

Technology -Process Reforms-

Initiatives for “Process Innovation” and “Factory DX” to Transform the Organization and Improve Productivity

Amid accelerating declining birthrate and the aging population as well as declining working population, Denka Group's production sites are working to transform their organizations and improve labor productivity by making the most of digital and robotic technologies and significantly reforming existing processes, so that continuous production activities can be maintained with limited human resources.

Specifically, we are promoting smart factory (DX) initiatives at production sites, automating inspection equipment using AI technology, automating material handling*, enabling early detection of abnormalities through predictive equipment management, and optimizing operating conditions and improving quality through plant data analysis. We are further advancing these initiatives to achieve the goals set out in our management plan.

* A collective term of equipment used to facilitate and automate logistics operations.

VOICE

Factory DX Initiatives

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At the Chiba Plant, DX initiative themes were created by organizing and systematizing departmental business challenges. To steadily solve on-site issues such as operational optimization through manufacturing data analysis, business efficiency and advancement using quantity and monetary data, and skill transfer through the evolution of knowledge search, we are closely collaborating among plant-related departments, headquarters departments, and vendors to achieve productivity improvement and a shift to high value-added operations.

Automation of visual inspection operations

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The use of AI technology for image recognition enables highly accurate automatic judgment without relying on visual inspection, which is expected to stabilize quality. It is also effective for reducing inspection costs and addressing future labor shortages. In the inspection of swabs included with rapid diagnostic kits for infectious diseases, the introduction of AI-based automatic inspection machines is expected to reduce the number of inspectors by 19. Going forward, we will consider expanding this to other products and realize process innovation and continuous improvement through the use of AI technology.

To Achieve the “Mission 2030” Management Plan Targets

[2024 results]

- We selected products and plants to prioritize for process innovation and implemented initiatives with a focus on selection and concentration. As a result, we made 46 process innovation investments during the period, and after completion, we expect labor savings equivalent to 70 people. In addition, this fiscal year, we executed carefully selected investments with consideration for business profitability.
- We defined our DX strategy for production sites as “realizing smart factories where manufacturing brings joy,” clarified our Ideal Form of Denka for promoting factory DX, and set up the necessary mechanisms, system concepts, and KPIs to achieve our goals.

[Examples of initiatives]



(1) Standardization of Electric Furnace operation through Big Data Analysis

In electric furnaces, skilled workers used various data and past experience to adjust operating conditions. To standardize operating methods, we organized and analyzed past data, which has led to the elimination of individual dependency and stabilization of operations and quality.



(2) Strengthening Quality and Production Management, and Labor-Saving

In the manufacturing process of in vitro diagnostic pharmaceuticals, we are introducing MES (Manufacturing Execution System) and LIMS (Laboratory Information Management System). This will streamline the recording and transcription of inspection data and strengthen our quality management system.



(3) Skill-Less Transformation of “Artisan Skills” that Have Become Individualized

In the manufacturing process of electronic components, we are promoting skill-less transformation for tasks that are manual and dependent on skilled workers. By digitizing movements and scientifically analyzing phenomena, we are working to automate “artisan skills,” aiming not only for skill-less transformation but also for labor-saving.

[2026 plan]

- From 2024 to 2026, we will execute approximately 150 process innovation themes over three years, minimizing additional personnel needed to achieve the management plan “Mission 2030.” We will also review priorities and themes from the perspectives of business viability, labor-saving effects, and cost structure to achieve our goals.
- We will also promote information sharing of process innovation technologies, horizontal deployment, and the transition from individual optimization to overall optimization.

[Division Goals for 2030]

- In a social environment where declining birthrate and the aging population as well as declining working population are accelerating, we aim to improve labor productivity to achieve continuous production activities with limited human resources.
- We will promote smart factory initiatives by adapting IoT, big data analysis, AI, and robotics technologies, aiming at factories equipped with innovative technologies, evolving according to the changes in time.
- We will strengthen collaboration between departments and promote process innovation with a focus on overall optimization, transforming organizations and business models to secure competitive advantage.

