

# QUALITY IMPROVEMENT

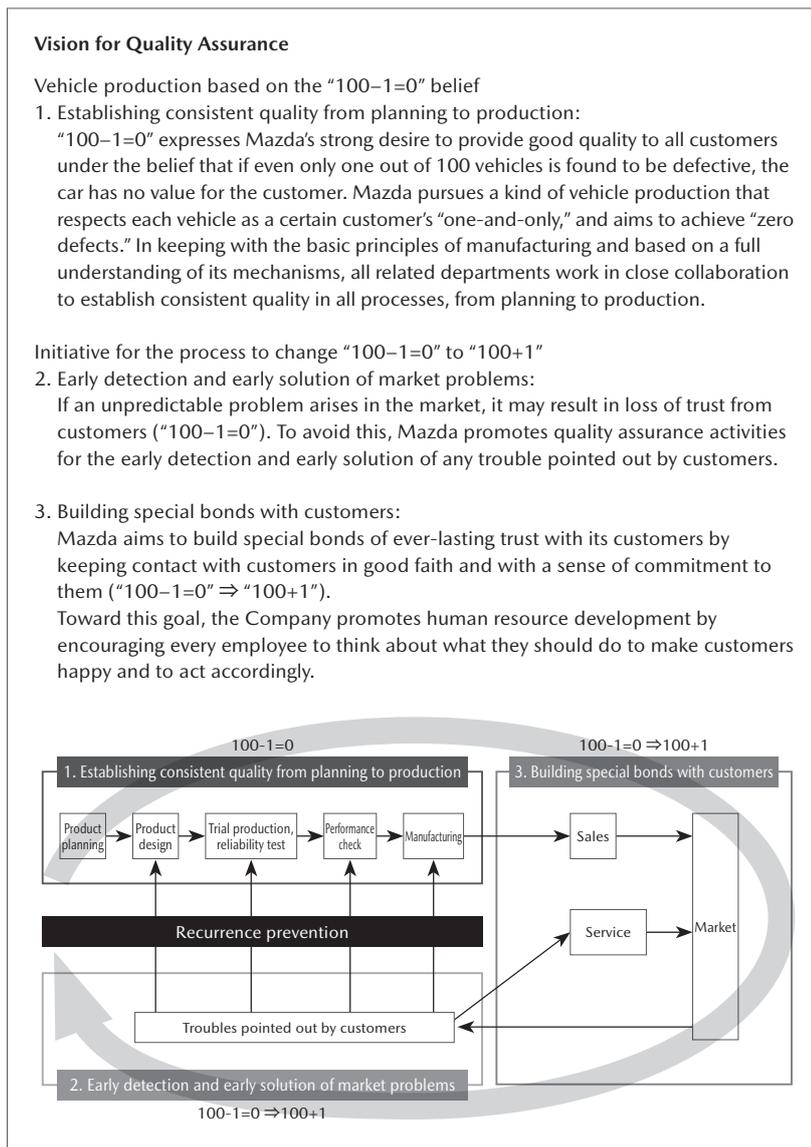
## Basic Approach

Toward the realization of its Corporate Vision, Mazda believes that it is important to enhance the quality of “all things offered outside the Company,” including products and services, to satisfy customers. The Company defines the Five Types of Mazda Quality: “quality of work,” “quality of management,” “quality of work environment,” “quality of behavior,” and “quality of all things offered outside the Company,” which is underpinned by the preceding four. In line with its quality policy, Mazda further advances the efforts it has made and promotes united collaboration among all areas, continuing to enhance Mazda’s unique value.

## Approach to Quality Improvement

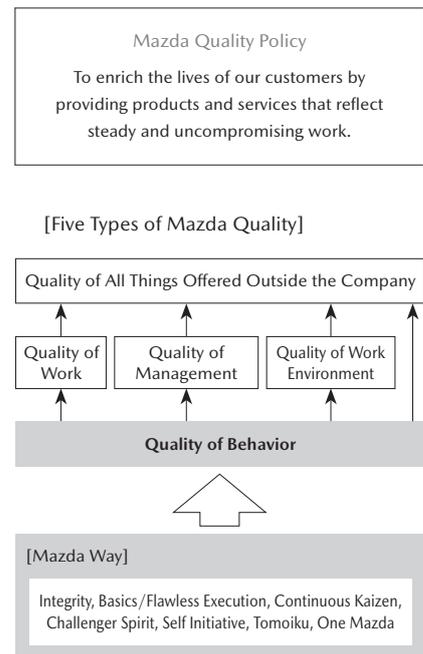
To deliver customers safety, trust and excitement through automotive lifestyles, and to have customers continuously realize the value of its products, Mazda makes Group-wide efforts based on the three principles below:

1. Establishing consistent quality, from planning to production:
2. Early detection and early solution of market problems
3. Building special bonds with customers—cultivating human resources capable of considering and acting toward the happiness of customers



a

a Mazda Quality Policy



## Mazda Quality Management System (M-QMS\*1)

To make faithful and unceasing efforts and constantly ensure quality in products, sales and after-sales services that can always satisfy the expectations and trust of customers, Mazda has established the Mazda Quality Management System (M-QMS) based on ISO 9001\*2, and has applied it to the series of processes from product development to production, sales and after-sales services.

At overseas production sites, Mazda also promotes the establishment of systems that encourage local employees of new sites to make self-reliant efforts to improve quality, and encourages them to acquire ISO 9001, thereby promoting the quality improvement of Mazda vehicles, which are produced and sold worldwide.

### 1. Establishing consistent quality, from planning to production

To satisfy the diverse needs of customers and offer greater trust, joy and excitement, Mazda is engaged in establishing a consistent quality level to be assured at all stages from planning/development to the delivery of products to customers.

## Establishing Stable Quality

Not only to improve the performance of products but also to enhance the quality of new technologies including the initiatives to address environment issues, Mazda is committed to "process assurance." Process assurance is the approach of ensuring a consistent quality level at all stages from engineering (planning, product development) to manufacturing (purchasing, vehicle production, logistics, after-sales services). Based on the correct understanding of customer needs and expectations, the important elements necessary to ensure each function and performance are identified. The Company has established a system to maintain and manage them in every stage from engineering to manufacturing. Furthermore, to allow customers feel driving pleasure through its products, Mazda identifies the functions and performance that embody "driving pleasure" for each stage from before getting in the car to after starting driving, so as to enhance consistency in establishing quality.

## Monotsukuri Innovation

Looking five to 10 years into the future, Mazda has implemented *Monotsukuri* Innovation for efficiently developing and manufacturing products. Shared development methods and manufacturing processes are made possible by using bundled product planning for models to be introduced in the future, spanning market segments and model classes.

Optimized structures for each function are shared across all car lines and laterally spread to each car line based on bundled product planning. A flexible production system is used to produce products engineered based on a common architecture concept in a highly efficient and flexible manner. Mazda is aiming to raise operational efficiency by building a flexible production process that can handle changes in volumes and can quickly introduce new models with a minimum of investment.

Through *Monotsukuri* Innovation, the Company's products since the CX-5, launched in 2012, and Skyactiv Technology have achieved improved efficiency in terms of both product development and manufacturing facility investment as well as significant improvements in vehicle costs. Through design based on common architecture under *Monotsukuri* Innovation, Mazda is able to promptly apply the latest technologies and designs to all of its products. In new-generation technology development, the Company is working to enhance the efficiency of development processes through bundled planning and computer modeling-based development.

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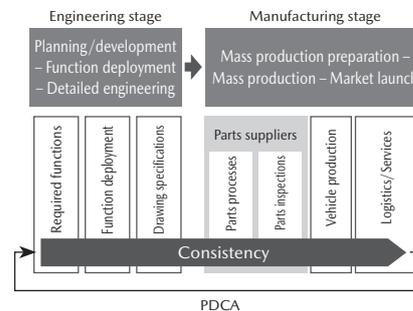
## b Acquisition of ISO 9000 series

Year of acquisition	Types of ISO certification	Certified organization, product, service, etc.
1994	ISO9002*1	Mazda Motor Corporation: Vehicles produced at Hiroshima Plant and Hofu Plant (First to be certified as Japanese automaker)
1996	ISO9001	Mazda Motor Corporation: Engineering, product development, manufacturing and after-sales service
2001	ISO9001	Mazda Motor Corporation: Accessories, KD, product planning, design Mazda Engineering & Technology Co., Ltd.: Specially equipped vehicles (TESMA), etc. (Application range expanded)
		Auto Alliance (Thailand) Co., Ltd.
2007	TS16949 (ISO9001 Sector certificate)	Changan Mazda Automobile Co., Ltd., Changan Ford Mazda Engine Co., Ltd. (now Changan Mazda Engine Co., Ltd.)
2015	ISO9001	Mazda de Mexico Vehicle Operation, Mazda Powertrain Manufacturing (Thailand) Co., Ltd.
2016	ISO9001: 2015	Mazda Sollers Manufacturing Rus LLC
	ISO9001: 2015	Mazda Motor Corporation: Head Office, Hiroshima Plant and Hofu Plant, Mazda de Mexico Vehicle Operation, Auto Alliance (Thailand) Co., Ltd.
2018	IATF16949: 2016 (ISO9001 Sector certificate)	Changan Mazda Automobile Co., Ltd., Changan Ford Mazda Engine Co., Ltd. (now Changan Mazda Engine Co., Ltd.)

\*1 International standard for product and service quality assurance

C

## C Consistent Process Assurance based on Major Characteristics



\*1 M-QMS: Stands for Mazda Quality Management System

\*2 ISO: Stands for International Organization for Standardization. ISO 9001 is a set of international standards for quality management and assurance.

## Model-Based Development (MBD)

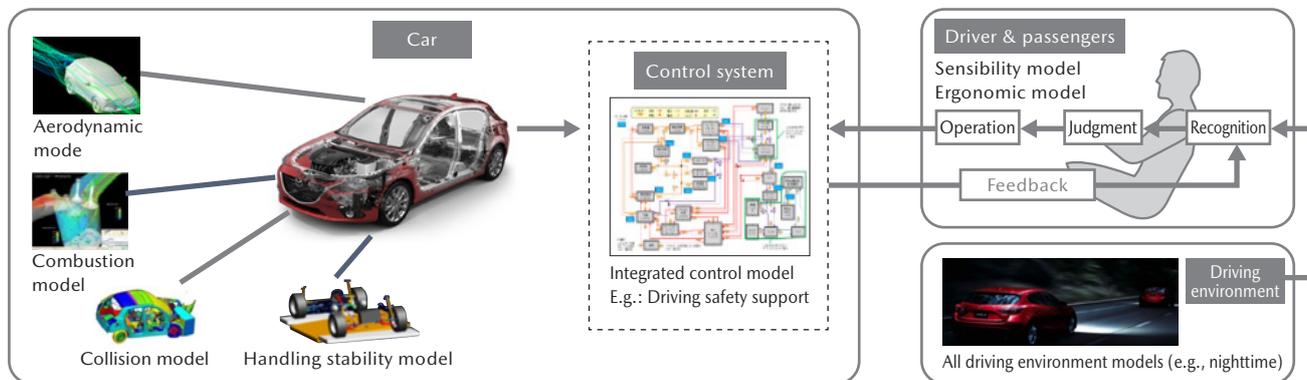
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Cars are being called on to provide increasingly advanced and diverse functions, while vehicle architecture and control systems are becoming more and more complex. Model-based development, which uses computers to efficiently replicate development processes, is essential to keep developing complex systems quickly and with limited resources. Model-based development involves creating computer models of the vehicle, control systems, drivers, passengers, driving environments and other development subjects, and conducting development via thorough computer simulation. It is an efficient method of optimization. By carrying out model-based powertrain and vehicle development through simulations from design to vehicle evaluation, Mazda strives to reduce the number of prototype parts and actual unit verification, in order to develop complex, highly sophisticated technologies and products with minimum resources while also ensuring quality.

Mazda believes that to further promote model-based development, universities working on cutting-edge technologies, automobile manufacturers and suppliers that cooperate in manufacturing must concretize the SURIAWASE 2.0 concept, which seeks to enhance development efficiency by using virtual models across the engineering chain. In September 2021, ten companies became operating members, and the "Japan Automotive Model-Based Engineering center (JAMBE)" was established to spread MBD technology widely to the automobile industry nationwide. Mazda is also participating as one of the operating member companies, and will contribute to improving the international competitiveness of the Japanese automobile industry by realizing the advanced matching development "SURIAWASE 2.0" using models. (see p.102)

### d Model-Based Development

A technique to develop outstanding products by modeling (quantifying) and connecting all four elements of (1) the car, (2) control systems, (3) the driver & passengers, and (4) the environment without using an actual vehicle

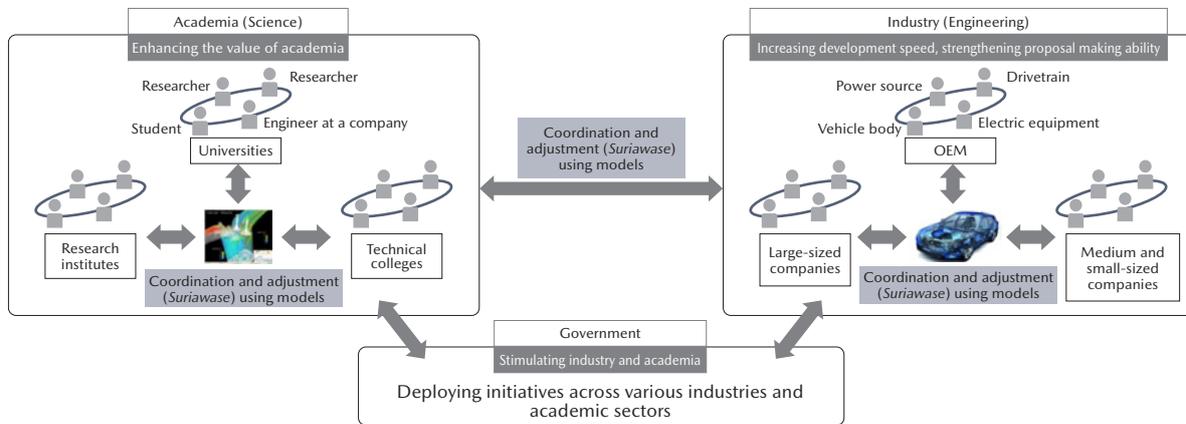


Contribution to Resolving Social Issues | Quality Improvement

What is advanced matching development SURIAWASE 2.0?

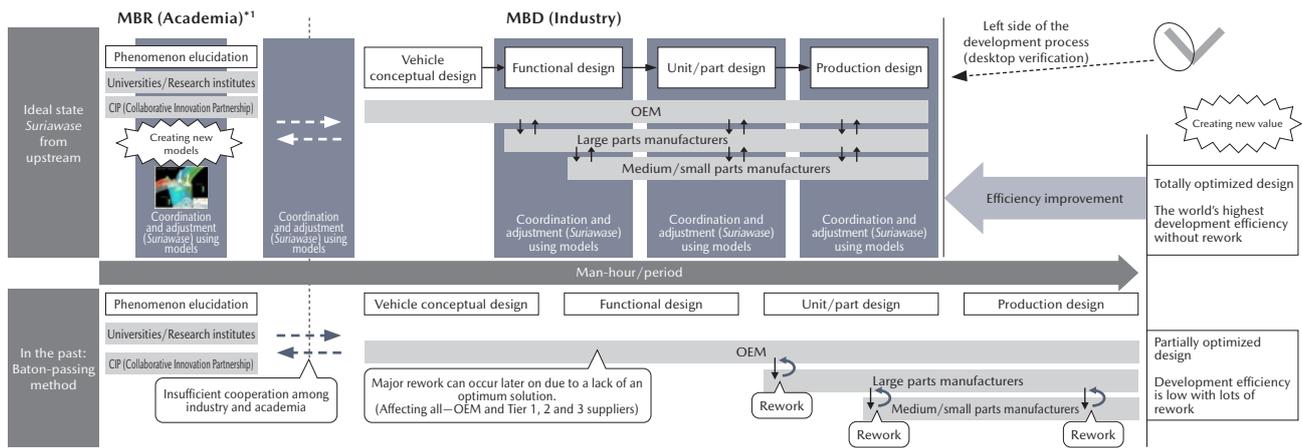
Created based on the SURIAWASE 2.0 concept presented in the materials prepared by the Ministry of Economy, Trade and Industry of Japan in 2017

SURIAWASE 2.0 is an initiative to enable academia and businesses (parts manufacturers and OEMs of all sizes) to share digital models across the board, linking academic research with development of parts, systems and vehicles, thereby allowing both sides to coordinate and make adjustments (Suriawase in Japanese) digitally from the initial stages of development, without using physical machines. This approach makes it possible to create the most-advanced development community in the mobility sector, able to carry optimal and high-grade *monotsukuri* efficiently and without rework.



Goal: Concretize Suriawase 2.0

Achieve the most efficient development processes in the world and create new value by innovating the research, development and production processes



\*1 Model Based Research: An approach that applies model-based concepts to research

Source: Materials for the online forum to commemorate the start of the Japan Automotive Model-Based Engineering center (JAMBE)

Global Quality Assurance

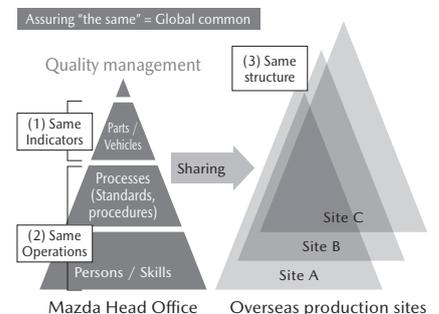
To ensure the same quality on a global scale, Mazda has adopted the "global common" concept, under which overseas production sites establish the same quality by employing the same indicators, the same operations, and the same structures as those of the Mazda Head Office. With the aim of achieving and maintaining the same quality into the future, the roles and responsibilities of the Mazda Head Office and overseas production sites have been clarified for management. As part of its efforts to secure the same quality on a global basis, Mazda works to establish common indicators of quality achievements and processes (standards and procedures) to be shared when conducting quality control of purchased parts or quality evaluation of finished vehicles. At the same time, initiatives are under way to develop human resources who can properly operate these processes. As part of its global quality assurance efforts, in cooperation with Mazda North American Operations, Mazda has developed a quality assurance system for a new joint-venture plant in Alabama, the United States, which commenced mass production of a new model in January 2022.

Quality Assurance after Shipment

To ensure that the high quality at factory shipment is maintained until delivery to customers around the world, Mazda has introduced the same quality evaluation indicators to be applied, from production plants to distributors and dealers, with the aim of delivering products maintaining high quality to customers around the world under a consistent evaluation system.

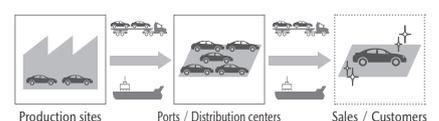
e

e Initiative for Global Quality Assurance



f

f Consistent evaluation system



## 2. Early detection and early solution of market problems

Mazda strives to offer an enriched car ownership experience, in which customers can feel satisfied with the car and realize the value of the product. While respecting each vehicle as a certain customer's "one-and-only," the Company endeavors to ensure stable and speedy quality improvement and enhance the quality of present and future products.

### Comprehensive and Speedy Quality Improvement

To enable early detection and early solution of market problems, Mazda has established a system for unified management of all items of quality information. Such information is gathered from distributors and dealerships in Japan and overseas and by employing the results of surveys by external institutions and conducting the Company's own market research. Under the system, the collected information is shared company-wide in real time. By using the system and closely monitoring daily progress, Mazda investigates quality-related incidents and their causes, determines and implements improvement measures, and confirms the results. In this manner, Mazda works to achieve comprehensive and speedy improvement. The Company also promotes quality improvement, capitalizing on the vehicle information collected through the utilization of connectivity technologies, in addition to conventional initiatives based on customer input.

#### <Examples of Surveys/Analyses>

- Gathering customer voices through Mazda-unique market survey
- Market surveys conducted by third parties
- Analysis of customer voices on social media
- Analysis of vehicle information obtained through connected technologies

### Corporate Activities with Highest Priority on Customer Safety and Comfort

Mazda prioritizes safety and comfort of vehicles above all. Under a strict quality assurance system, Mazda conducts inspections on conformity with laws and regulations of each country and on functions to be used by customers, with a view to manufacturing vehicles that customers feel safe using.

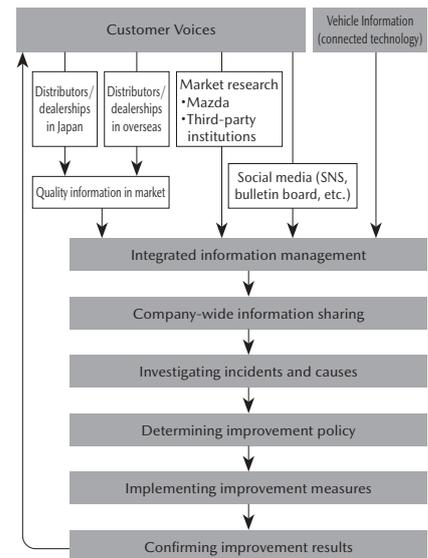
This quality assurance system is maintained and managed by the development, production and quality divisions auditing each other from independent standpoints.

#### Recall Procedures (Overview)\*<sup>1</sup>

- Registration with authorities in each jurisdiction, according to the laws and regulations of each country and region
- Disclosure to customers via direct mail, telephone, and other methods, and explanations at dealerships
- Disclosure of information on recalls on the Mazda Official Website



### Quality improvement system



\*<sup>1</sup> Recall procedures may vary among countries/regions.

### 3. Building Special Bonds with Customers —Cultivating Human Resources Capable of Thinking and Acting for the Happiness of Customers

To encourage every employee to think about what they should do to please customers and to act accordingly, Mazda places emphasis on cultivating a customer-oriented corporate culture/mind. Specifically, the entire Mazda Group is committed to promoting quality awareness-raising activities, quality control education, and QC (Quality Control) circle activities.

Under the impact of the COVID-19 pandemic, since FY March 2021, Mazda has continued these activities by shifting to an online format through active introduction of e-learning and video streaming.

#### <Major Activities>

##### Quality Awareness-Raising Activities

Mazda holds quality meetings on a regular basis. At these meetings, top management communicate their commitment to compliance and quality in their own words to all employees. This provides opportunities for individual employees to reflect on and think about their work, thereby enhancing their compliance and quality awareness.

##### Sharing Past Cases

Mazda has undertaken an initiative to share lessons learned from past cases through exhibits of actual defective products and videos. This program is intended to encourage employees to think about past issues as issues concerning themselves and to improve their attitudes and behavior. Since its launch in FY March 2019, a total of 8,700 employees have experienced this initiative.

##### Quality Control Education

For the purpose of developing human resources capable of proactively finding/solving problems from a customer viewpoint and working for continuous improvement, quality control education is provided for employees. Quality education courses taught by internal instructors are offered, and employees take appropriate courses when their job type or management level changes.

##### QC (Quality Control) Circle Activities

Mazda promotes QC circle activities to encourage members of each workplace to find and solve problems by themselves. QC circle activities, which have been implemented for over 50 years as key activities for the company, have evolved into global activities, being conducted not only inside Mazda but also at its suppliers and dealerships. The All Mazda QC Circle Competition held every year at the Mazda Head Office is now participated by QC circles of overseas sites, such as those in China, Thailand, and Mexico.

##### Training Program to Deepen Employees' Understanding of the Mazda Brand

To enable Mazda employees to explain Mazda's products and communicate the concept of Mazda's *monotsukuri*, or product development and manufacturing, with their own words to Mazda's stakeholders, Mazda offers a training program for employees, designed to help them deepen, through test rides in the latest models, their understanding of not only each product's characteristics but also the spirit and philosophy common in all Mazda products.

## 4. Results of Quality Improvement Initiatives

Mazda's initiatives to improve quality have been highly praised worldwide.

#### FY March 2021 Results (April 2020 – March 2021)

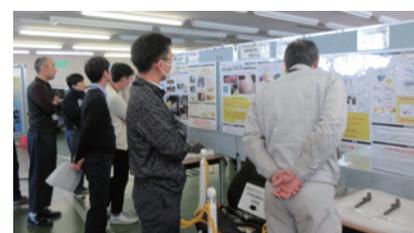
Country	Name of the Study	Vehicle Type and Rankings	Name of Company
U.S.	Reliability/Road Test by Consumer Reports	2021 Automobile Brand Ranking: 1st CX-30: 1st in subcompact	Consumer Reports
Japan	2020 Automotive Performance Execution and Layout (APEAL)*1	CX-5: 3rd in midsize	J.D. Power

\*1 The J.D. Power 2020 Japan Automotive Performance Execution and Layout (APEAL) is based on responses from around 20,000 purchasers of new cars. The study was fielded between May and June 2020.

## h Quality meeting materials



## i Employees share past cases



## j Group-wide Quality Education Courses

Course	Objective (for FY March 2021)
1 Quality program for freshmen	To understand basic quality control concepts (customer-oriented attitude, continuous improvement efforts)
2 Problem-solving story course	To understand the concept, processes and basic techniques of problem solving
3 Quality management elementary course	To apply the concepts, processes, and basic techniques of problem solving to daily operations, thereby obtaining problem-solving abilities
4 Quality management intermediate course	To become capable of applying and practically implementing specialized quality management techniques
5 Quality Improvement Seminar for Assistant Managers	To reaffirm Mazda's vision for quality assurance, as a team leader

## k FY March 2021 All Mazda QC Circle Competition Winner's Award Hofu Plant Spirit A Circle

