

Promoting R&D that Contributes to Society and the Environment through Distinctive Product Development Exhibiting the Spirit of *Mono-zukuri*

R&D

■ Pursuing the Creation of New Value with the Promotion of R&D for Cutting-edge Technologies across a Variety of Fields

At AISIN, we plan and design our products from the customer's point of view as we engage in a wide range of technological development. In the automotive field, we are accelerating the development of value-added and highly appealing system products. Further, we are expanding our range of development in more diverse fields through collaboration among Group companies. Such fields include scientific research regarding the relationship between living environments and the living body based on state-of-the-art automotive parts technology, as well as research on fuel cells, lasers and other advanced technologies and environmental technologies.

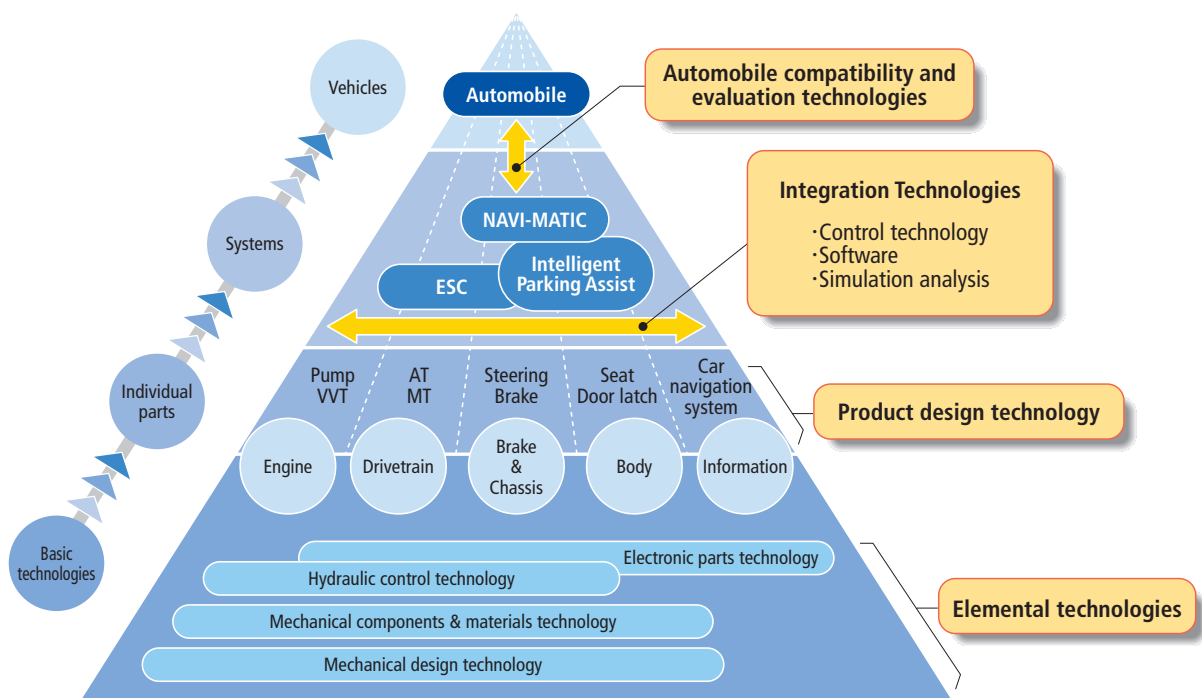
While system product development extends in a variety of directions, our efforts are devoted to fields where customer needs are high, notably the "environment," "safety" and "comfort." In addition, with the aim of creating new system products, we are currently expanding the scale of value innovation (VI) activities to the entire AISIN Group, as well as proac-

tively undertaking innovative *mono-zukuri* measures through integrated production, procurement and other functions.

To support the development of new products, the elemental technologies that serve as the core are vitally important. The development of individual parts is handled by refining basic technologies such as mechanical design, mechanical components and materials, and hydraulic control technologies—areas in which AISIN excels. For the development of system products that integrate these technologies, the entire system needs to be optimally controlled by seeking greater compatibility with automobiles. To this end, in February 2007 Aisin Comcruise Co., Ltd., which specializes in software development for embedded systems, was jointly established by Aisin Seiki and other Group companies to further strengthen crucial core technologies such as control, software and simulation technologies.

The AISIN Group will continue to accelerate the development of proprietary system products.

● AISIN's Technological Development Structure



Domestic and overseas operations of the AISIN Group include four advanced R&D companies through which we are pursuing cutting-edge technologies in the automotive field and other areas. In particular, IMRA America, Inc., located in the state of Michigan in the United States, and IMRA Europe S.A.S. of France are collaborating with local universities and research institutes on state-of-the-art technologies in information and energy.

Among IMRA America's research results, in April 2007, the company's femtosecond fiber laser*1 FCPA μ Jewel™ was equipped on the VisuMax™*2 eye surgery system developed by German medical company Carl Zeiss Meditec AG. The VisuMax system, which incorporates IMRA's advanced femtosecond fiber laser technology and Carl Zeiss's world-renowned optical lens technology, boosts a level of safety and reliability far beyond conventional methods of eye surgery.

*1) Pulse laser that intermittently emits pulses of light, with pulse duration on the order of a femtosecond (10-15, 1 femtosecond = one quadrillionth of a second).

*2) Product name of the device used to perform LASIK, a surgical procedure used to correct myopia or astigmatism. VisuMax™ will be available in the United States and Europe from the latter half of 2007, while sales in Japan are pending until approved by the Ministry of Health, Labour and Welfare.



Femtosecond fiber laser FCPA μ Jewel™

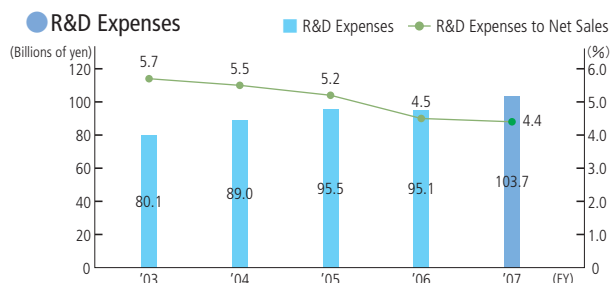
In terms of environmental technology, AISIN is actively working to develop global environment-friendly products as well as undertaking research on recycling technology. As for auto-

motive parts, in March 2006 AISIN introduced into the market the world's first RWD hybrid transmission, which was jointly developed with Toyota Motor Corporation (TMC). Together with the FWD hybrid transmission introduced in 2004, we have further bolstered our hybrid system lineup.

In the life related and other products business, we continued our collaboration with TMC for the development of residential fuel cell cogeneration systems, and commenced demonstration tests in private residences in Aichi Prefecture in October 2006.

AISIN is actively developing an array of devices and technologies from gas engine cogeneration systems that are already commercially available to promising products such as dye-sensitized solar cells targeted for commercialization in the near future.

Competition within the technological development field is gaining in intensity, making a high level of investment essential. Our basic stance is to focus our efforts on forward-looking technological development regardless of temporary fluctuations in the business environment or business results. We will continue to make proactive investments to rapidly introduce new products closely tailored to customer needs.



Evaluating Reliability

■ Enhancing Proving Grounds to Raise Quality and Thoroughly Assure Reliability

To provide products that meet the expectations for reliability from customers the world over, AISIN has pioneered as an automotive parts manufacturer by establishing proving grounds capable of evaluating not only individual parts but also the entire vehicle system. In 1970, AISIN established the Fujioka Proving Ground in Aichi Prefecture followed by the Toyokoro Proving Ground in Hokkaido in 1992, both of which are among the largest in the world. Overseas, AISIN was the first Japanese supplier to construct a proving ground in North America, with the Fowlerville Proving Ground in the U.S. state of Michigan.

In meeting the needs for systemization and increasingly sophisticated products, AISIN is enhancing its evaluation and testing capabilities for automobile compatibility and systems. In

September 2005, AISIN upgraded its Toyokoro Proving Ground with a new track equipped with a close reproduction of a standard freeway with slopes and no banked curves. Iron bridges, tunnels and concrete walls also allow assessment of radio disturbances and ITS-related issues, offering a testing environment that simulates actual driving conditions.

As we anticipate future needs in the global market, AISIN will continue to upgrade evaluation facilities and strengthen our development structure to enable testing and evaluations under a variety of environmental conditions found throughout the world. We believe these initiatives in turn will raise the quality and reliability of our products.



Conducting engine bench testing (Fujioka)



Iron bridge test road simulating highway driving (Toyokoro)



Anechoic chamber which evaluates the influence of electromagnetic waves on electronic devices (Fujioka)

Production Technology

■ Developing Unique *Mono-zukuri* with an Unflinching Spirit of Inquiry and Flexible Ideas

To provide customers with high-quality, high-performance products at low prices, we are taking a unique approach toward *mono-zukuri* underscored by our unflinching spirit of inquiry and flexible ideas. Further, we are focusing concerted efforts on nurturing outstanding staff possessing manufacturing know-how so that we can deploy our approach to *mono-zukuri* throughout the world.

Production technologies extend from the development of emerging technologies for new manufacturing processes to the development of technologies for commercialization, preparing for mass production and making improvements. By implementing dedicated activities based on the fundamentals of *mono-zukuri*, we are strengthening the development of proprietary manufacturing processes, facilities and production systems in metal forming, plastic molding, iron casting and other areas.

Additionally, AISIN is in the process of standardizing production by internally making simple, streamlined and efficient equipment and molds that can be mastered by any AISIN employee in any country, allowing us to realize significant cost reduction and enhanced competitiveness.

A specific example of this is the production line for height sensors at the Handa Electronic Plant. By thoroughly simplifying the production line, we reduced the space required by one-fifth while raising productivity by 1.4 times.

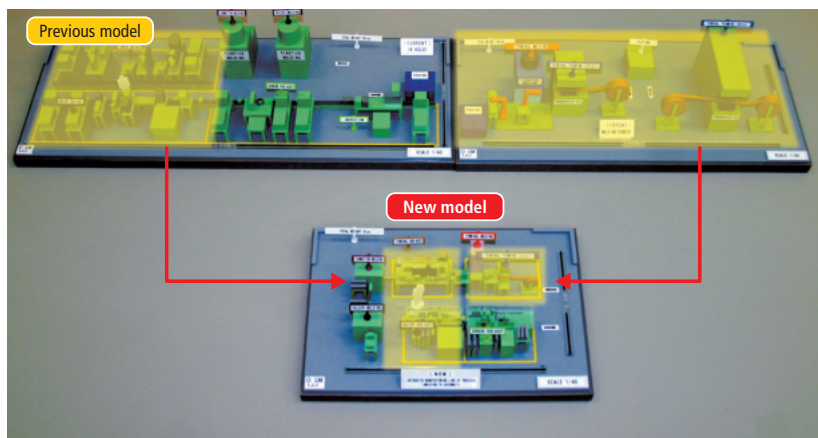
Nurturing people is at the heart of *mono-zukuri*. AISIN

therefore places a strong emphasis on training personnel who possess broad and sophisticated technological knowledge and advanced skills and who can operate on a global playing field so that we can make sure we can provide products with AISIN quality to the four corners of the world.

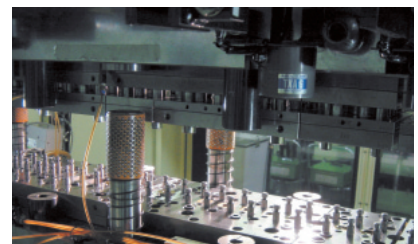
AISIN is proceeding with preparation of the Production Engineering Center, scheduled for opening in August 2007. The Production Engineering Center will function as a nucleus for the global deployment of production technologies and significantly strengthen AISIN's "*mono-zukuri* power" by consolidating production engineering-related functions, including the development of manufacturing processes and the design and production of equipment and molds, presently dispersed across various regions. The center will create revolutionary new production technologies that are outstanding in terms of economic efficiency as well as safety and the environment, with efforts ranging from the development of emerging technologies for new manufacturing processes to the development of technologies for commercialization.

In January 2007, AISIN newly established the Manufacturing Career Development Department to devise the framework for the smooth operation of overseas plants and accelerate standardization in production to ensure the manufacture of products with the same high quality at all production bases worldwide.

● Introducing a Simple and Streamlined Global Production Line



Model of height sensor production line



High-precision molds for forging press



Production Engineering Center (artist's rendering)