

Paint Finishing System Business

Our Paint Finishing System Business has over 50 years of track record in the automotive industry, where the highest level of painting quality is required. In addition to process businesses such as pretreatment, electrodeposition, booths, and ovens, we provide automation technologies for painting, inspection, and polishing, as well as conveyance technologies for transporting products, and environmental technologies for exhaust and wastewater treatment. As a full turnkey supplier, we operate globally and hold No. 1 market share in Japan and No. 2 in the world.



Director, Managing Corporate Officer, Chief General Manager, Paint Finishing System Division
Yukinori Hamanaka

We will pursue sustainable growth of the Paint Finishing System Business by developing new technologies that stay ahead of changing times and transforming medium- to long-term business portfolio.

Business environment (risks and opportunities)

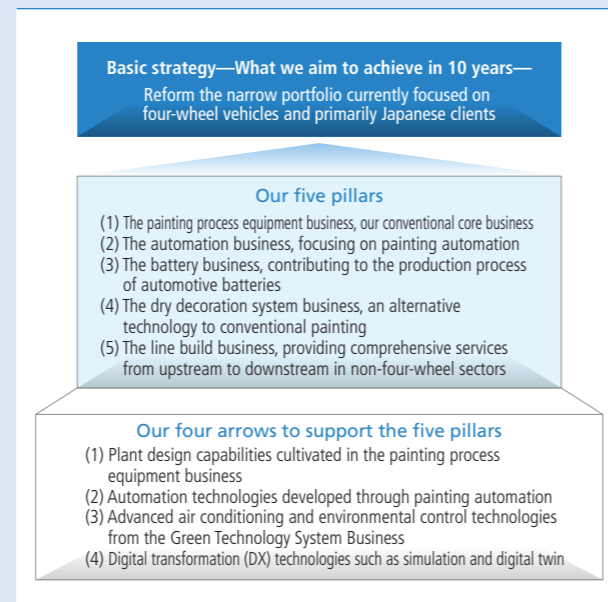
- In the four-wheel automobile market, investment appetite is robust in all regions, driven by the strong trend toward investing in production capacity expansion in India, Europe, and the U.S., along with domestic trends such as renewal of aging facilities, the shift to EVs, and demand for carbon neutrality
- New technologies to realize carbon neutrality will spread not only throughout the automotive industry but also to all industries that require paint finishing
- Demand for automotive batteries in conjunction with the increased production of BEVs and HEVs is rapidly increasing to the extent that each automobile plant is building its own battery plant
- With the advent of EVs, which have fewer parts, car manufacturing is undergoing a once-in-a-century revolution. The industry is beginning to consider massive overhauls to the process of painting and outfitting the assembled body by shifting to unboxed assembly methods
- Declining workforce due to low birthrate and aging population, increasing need for automation due to decrease in skilled workers, and active incorporation of digital transformation (DX) technology into production sites due to the evolution of generative AI

Strengths

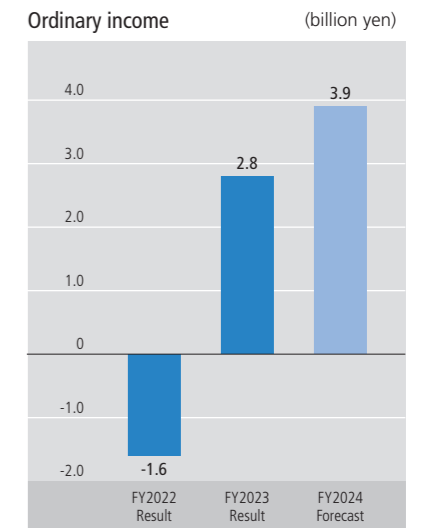
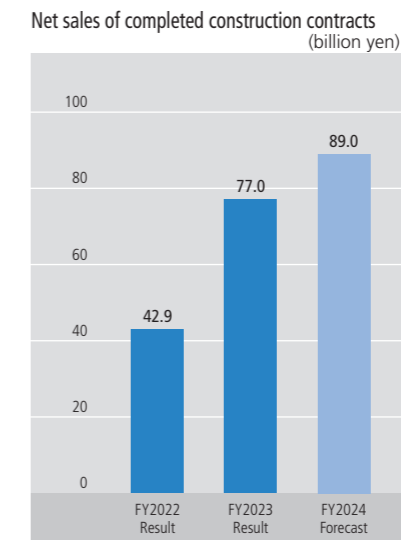
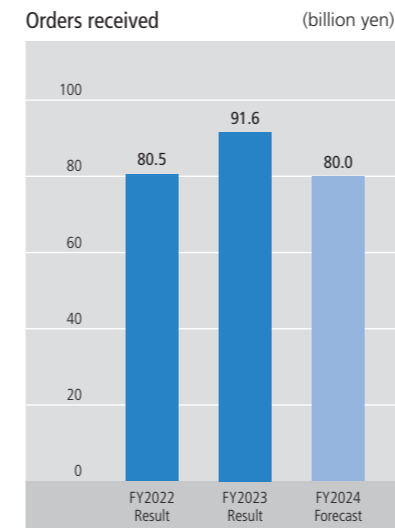
- Technological capabilities to achieve the world's highest-level painting quality, and rich experience as well as profound knowledge and understanding regarding painting technologies
- Global capabilities to grasp the latest technological trends from the developed regions of Japan, the U.S., and Europe, as well as the unique regional demands of China and India, through a global network of sites, and to develop and deploy region-specific business strategies that match the needs of each region
- System integration technology that applies automation technology cultivated through the automation of automotive paint finishing to fields outside the automotive industry
- High market share mainly in the Asian market
- Ability to provide specialized air conditioning technology not available from other companies in the industry, made possible through the sharing of advanced air conditioning technology from the Green Technology System Business

Strategic direction for the future

We vigorously promote the “five pillars and four supporting arrows” as our new growth strategy, aiming to reform our portfolio from one focused primarily on four-wheel vehicle painting to a more balanced and diversified portfolio.



The automotive industry serves as a key industry in every country and region. However, if our business portfolio becomes too heavily reliant on the automotive industry, it will become more susceptible to the economic conditions and market trends of various countries and regions, making stable business operations difficult to maintain. Based on our past achievements, we will steadily advance reforms to our portfolio to ensure stable and sustainable growth moving forward.



Key strategies

- Expand our automation business by utilizing our robot control technology and know-how
- Work with partner companies to approach new customers outside the automotive market
- Formulate and implement regional business strategies
- Improve coating efficiency and promote the development of energy-saving technologies
- Develop and verify equipment with low environmental impact, such as hydrogen fuel burners
- Promote the development of dry decoration technologies
- Utilize DX
- Enhance global education programs, including those for national staff

Direction of the Mid-Term Business Plan

- **Establish a firm position at home and abroad**
 - Make our business domains and customer portfolio well-balanced one
 - Develop non-automotive markets
 - Further attract non-Japanese customers
- **Development with an awareness of global social issues**
 - Contribute to the realization of carbon-neutrality
- **Improve business operation systems and productivity**
 - Contribute to early visualization of customer factories as well as installation of concurrent engineering and smart factories
 - Improve engineering capabilities of the entire Taikisha Group

Development of a Dry Decoration System: Demonstration Line Aimed at Mass Production to Be Completed in the Fall of 2024

Against the backdrop of a global shift to a carbon-neutral society and changing production technologies associated with the conversion to EVs, the automobile industry is undergoing a revolution. We are developing a dry decoration system in consideration of CO₂ emission reduction targets of automobile manufacturers and in response to changes in production technology.

What is dry decoration technology?

Film decoration technology provides the exteriors and other parts of automobiles with film decoration (dry decoration) by applying films through vacuum-pressure molding technology instead of the conventional spray painting (wet painting) that uses paint. Dry decoration is capable of applying films on large three-dimensional exterior parts such as bumpers in a continuous line, and is compatible with resin and metal substrate parts.

In addition, since large facilities such as paint booths and drying furnaces required for conventional wet painting are not necessary, dry decoration not only saves space, but also significantly reduces CO₂ emissions and energy consumption. Another major feature of dry decoration technology is the design and functionality of the film, which cannot be found in conventional painting technologies.

Future business development

In 2023, our Group companies' joint research on dry decoration was evaluated* by an external organization, and interest in our technology is steadily increasing. In addition, this fall, we will complete building a demonstration line for a dry decoration system, designed with a mass

production line in mind, at our research facility. By having automobile manufacturers see the system firsthand, we aim for early adoption on our customers' production lines.

We are determined to promote the development of dry decoration technologies that provide higher value for automotive exteriors to continue contributing to the realization of a decarbonized society.

*In June 2023, at SURCAR, the International Conference on Automotive Body Finishing, we received the Jury's Award, which is granted to the presentation that receives the highest evaluation from the judges.



We created a promotion video about dry decoration. You can watch the video here. ▶



Digital Strategies in the Paint Finishing System Business

In the Paint Finishing System Business, we are advancing digital strategies centered on BIM*. Looking to the future over the ten years of the upcoming Mid-Term Business Plan and the one that follows, we are taking specific initiatives from a backcasting perspective.

Toward formulating Mid- to Long-Term Business Plan

We are currently working on a project to formulate the next Mid-Term Business Plan, including the long-term plan. As a result of the discussions we have had within the company, we have come up with the concept of "five pillars and four supporting arrows" as a growth strategy for the Paint Finishing System Business (see Business Strategies, Paint Finishing System Business on p. 39). Of the four arrows supporting the pillar, digital transformation (DX), in particular, requires further strengthening of activities. We are accelerating the implementation of initiatives centered

on the use of BIM by asking ourselves: "what should we do now," "how can we incorporate it into the field," and "how do we embark on practical implementation."

We expect this DX initiative to have a wide range of ripple effects, extending beyond the Paint Finishing System Business. For this reason, the corporate Digital Strategy Committee is addressing this issue to enhance operational efficiency, quality, and competitive strength through DX.

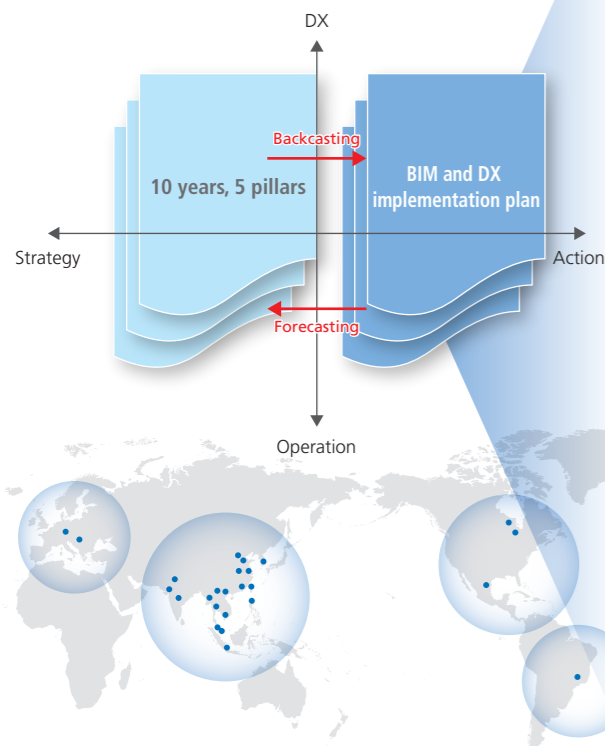
The future of the Paint Finishing System achieved through DX

In the Paint Finishing System Business, we have incorporated DX into the strategies and specific implementation details for each stage, considering the assumed stages of BIM and megatrends from a medium- to long-term perspective.

By integrating various functions into existing systems, we will expand the stage of BIM utilization. Taikisha's platform infrastructure will be

completed at the 5D stage, which is within the timeframe of the next Mid-Term Business Plan. From the 6D stage, we will develop the system in a unique direction that aligns with our own goals and ultimately aim for the complete automation of physical tasks using robots.

28 consolidated subsidiaries in 19 countries



	Current	Next Mid-Term Business Plan	Subsequent Mid-Term Business Plan	2035
	BIM stage Main implementation details			
2035	9D	Space and Ocean Businesses	Completely automating physical tasks by connecting robots with information from 2D to 8D	
2030	8D	Facility Management	Delivering the optimal maintenance management system for paint finishing factories to manage the life cycle of the factory	
	7D	Co-creation with Customers	Optimizing production and maintenance with digital twins to achieve customer satisfaction	
	6D	Sustainability	Providing construction solutions that achieve a low-carbon society through BIM x energy management	
2027	5D	Cost	Optimizing global cost management with BIM x cost	
	4D	Time	Creating an optimal decision-making environment by visualizing operation processes and work progress Managing personnel with real-time updates on their status	
2025	3D	CDE AI	Developing a new business model through business optimization using BIM and AI Promoting global communication using CDE	
	2D/3D	Operational reform	Accelerating the streamlining of designing and construction with BIM and DX Starting advanced human resources development for BIM and DX	

*Building Information Modeling, a system that creates building information models by superimposing attribute data of the building, such as specifications and performance of each part, names, uses, and finishes of rooms, and cost information, on the computer-generated 3D building shape data. It is a solution for using information in all processes, from architectural designing and construction to maintenance and management, and it is becoming the mainstream tool used in the construction industry.

Recent initiatives in each operation domain

Below are some examples of initiatives currently underway that make use of BIM.

4D designing and on-site progress management

We run simulations using 4D BIM, which integrates schedule and time information into 3D models (4D designing). We then visualize the progress of the work by extracting design imagery and actual on-site photos from the same angle.

Use of point cloud data

We create a point cloud data set by 3D scanning an existing factory. By digitally converging this data with new equipment data, you can check for interference with the equipment and design with high accuracy in advance when renovating.

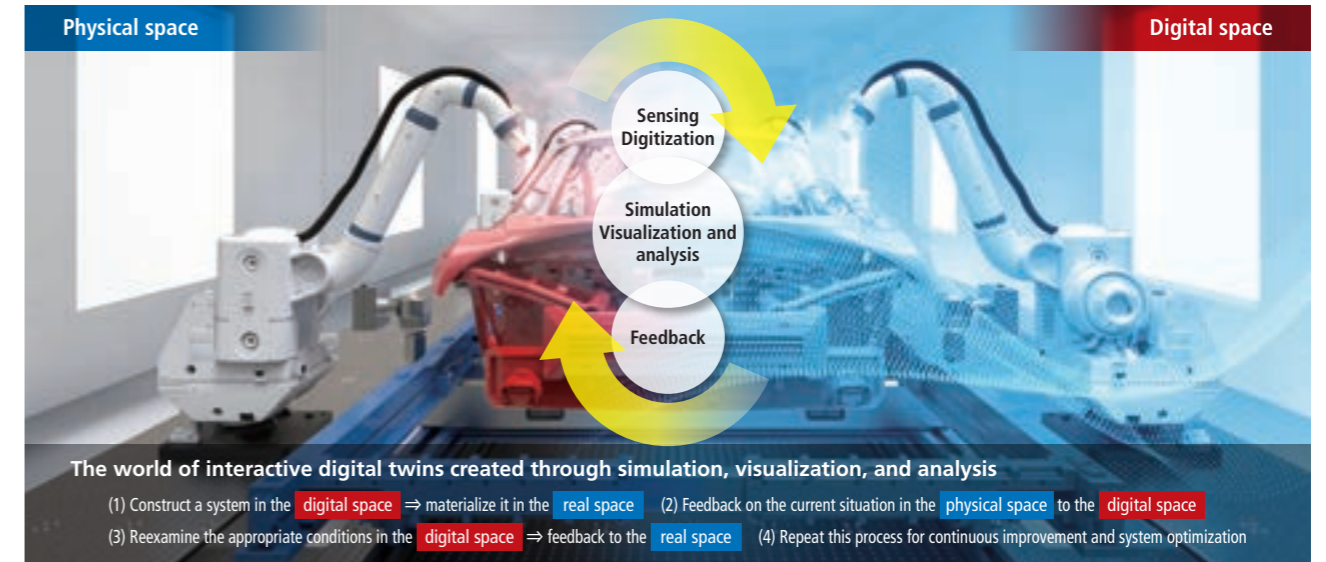
Digital twins

We use digital designing to simulate the thickness of water-based paint finishing in both real and digital spaces. This enables the hull or chassis to be fitted with the real motors and various interior and exterior equipment. In addition, even with dry film decoration, you can check the quality in advance by simulating the film's stretchability before the adhesion test.

Delivering business support information by AI

Using AI technology, we identify and analyze points of caution based on past loss costs and new project specifications. Based on the vast amount of data that has been accumulated to date, it timely and automatically distributes business support information according to business processes.

Conceptual image of digital twins



Global cooperation and work-sharing powered by DX

We are currently developing technology to automatically generate design drawings using 3D data held at each base and business office. This will reduce data management time by automatically integrating 3D parameters, various estimates, and ordering materials. In addition, we are working to build a system that actively utilizes the design center in Thailand, smoothing out the workload at bases and business offices.



The expected ripple effect of DX

We will first use 2D/3D BIM to improve operational efficiency and quality, but moving forward, we expect to see the following effects along with the expansion of the BIM stage.

Although translating these ideas into actual practices will take time, we will strive to deepen our understanding by actually using BIM and actively develop it. We will transform ourselves into a borderless company, by building a global system that includes our overseas bases.

- Accelerating R&D and open innovation through the introduction of next-generation technologies and functions
- Improving productivity by digitizing employees' experience and skills to be passed on (making tacit knowledge into explicit knowledge)
- Accumulating data related to customers' production lines, including factory data, and enabling appropriate proposals at all stages of manufacturing, from planning and consulting to operations
- Addressing the labor shortage by fully automating physical work and avoiding tasks in harsh environments (ensuring safety)
- Developing a new business model using BIM