

# POWERTRAIN SYSTEMS

## Balancing the joy of life with vehicles with superior environmental performance—Providing solutions that help overcome this seemingly contradictory task

We will reduce the environmental burden of vehicles to the greatest extent possible and respond to the diversification of fuel and various environmental regulations, which are becoming stricter by the year. We will also work to supply high-quality systems and components. By doing so, we will strive to create and deliver new value in order to contribute to society as a whole.



Hisashi Iida  
Head of Business Group

### Business Strengths

<b>R&amp;D Capabilities That Have Led Development of World-First Products and Advanced Powertrains</b>	<b>Highly Reliable Manufacturing Technologies That Facilitate the Safe Driving of Vehicles</b>	<b>Personnel, Masters of Powertrains, Form Organically Coordinating Organizational Capabilities</b>
DENSO has mass-produced a number of world-first products, such as common rail systems and a product that directly injects fuel in diesel internal combustion engines, while pursuing greater environmental performance in vehicles. Our core technologies and development capabilities are also compatible with the expansion of options for carbon-neutral powertrains, such as hydrogen and biofuel engines.	To enable the high-performance driving of vehicles, DENSO has refined its highly reliable manufacturing technologies that are integrated from materials preparation to molding and sintering, as well as its technologies for high-speed assembly and highly complex and precise processing at the micron-unit level. DENSO aims to sharpen its technological edge further by fusing together cutting-edge AI and digital technologies with robots and its accumulated skills and manufacturing knowledge.	In working with automakers on the creation of vehicles that can satisfy tough environmental regulations and withstand harsh operating environments, we have developed a varied range of professionals, each of whom has expertise in particular elemental technologies or technical skills and works in a team of professionals focused on vehicle specifications. In other words, we have advanced organizational capabilities that allow us to leverage specializations in all areas, from components through to systems.

### Business Strategy

The Powertrain Systems Business has helped the spread of mobility by pursuing the simultaneous realization of lower environmental impact and convenience. The extensive experience garnered through these efforts has enabled us to acquire additional technologies and skills. Moreover, meeting the needs of markets and customers has developed and strengthened our personnel and organization. We have a responsibility to utilize these technologies and skills and thereby continue contributing to the realization of a sustainable mobility society. With a view to helping achieve a sustainable future while ensuring that all our personnel can continue working with cheerfulness, pride, and vitality, in fiscal 2024 we will continue efforts to de-emphasize and discontinue internal combustion engine products throughout supply chains and to commercialize new energy businesses (demonstrating the effectiveness of measures).

Business Portfolio Transformation	As the internal combustion engine market enters a period of maturity and contraction, the Powertrain Systems Business Group will transform its business portfolio, which developed during the previous period of rising production volume. In this way, we will establish a profitable structure that enables continued earnings even during a phase of declining production. At the same time, the business group has a responsibility to pass on the baton by shifting the freed-up resources—personnel, products, and money—to growth fields. Attempting to shift such resources as personnel, products, and money to growth fields in a short period would not only require excessive manpower and expenses but would also impact and burden a wide range of stakeholders, including customers and suppliers. Collaboration with other business groups to identify needs in growth fields and then swiftly initiating activities and making adequate preparations is extremely important. With this in mind, we will begin initiatives as soon as possible, complete preparations promptly, and de-emphasize and discontinue internal combustion engine products in a decisive manner that precludes backtracking.
Realization of Carbon Neutrality and the Creation of New Value	In the field of utilizing new sources of energy, such as hydrogen and exhaust heat, our activities have led many people to entertain great expectations of our efforts and express interest in them. On the other hand, to realize commercialization we must gain the genuine endorsement of the business partners who create, use, and buy our products. For this reason, demonstrating the tangible value of products is essential. In fiscal 2024, we will conduct commercial product installation and advance demonstration activities in relation to exhaust heat power generation, fuel cells, and carbon neutrality at DENSO FUKUSHIMA CORPORATION and prepare concrete plans for commercialization.

### Specific Initiatives to Achieve Strategic Aims

**Preparatory Activities for the De-Emphasis and Discontinuation of Internal Combustion Engine Products**  
 Our preparatory activities are ensuring the safety, reliability, and stability of our products and businesses. In other words, we are establishing conditions that will enable us to safely deliver products with reliable quality. Specifically, in de-emphasizing and discontinuing internal combustion engine products, we must put in place four key elements: quality, business conditions, products, and supply chains. Therefore, we will strengthen the foundations of quality, revise sustainable business conditions and product specifications, and reorganize supply chains so that they reflect changes in scale. In the internal combustion engine field—where the new investment of resources is likely to become challenging—we will advance the aforementioned preparatory activities in collaboration with customers, suppliers, and other stakeholders so that we maintain supplies of internal combustion engines for those continuing to require them due to regional or timeframe-related issues. In this way, we will help realize the multi-pathway development of powertrain systems.

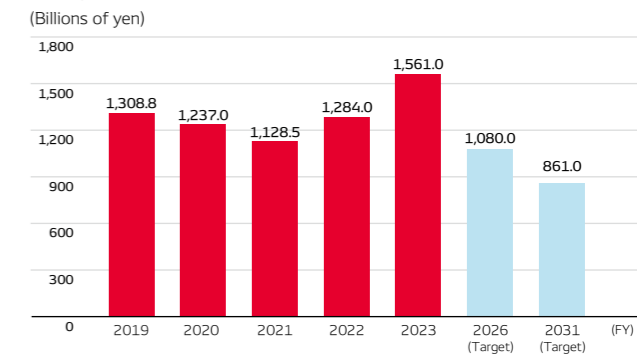
### Outcome of Strategies for “Green” and “Peace of Mind”

<b>Objective:</b>	Promote efforts to de-emphasize and discontinue internal combustion engine products together with customers, suppliers, and other industry participants
<b>Results:</b>	Began discussions with customers and suppliers and initiated agreement on future strategies and scenarios; in fiscal 2024, expanding the scope and securing sufficient time for discussions and preparation by starting early
<b>Objective:</b>	Achieve commercialization in the new energy field through activities to promote related parties’ understanding
<b>Results:</b>	Through discussions with industry stakeholders, agreed on moving forward with various projects; in fiscal 2024, shifting to implementation by realizing commercialization through implementation demonstrations

### Preparatory Activities

- Preparing quality (strengthening the foundations of quality)**
  - Eliminating dependence on the skills of individuals and creating processes not overly reliant on personnel
- Preparing business conditions (replacing businesses in our portfolio)**
  - Thinking through sustainable measures and establishing the required elements
- Preparing products (standardizing products)**
  - Establishing manufacturing that is easy to manage by improving the robustness of quality and by integrating product types to reduce component varieties
- Preparing supply chains**
  - Building a flexible production system in line with scale
  - Integrating the production lines of manufacturing bases and introducing high-mix, low-volume production lines

### Revenue of Internal Combustion Engine Products Designated to Be De-Emphasized or Discontinued\*



\* Powertrain Systems Business Group overall

### Resolving Social Issues through Our Businesses



#### Acquisition of Like-Minded Partners through Early Implementation of Demonstrations in the New Energy Field

With our sights set on a society where a range of energy-saving and renewable energy solutions become ubiquitous and energy and resources are used without waste, we have been creating core products that realize the concept of utilizing hydrogen, heat, and water, and we have been analyzing the value that these products offer. However, simply providing products that have value is not enough. Together with partners who share our vision, we must provide a value model that includes the establishment of suitable conditions. We will develop commercialization models that take into account safety, statutory regulations, infrastructure, regional characteristics, and economics, and together with our partners we will begin implementation demonstrations aimed at the start-up and expansion of operations.

#### Realization of Plant Decarbonization Technologies through On-site Hydrogen Production and Combustion Utilization at DENSO FUKUSHIMA CORPORATION

