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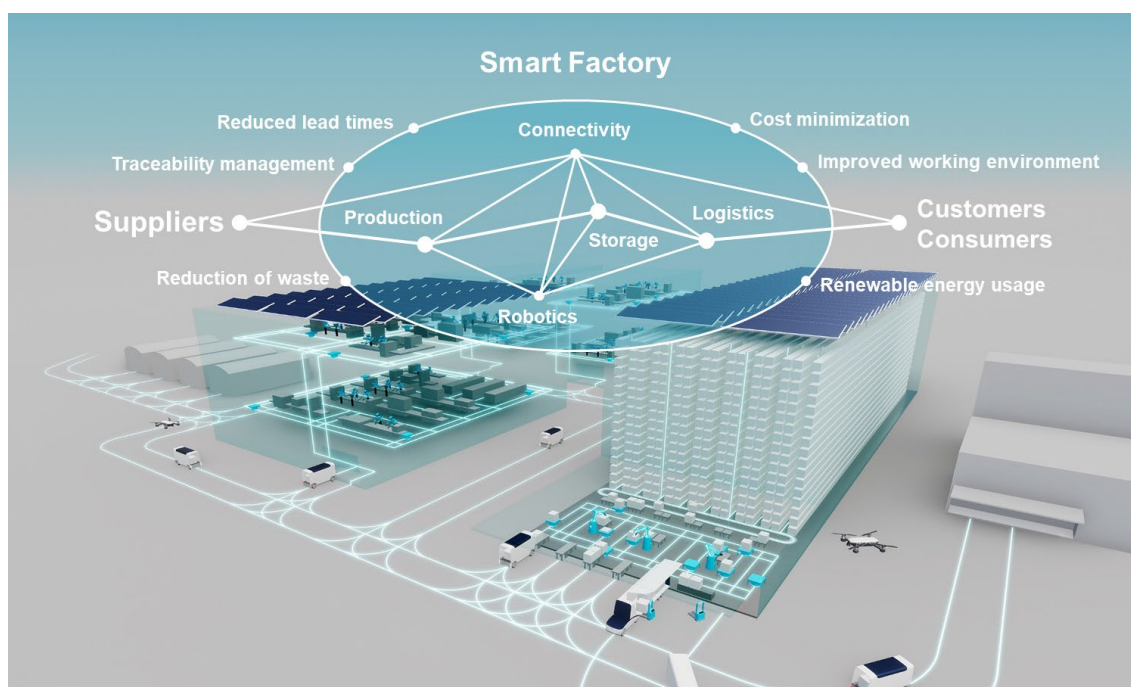
March 30, 2022

Kao to Establish New Flexible, Efficient Production System and Logistics Model at Toyohashi Plant

Transformation into an Integrated Production and Logistics Base to Realize a Sustainable Supply Chain

Kao Corporation is transforming its Toyohashi Plant into a supply chain base with integrated production and logistics functions, aiming to build a new flexible, efficient logistics model and production system that is friendly to people and the environment, capable of delivering products to consumers and customers in a stable manner.

At the Toyohashi Plant, which produces a wide variety of products—primarily skin care and hair care products—Kao is working to build a flexible production system utilizing robots and AI to create a comfortable working environment in response to fluctuating demand caused by changes in customer purchasing behavior as well as a shrinking workforce due to the declining birthrate and an aging population. At the same time, by the construction of a new fully automated warehouse and integrated operation of automated in-plant logistics and the Logistics Center which handles distribution functions, Kao aims to realize a Toyohashi Connected Flexible Factory capable of a coordinated and flexible supply of products.



Toyohashi Connected Flexible Factory

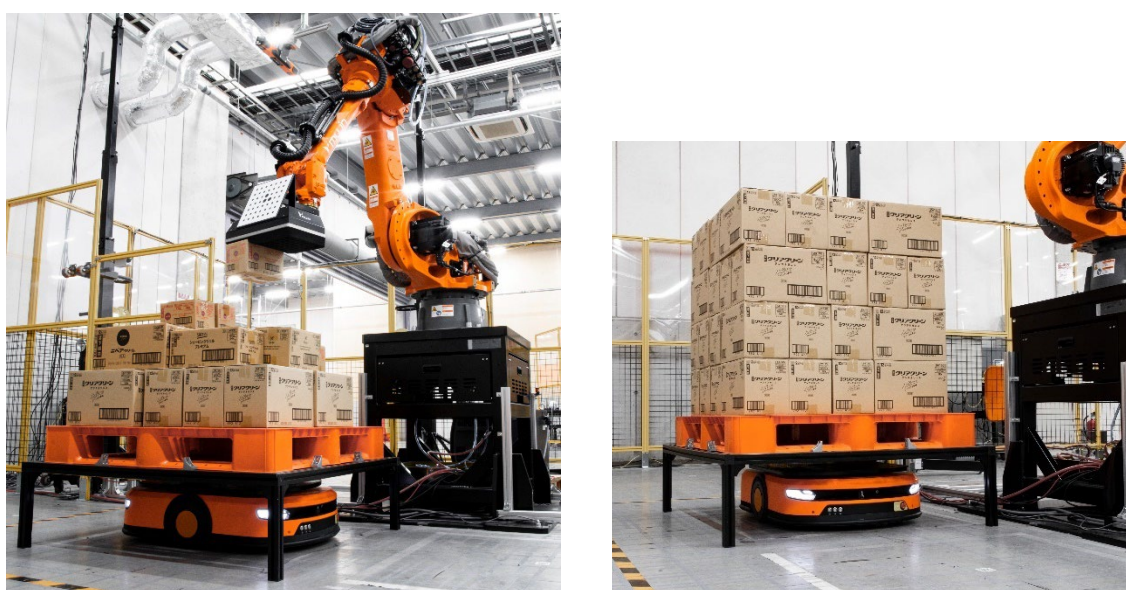
The new warehouse, on which construction began in February 2022, is intended to realize this new logistics model. It will have a building area of approximately 7,150 square meters, an automated

warehouse storage capacity of 1.2 million cases, and automated equipment to provide receiving and shipping capacity of 40,000 cases each per day. Construction is expected to be completed and operations to commence in the first half of 2023. With the introduction of automated equipment using advanced technology such as case-sorting robots, automated guided vehicles (AGVs), and automated forklifts, the warehouse is designed to achieve a high degree of freedom and full automation, with sorting robots and AGVs freely loading products onto pallets and unloading products from pallets at the same time, without the need for a fixed work area. With a shift to the use of renewable energy through deployment of solar panels for electric power, as well as the use of NEWTLAC 5000*¹, Kao's proprietary technology for an asphalt modifier made from waste PET, the facility will feature outstanding environmental performance for which Kao plans to obtain both CASBEE Aichi Rank A*² and BELS 5 stars*³ certification.

Working with leading-edge companies in the fields of architecture, control systems and logistics equipment, Kao aims to co-create a sustainable supply chain by streamlining logistics, improving the work environment, and reducing environmental impact.



Conceptual Drawing of the New Toyohashi Automated Warehouse



Sorting Robots and Automated Guided Vehicles (AGVs) Scheduled for Deployment

To make intra-factory truck transport smarter, Kao is also working with the automated forklift demonstration project*⁴, under the FY2021 Promotion businesses for further transportation efficiency

utilizing AI, IoT etc. publicly solicited by the Agency for Natural Resources and Energy of the Ministry of Economy, Trade and Industry, to automate loading and unloading work. Kao is promoting a sustainable logistics campaign^{*5} through smart management of truck entry and exit to and from the factory, reducing truck wait times and allowing drivers to operate with peace of mind. Further, Kao is a participant in the Robot Revolution & Industrial IoT Initiative's Logistics Warehouse Technical Committee, aimed at putting in place a robot-friendly environment in logistics warehouses.^{*6}

The goal of these efforts is to build a new logistics model that can achieve efficiency across the entire supply chain, and to realize consumer-oriented logistics services that are friendly to both people and the environment. These include lean product supply; shorter lead times; traceability management; logistics cost controls; deployment of electric and fuel cell-powered trucks; reduction of environmental impact through solar power generation; and an improvement in the working environment through automation and unmanned logistics operations.

- *1 Asphalt modifier that reuses waste PET to improve pavement performance, including durability, and reduce environmental impact.
<https://www.kao.com/global/en/news/rd/2021/20210205-002/>
- *2 The Comprehensive Assessment System for Built Environment Efficiency Aichi ranks the environmental performance of homes and buildings on a scale of five: S/A/B+/B-/C
<https://www.pref.aichi.jp/soshiki/kenchikushido/casbeeaichi.html> (Japanese)
- *3 The Building-Housing Energy-efficiency Labeling System, a five-level third-party certification of a building's energy-saving performance
<https://www.hyoukakyokai.or.jp/bels/bels.html> (Japanese)
- *4 Joint demonstration project launched to link automated forklifts equipped with AI with truck operations
<https://www.kao.com/jp/corporate/news/business-finance/2021/20210917-001/> (Japanese)
- *5 Sustainable logistics campaign portal site
<https://white-logistics-movement.jp/> (Japanese)
- *6 Robot Revolution & Industrial IoT Initiative/Task Force for Promoting Establishment of Implementation Models of Robots
Logistics Warehouse Technical Committee
<https://www.meti.go.jp/press/2021/09/20210930003/20210930003.html> (Japanese)

Recognizing its responsibility as an enterprise that provides products which people use on a regular basis in their daily lives, Kao takes active steps to reduce the environmental footprint of its products throughout the entirety of the product lifecycle. Under the Kirei Lifestyle Plan, its ESG strategy, the company aims to transform from mass production, mass consumption, and mass disposal to a waste-free, sustainable supply chain, contributing to “Zero Waste” through the efficient use of resources and energy and by reducing waste and aiming for “Decarbonation” through CO₂ emission reductions for the sake of a healthier planet. Kao will work to further prevent global warming with the goal of decarbonizing by cutting CO₂ emissions to zero by 2040, and becoming carbon negative by 2050.

<Related Information>

■ Kao Sustainability website

<https://www.kao.com/global/en/sustainability/>

■ Kao launches new ESG Strategy “Kirei Lifestyle Plan” to support consumer lifestyle changes

<https://www.kao.com/global/en/news/sustainability/2019/20190422-001/>

■ Kao’s New Challenges for the Future: Accelerating Purposeful Business Commitment with ESG

<https://www.kao.com/global/en/news/business-finance/2019/20190926-001/>

■ Kao Moves Up Its Target Year for Seeing 100% of Electricity the Company Purchases in Japan and Globally Sourced from Renewable Energy

<https://www.kao.com/global/en/news/sustainability/2021/20210415-001/>

■ Kao Is Aiming to Reduce Its CO₂ Emissions to Zero by 2040, and to Be Carbon Negative by 2050

<https://www.kao.com/global/en/news/sustainability/2021/20210519-001/>

About Kao

Kao creates high-value-added products that enrich the lives of consumers around the world. Through its portfolio of over 20 leading brands such as *Attack*, *Bioré*, *Goldwell*, *Jergens*, *John Frieda*, *Kanebo*, *Laurier*, *Merries*, and *Molton Brown*, Kao is part of the everyday lives of people in Asia, Oceania, North America, and Europe. Combined with its chemical division, which contributes to a wide range of industries, Kao generates about 1,420 billion yen in annual sales. Kao employs about 33,500 people worldwide and has 135 years of history in innovation. Please visit the Kao Group website for updated information.

<https://www.kao.com/global/en/>

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