

Initiatives in the Value Chain

YKK AP operates from a perspective of sustainability, based on the YKK philosophy of the “Cycle of Goodness,” and the company’s Purpose.

By creating added value in each of our monozukuri activities and proactively addressing various issues in the infrastructure that supports these activities, we hope to contribute to solving social issues and achieving the SDGs, and to be a company that builds a better society through our business.

→ YKK Philosophy
Cycle of Goodness
P4

→ Purpose
P5

Research, Development and Verification

Three technical facilities and the Central Testing Center Laboratory

The YKK AP R&D Center, Value Verification Center, and Partners Support Studio, all located in Kurobe City, Toyama Prefecture, are responsible for the cycle of development, evaluation and verification, technical proposals, and information communication that form the foundation of YKK AP’s monozukuri process. The YKK AP R&D Center is a center of technology and expertise which develops high-quality products. The Value Verification Center conducts “user verification” using consumer monitors and “field verification” that reproduces the natural environment. Finally, the Partners Support Studio presents proposals aimed at addressing the issues of professional users, based on our technology. Furthermore, the Central Testing Laboratory, a JNLA testing laboratory that meets international standards, reinforces our product quality assurance system through rigorous testing.

Global R&D organization

YKK AP has also strengthened its global research and development system. In addition to Japan, R&D centers have

been established in Germany and Indonesia to conduct research and studies in different regions: Japan for warmer regions, Germany for colder regions, and Indonesia for hot and humid regions. This information is compiled and shared to develop products optimally suited to each region.

At the YKK AP R&D Center (Germany), we investigate and research innovative European technology in the fields of energy conservation architecture and building materials, and promote high added-value in windows and doors through functional parts, thermal insulation of windows and doors, and frames and glass, etc.

At the YKK AP R&D Center (Indonesia), we conduct investigations, research, and development related to energy conserving construction methods and windows and doors suited to hot-humid regions, as well as research on passive design (the design of comfortable living environments that utilize natural energy). As part of a joint industry-government-academia research project on “energy-conserving multi-family residences for middle-income residents,” we are measuring the effectiveness of using windows and entrance doors that provide

→ Intellectual Capital
P17



“WIDE VIEW SLIDING” product for wide openings (NEXSTA series)

effective ventilation. In October 2022, we launched “WIDE VIEW SLIDING” in the NEXSTA series for luxury custom-built homes to meet the need for products for wide openings. Taking advantage of our knowledge of technological development in Japan in areas such as design and component structure, we ensure the necessary performance required in the areas where our products are used.

Technical Research Division initiatives

Technical Research Division, established in FY2023, is responsible for technology, research, and development from a global perspective. It is working on technology, research, and development for new technologies and new materials, including the development of recycling technology to achieve a 100% aluminum recycling rate and the development of organic materials to become carbon neutral. It is also striving to advance our technologies in existing areas, such as building technologies for ultra-high thermal insulation glass. Moreover, through joint research with external research institutions, efforts are underway to promote the development and exchange of human resources.

→ Details of the YKK Group Procurement Policy, YKK AP Basic Policy on Green Procurement, and the Partnership Building Declaration are presented on the website. <https://www.ykkap.co.jp/company/en/sustainability/procurement/>

Materials Procurement

Procurement Policy and CSR Procurement

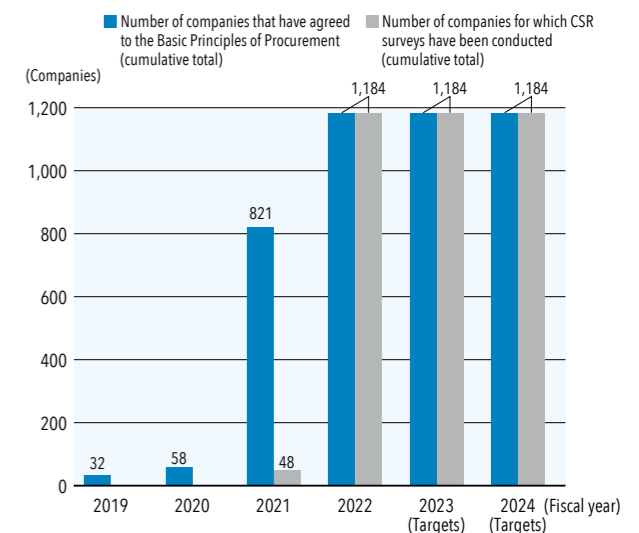
The YKK Group has a procurement policy consisting of organizational governance and human rights. In order to conduct CSR procurement based on this policy, we have established a set of “Basic Transaction Principles” that explicitly stipulate compliance with laws and regulations and fair transactions. By FY2022, we had concluded agreements with 1,184 major business partners, achieving our FY2024 target for the number of agreements in place. In addition, in FY2022, we conducted a CSR questionnaire at all of our business partners with whom we have concluded agreements to confirm the status of their initiatives. Going forward, we will administer the questionnaire to our major business partners and those that handle particularly important materials and parts.

YKK AP also conducts “green procurement,” which involves prioritizing the purchase of environmentally friendly materials in accordance with the “YKK AP Basic Policy on Green Procurement.”

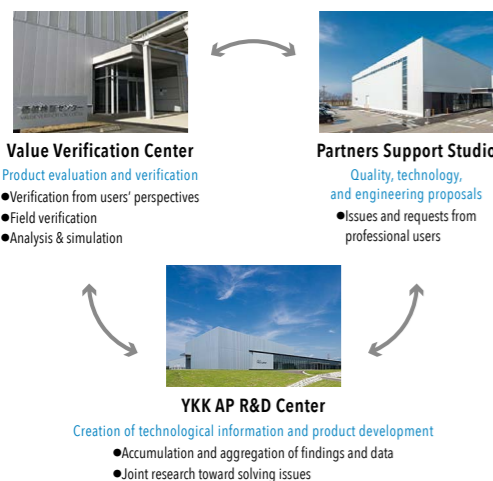
Partnership Building Declaration

In keeping with the YKK Philosophy, Management Principle, and Purpose, we are strengthening our partnerships with suppliers and business operators in the supply chain with the aim of fulfilling our social responsibilities. In June 2022, we drew up and announced the “Partnership Building Declaration” with the aim of building relationships of co-existence and mutual prosperity.

CSR Procurement Promotion Goals



Three technology facilities



Global R&D organization



Manufacturing and Logistics

Integrated production system

Upholding the spirit of YKK founder Tadao Yoshida, who laid the foundation for the company's integrated production system, YKK AP has integrated all monozukuri processes at its own manufacturing sites in Japan and overseas.

Currently, we are working to further enhance our technological competitiveness through seamless and rapid collaboration between our development and manufacturing departments and Machinery and Engineering Department, which is responsible for the development and manufacture of specialized equipment to make our products. In addition, we are rolling out technology developed in Japan to overseas markets, as shown by the introduction of the labor-saving APW line, a vinyl window manufacturing line used in Japan, to the residential vinyl windows plant being built at YKK AP AMERICA INC. Going forward, we will pursue a shift to smart factories and aim to improve productivity through DX.

Health and safety

Another important issue is to create a safe and healthy workplace for employees involved in manufacturing. We are creating a stress-free and fulfilling workplace by installing air-conditioning equipment and air-conditioned clothing to combat heat, and improving the environment of the cafeterias and restrooms. To enhance safety, we also continue to conduct regular equipment and machinery safety audits every three years to ensure the intrinsic safety of our equipment. In addition, since FY2021, we have been identifying and improving "shortcut behaviors" and "troublesome tasks" in the workplace in order to eliminate all unsafe practices. Starting in FY2023, we will provide training to workplace leaders to incorporate hazard prediction into their training, further strengthening safety awareness.



→ [Integrated production system](#)
P18

→ [YKK Philosophy, Management Principle, Purpose](#)
P4-5

→ [Smart factory](#)
P41

Logistics

The so-called "2024 problem" will arise in April 2024, when an overtime limit for truck drivers will be imposed. YKK AP began developing new pallets in FY2016 to improve delivery efficiency. In FY2019, we endorsed the "White Logistics" campaign initiated by the Ministry of Land, Infrastructure, Transport and Tourism, aiming to promote logistics efficiency and productivity improvement to realize sustainable logistics.

Specifically, we have introduced a "unit load" system that efficiently transports cargo in units such as pallets and containers, enabling efficient loading and unloading that does not rely on driver experience and intuition. In addition, Y-Caps, a proprietary system designed to efficiently load pallets onto truck beds, identifies the optimal combination of products and pallets to improve truck loading efficiency and enable optimal dispatch management. Moreover, in order to reduce work hours associated with various logistics processes, we are pursuing sustainable logistics through joint transportation with other companies, thereby reducing drivers' time commitment.

Sales

BtoC and BtoB activities

For end-user customers and professional users, we provide information on safe, secure, healthy, and comfortable homebuilding through our showrooms and web content. Furthermore, since 2002, we have maintained a business alliance in the remodeling field, the "TDY Alliance," with TOTO Ltd. and DAIKEN Corporation. Information on remodeling is delivered through 13 collaborative showrooms nationwide, fairs and events, as well as a joint website.

SE (Sales Engineers)

One of our greatest strengths in terms of proposal capability is our sales engineers (SE), who make technical proposals together with sales representatives. Our 49 sales engineers belong to the Product Development, Residential Business Department in Product Research & Development Division, and are located at 10 sites in Japan. Our proposals are based on our knowledge of housing as a whole, and are designed not only for new construction but also for the revitalization of the market for stock housing. We also provide information to help address the requests and problems of professional users, tailored to the characteristics of individual regions, such as verifying the value of shutters in snowy areas.



Unit loading facilitated by the introduction of the proprietary Y-Caps system



Shutter side pressure verification using reproduced snowfall

→ [Details of customer satisfaction initiatives are presented in our Sustainability Databook. \(in Japanese only\)](#)
<https://www.ykkap.co.jp/company/jp/sustainability/data/social/>



Saitama MADO (Window) Plant

Installation

FE (Field Engineers) and the FTC

The Field Technical Center (FTC), located in Fabrication Technology Department in the Manufacturing Division, provides technical support to enhance the competitiveness of distributors, who serve a variety of functions in the completion of building homes, as well as providing training and guidance on assembly and delivery to ensure product quality. Assigned to the FTC are 39 FEs, engineers who are active on the front lines of installation sites, working at 14 locations nationwide. Currently, the FTC is expanding its educational programs for FEs, responding to requests for improvement from installation sites, and supporting sales expansion by enhancing installation training for remodeling products, thereby contributing to the improvement of our product appeal and technology capabilities.



Internal FE installation training

Co-creation to improve installation quality in Japan and overseas

In 2013, YKK AP established the "Installation Skills Training Academy" in collaboration with the "YKK AP Group Installation Cooperative," which consists of sash and curtain wall installation specialists with advanced installation skills, in an effort to transfer skills and develop human resources. The academy trains installation technicians for a minimum of six years, and a cumulative total of 311 young technicians have participated in the program as of FY2022. Overseas, we have established installation training centers and conducted installation training in China, Taiwan, and Indonesia to support the improvement of local installation technicians' skills.



On-site installation training in Taiwan

Labor-saving in installation work

With the aging of installation technicians and the increasing workload at construction sites, the FTC is also working to save labor in installation through the development and operation of installation jigs. The "Folded Plate Lifting Roller" provides support for lifting folded plates, the material used for roofing carports. Other new developments include a "diamond cutter dust collection cover" that improves safety and the working environment for installation technicians with its superior dust collection performance, and a "simple hand crane" that assists in the loading and unloading of trucks.



Installation using the "diamond cutter dust collection cover" (top right)

Product Use

Providing information to customers

In accordance with its Product Safety Basic Policy, YKK AP is committed to providing information to ensure that customers can use its products safely and with peace of mind. In addition to paper manuals, QR codes are printed on product labels so that customers can easily access usage, care, and traceability information.

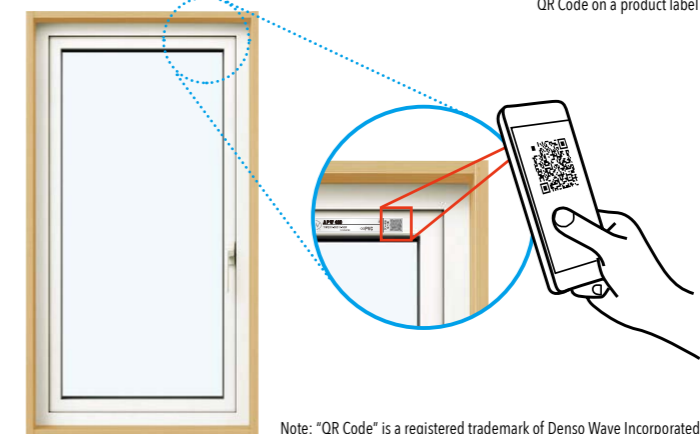
In addition, the official YKK AP app "AP Poke Navi" offers push delivery and provision of information on how to use and care for products, as well as on preparing for disasters such as typhoons and heavy rain.



Providing support information through the "AP Poke Navi" app



QR Code on a product label



Note: "QR Code" is a registered trademark of Denso Wave Incorporated.

Maintenance support

To ensure long and safe use of our products, we aim to improve the quality and consistency of our maintenance support. The Maintenance Business Development Department in Residential Business Division takes the lead in sharing information with the Maintenance Centers in each region. Further, we launched the YKK AP Certified Maintenance Technician Association to certify installation technicians with superior skills, and by having them join the association, we are strengthening our maintenance support capabilities through technical training and other programs. In addition, we are working on the maintenance of electric equipment using digital tools.

*No. of Certified Technicians: 541 (as of June 1, 2023)



Maintenance of electric equipment using digital tools