

Shifting to a Resource-recycling Business

One of the Group's materialities is to shift to a resource-recycling business. The unsustainable business model of mining, using, and then disposing of resources will eventually reach its limits. The Group contributes to resource recycling through its value-chain business, which consists of businesses such as remanufacturing, used equipment, rentals, and service.

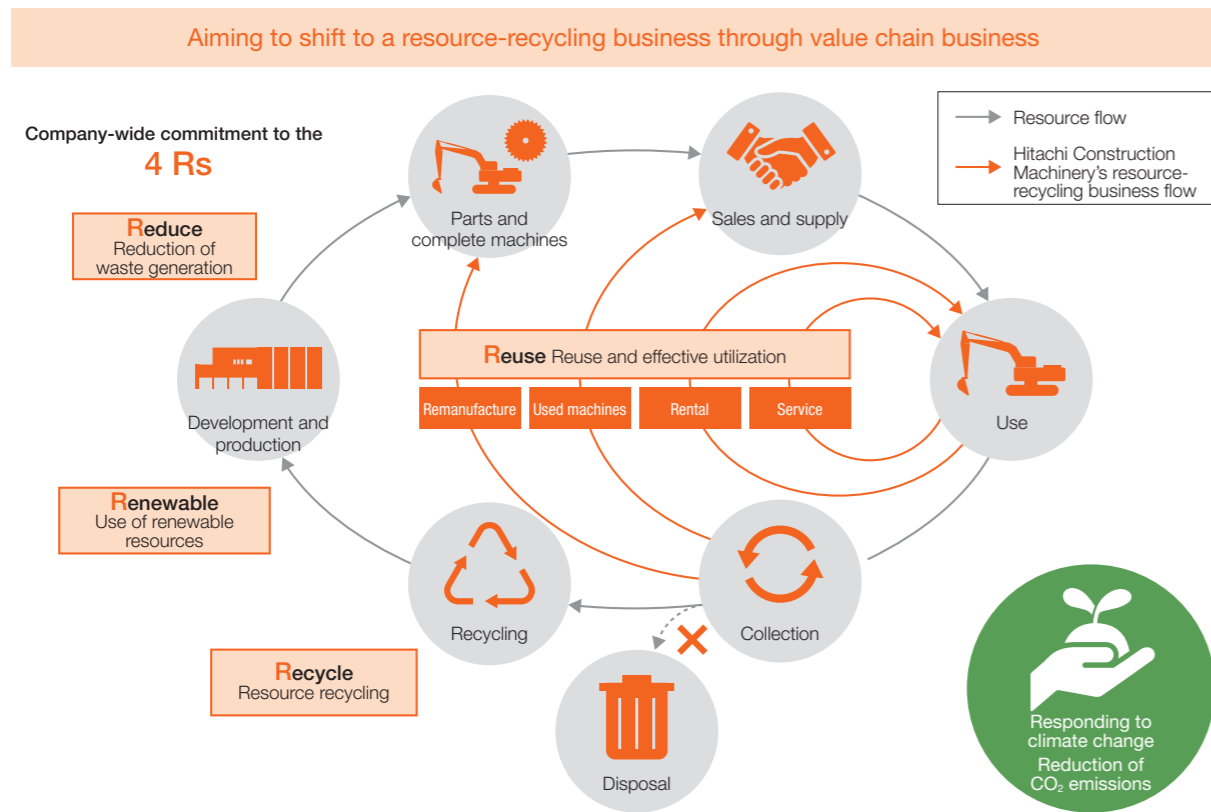
In the parts remanufacturing business, we manufacture refurbished parts that guarantee the same functionality and performance as new parts. Parts collected from customers are disassembled, serviced, and inspected, and consumable parts are replaced as needed. Advanced remanufacturing technologies can help reduce resource inputs by extending the life of components. In addition, we utilize our accumulated expertise to recondition discarded aircraft so that they are again the equivalent of new machines, which are then sold as used machines. This reduces the use of new materials and contributes to a new resource-recycling business model. Hitachi Construction Machinery Zambia is refurbishing ultra-large hydraulic excavators (EX1200) to make them as good as new. In addition, they are also working to remanufacture them as high-value products that reflect even minor changes in the product.

In the rental and used equipment business, Hitachi Construction Machinery provides advanced maintenance services through ConSite during the usage period of PREMIUM RENTAL machines that are certified by Hitachi Construction Machinery. We extend the operational life of the machines and distribute them to emerging countries as PREMIUM USED, high-quality used machines with a manufacturer's warranty. This contributes to reducing the number of discarded machines.

In the parts and service business, through the ConSite menu, we are working to extend the service life of machinery through appropriate maintenance using IoT. At the same time, we monitor the operation of each machine and make proposals to reduce fuel consumption through work improvement proposals, thereby contributing to the reduction of CO2. We extended ConSite services to our hydraulic excavators for North and South America starting in March 2022.

In this way, the Group's value chain business is a sustainable business that contributes to the circular economy by simultaneously helping to solve the problems of customers, society, and the environment, thereby creating a resource-recycling business.

Hitachi Construction Machinery Group's Goal of Shifting to a Resource-recycling Business



Technology Strategy

The Hitachi Construction Machinery Group is working to develop unique technologies, products, and solutions with the aim of realizing future construction sites where people and machines cooperate.

Promoting DX (Digital Transformation)

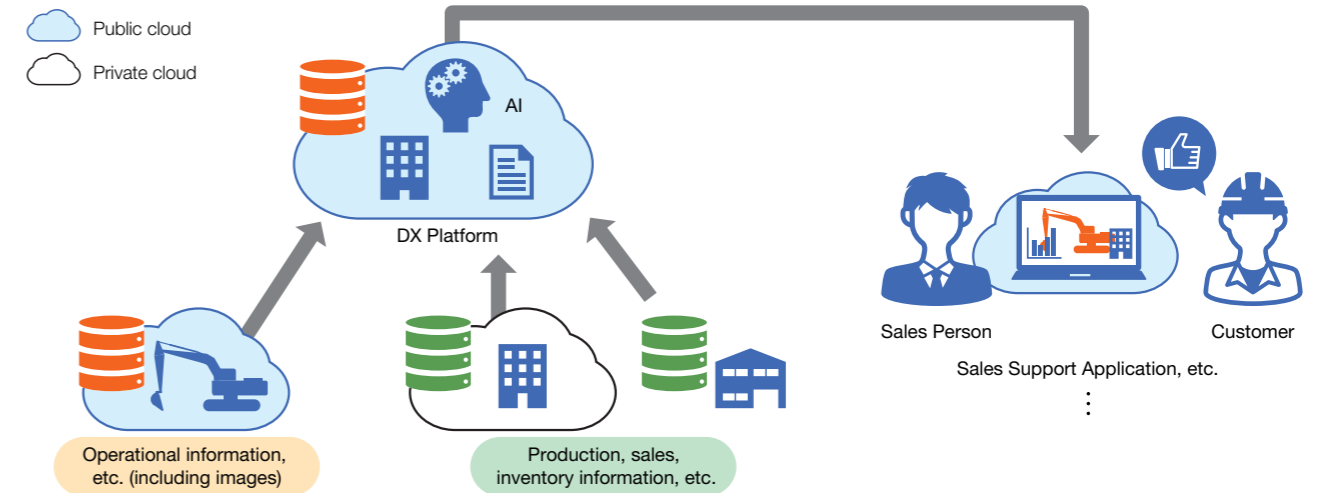
Establishment of DX Platform

The Group aims to help provide solutions to our customers' issues by deepening the value chain and utilizing digital technology. In April 2020, the DX Promotion Group was established as an organization to lead company-wide DX and is developing various initiatives.

In January 2022, in collaboration with Hitachi, Ltd., we established the DX Platform, a platform for utilizing data on construction machinery operational information, production, sales, and inventory. In the past, systems to utilize this data were built separately, but by utilizing the DX Platform, the collection, analysis, and utilization of data will become much more efficient.

For the first initiative using the DX Platform, we began operating a Sales Support Application in Japan in fiscal 2022. This application is provide to all Hitachi Construction Machinery Japan personnel (approximately 1,000 people at 243 locations nationwide) who are in charge of construction machinery sales, parts and service business in Japan. It allows users to collectively view information such as the operational information of their machines, maintenance plans, and transaction histories. Then, based on this big data, it can instantly display proposals determined by AI that utilize multiple patterns. We will utilize this application to create new value.

Overview of Data Utilization Platform "DX Platform" and Sales Support Application



Selected as a Noteworthy DX Company

In June 2022, Hitachi Construction Machinery was jointly selected by the Ministry of Economy, Trade and Industry and the Tokyo Stock Exchange as a Noteworthy DX Company, and was included on the list of Digital Transformation Stocks 2022 (DX Stocks). DX Stocks are selected by industry from among companies listed on the Tokyo Stock Exchange. The selected companies have established internal mechanisms to promote DX that have led to increased corporate value, and have demonstrated outstanding achievements in the use of digital technology. In addition to DX Stocks, companies that are implementing initiatives that deserve attention are selected as Noteworthy DX Companies.

In our medium-term management plan, we are shifting our

business model from a focus on new machinery sales to a value chain business that utilizes DX and targets machines in operation worldwide. Furthermore, we are promoting the provision of digital solutions to improve safety and productivity and reduce lifecycle costs—issues faced by our customers. These initiatives received positive recognition. 15 companies have been selected for 2022, including Hitachi Construction Machinery.



Strengthen R&D Platform

Construction of the New Engineering Building

The Group has six development and production bases in Japan: the Tsuchiura Works, Kasumigaura Works, Hitachinaka-Rinko Works, Hitachinaka Works, Ryugasaki Works (Ibaraki Prefecture), and Banshu Works (Hyogo Prefecture). We are currently reorganizing our major development and production bases in Japan to strengthen our global competitiveness. We plan to relocate and consolidate our R&D base to the Tsuchiura Works.

As part of this effort, we are constructing the new Engineering Building on the grounds of the Tsuchiura Works. It is currently under construction and is scheduled to begin operation in May 2023. It is a six-story building totaling approximately 26,000 square meters and work space for 2,700 employees. We expect to create synergy by bringing together engineers from development departments that were previously divided between various locations. With the construction of the new Engineering Building, the Tsuchiura Plant will assume an important role not only as a production plant for construction products, but also as a development base for mining machinery: such as medium-sized hydraulic excavators, medium and large wheel loaders, and ultra-large hydraulic excavators and dump trucks. In addition to adapting to emission regulations, improving operability, and pursuing reduced fuel consumption, we plan to promote advanced development, including further improvements in safety, more sophisticated control functions for future automation and

autonomy, and linkage with ICT and IoT.

The Engineering Building has been approved for Ibaraki Prefecture's Subsidy for Promoting the Relocation and Enhancement of Head Office Functions.



Rendering of the Engineering Building



Rendering of the interior of the Engineering Building

Construction of One of the Largest Anechoic Chambers in Japan

In August 2021, we constructed a new Anechoic Chamber for machines EMC testing on the premises of the Tsuchiura Works in Ibaraki Prefecture in order to test the effects of electromagnetic waves from construction machinery. Until now, we have conducted Electromagnetic Compatibility (EMC) testing outdoors at the Urahoro Test Site in Hokkaido or at a third-party facility. EMC tests are conducted to confirm the effects of electromagnetic waves emitted by construction machinery on other electronic equipment (electromagnetic interference) and the resistance to electromagnetic waves from other electronic equipment (electromagnetic immunity). The new anechoic chamber makes it possible to conduct the testing at the Tsuchiura Works, which is the development and production base for hydraulic excavators and other products. It is one of the largest* anechoic chambers in Japan with the capacity to conduct testing on construction machinery. Since the tests are conducted indoors, they can be carried out in a stable environment unaffected by weather and climatic conditions.

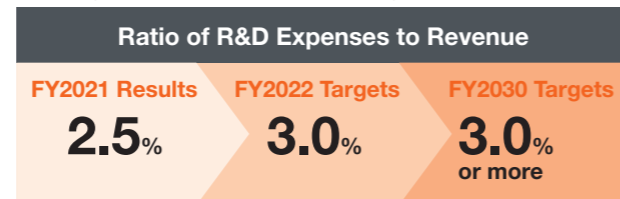
This will accelerate the speed of product development, including the automation, autonomous function development, and electrification of construction machinery, for which demand has been increasing in recent years, as well as the incorporation of

safety devices and ICT construction initiatives.

*As of July 8, 2021. Surveyed by Hitachi Construction Machinery.



EMC testing of a hydraulic excavator (30-ton class) (image)



Initiatives for Automation and Development of Autonomous Function of Construction Machinery

In the construction industry, the decline in the productive labor force and the aging of skilled workers have made it a challenge to improve productivity through labor savings. In particular, mining sites are required to operate 24 hours a day, 365 days a year, placing a heavy physical burden on operators. As one solution to this problem, there are high expectations for the development of construction machinery that can operate autonomously.

A remote-controlled demonstration of an ultra-large hydraulic excavator was conducted at the Group's exhibition booth at the 4th Construction and Surveying Productivity Improvement Expo (CSPI-EXPO) held at Makuhari Messe in Chiba Prefecture from May 25 to 27, 2022. This possible thanks to a system that was created to systematically advance the development of autonomous-functioning ultra-large hydraulic excavators. We connected the exhibition site (Chiba City, Chiba Prefecture) to the Urahoro Laboratory (Urahoro-cho, Tokachi-gun, Hokkaido), 870 km away from the site, via a communication network, and operated the excavators from the exhibition. The demonstration used a

high-speed wireless network with wireless antennas and cameras set up on the EX2500-6, an ultra-large hydraulic excavator. In addition to remote control, the monitor displays information that improves productivity, such as the load status on the cylinder and load determination, which enabled highly fuel-efficient excavation.



An operator remotely controls an excavator while watching images projected on monitors.

Intellectual Property Strategy

The Group emphasizes intellectual property activities in its business. The Hitachi Construction Machinery Group Code of Conduct sets forth our basic policy for protecting our own intellectual property and respecting the intellectual property of others. We conduct intellectual property activities based on this policy.

At the same time, the Group has a high percentage of over-

seas sales, so it is important to build a global patent network. Hitachi Construction Machinery has maintained an overseas patent application ratio of 30% or more since fiscal 2011. Going forward, we will increase and enhance our applications for value chain-related technologies and establish a first-class, global intellectual property portfolio.

Technology Transmission

With the aim of ensuring uniform quality assurance levels at group companies around the world, we implement a variety of technical improvement programs. For example, there are "Kataribe", (Storytelling) sessions in which senior and active experts in various fields pass on their ideas on business execution, experiences of failure, and technical know-how to active front-line engineers. In FY2021, 46 sessions, including those at the head office and group companies, were held with 906 participants (including web-based participation). In FY2022, we plan to offer approximately 50 sessions with new instructors and new sessions.

