, which has streamlined our electronics and software development functions. Based on an approach that prioritizes safety and quality above all else, we will prevent the recurrence of quality-related issues.

Specific Initiatives to Achieve Strategic Aims Strengthening Competitiveness in Priority Domains and Accelerating Business Growth

DENSO is prioritizing the development of the following products in the fields of “green” and “peace of mind.”

- Green: Development of ECUs and software necessary for electric vehicles
- Peace of mind: Development of high-value-added product lines that work with ADAS and human-machine interface (HMI), based on precision information processing

- Integrated electronic platform that leads to greater value in “green” and “peace of mind” fields: Development of electronic platform that facilitates optimized actions among applications
- **Strengthening Software Business and Hitozukuri**
DENSO balances the development of human resources (*Hitozukuri*) on the cutting edge of change with business growth in the software field.

- We are introducing ideal development models incorporating cutting-edge IT in software development methodologies accumulated in automotive products.
- We are greatly strengthening our human resources, organizations, and corporate culture by establishing a systematic management cycle and career development process, which was implemented in fiscal 2022.

Building an Optimal Supply Structure and Strengthening Manufacturing Competitiveness

DENSO is improving its competitiveness while building an optimal global supply structure able to respond to sharp growth in production volume of electronic products amid advances in CASE technologies.

- Consolidate/Create series for easy-to-manufacture product structures
- Finish building digital-twin plants

Resolving Social Issues through Our Businesses

Relevant SDGs



Global Safety Package 3 Helping Improve Safety Performance of Vehicles with Millimeter-wave Radar and Vision Sensors

We developed Global Safety Package 3 as an accident prevention system and launched it in fiscal 2022.

Global Safety Package is a system that assists drivers with a combination of millimeter-wave radar sensors that detect the position and speed of vehicles and objects on the road and vision sensors that use cameras to observe conditions in front of the vehicle.

In order to eliminate traffic accidents while ensuring freedom of movement, it is important to develop products with attractive prices while further advancing safety products with cutting-edge technologies, and then deploying these products in as many vehicles as possible. Global Safety Package 3 realizes both compactness and low costs, while expanding assistance scenarios through the use of cutting-edge technologies, such as AI.

We are developing technologies with the objective of ensuring safe freedom of movement for drivers, pedestrians, and everyone else in the world.



Millimeter-wave Radar Sensors
Our millimeter-wave radar sensors help vehicles avoid collisions at intersections, such as with oncoming vehicles when turning right, or with pedestrians crossing the street when turning left or right, thanks to a wider angle and longer distance of object detection, and improvements in the speed of analysis functions. With the aim of installing these radar sensors in a variety of vehicles, we are working to improve detection performance and make the radar sensor more compact and lightweight, thereby lowering the hurdles to installing the sensors in vehicles.



Vision Sensors
Our vision sensors help vehicles avoid collisions in intersections thanks to a wider horizontal view angle. This wider angle of view also enhances cruise control functions that maintain distances with the vehicle in front and when changing lanes, while increasing the distance a vehicle can detect objects. We are improving object detection capabilities with AI in a bid to expand functionality to vehicle distance maintenance assistance and traffic signage recognition assistance.