Kawasaki

Precision Machinery Report

2026

Contents and Editorial Policy

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Editorial policy

This Report is issued to clearly communicate to stakeholders the business strategies, basic policies for achieving goals, management structure, and the results and progress of various initiatives of the Precision Machinery Business Division of Kawasaki Heavy Industries. The Precision Machinery Business Division's General Manager approved the issuance of this Report.

Reporting period

This Report covers fiscal 2025 (April 1, 2025 to March 31, 2026). It also includes information on past activities and activities carried out on or after April 1, 2026, as well as activities planned for the future.

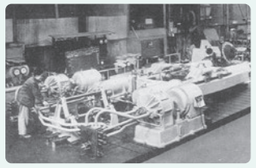
History

Throughout its more than 100-year history, the Kawasaki Heavy Industries Precision Machinery Business Division has continuously created technologies and products in response to social issues.

Founding–1920s | **Through 1960s** | **Through 2010s** | **Up to the present**

1916
Launch of the hydraulic business

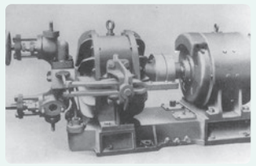
The technology for the Hele-Shaw electro-hydraulic steering gear was introduced at the Kawasaki Dockyard (currently Kobe Works). This was the origin of our hydraulic business.



Hele-Shaw electro-hydraulic steering gear

1924
Manufacturing Hele-Shaw pumps

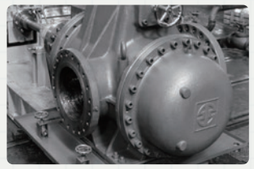
The first unit, a hydraulic pump that could change the discharge rate and flow direction of oil, was installed on a merchant ship. It supported the vessel's steering for many years.



Hele-Shaw hydraulic pump

1936
Manufacturing and sale of screw pumps

Through a technology tie-up with Imo AB of Sweden, we began manufacturing and selling screw pumps suitable for transferring and injecting lubricating oil and fuel oil.



Screw pump

1968
Opening of Nishi-Kobe Works

Domestic demand for hydraulic machinery and equipment grew rapidly, and our market share increased to 7.1%. To ensure stable supply in response to this rapidly-growing demand, the Nishi-Kobe Works was opened.



Nishi-Kobe Works

1994
Strengthening overseas business foundations

A development and production site was established in the United Kingdom. The site became the home of the Staffa Motor (hydraulic motor), which remains a core product, and developed into a key manufacturing hub in Europe.



Kawasaki Precision Machinery (UK) Ltd.

2002–2010
Development through corporate spinoff

The business was spun off from Kawasaki Heavy Industries and established as Kawasaki Precision Machinery Ltd. By developing an integrated business structure that includes services and by driving global expansion, the Company established the KPM brand.

In 2010, after expanding its sales to more than three times the level at the time of the spinoff, KPM was reintegrated and relaunched as the Precision Machinery & Robot Company of Kawasaki Heavy Industries, Ltd.

2023
Autonomous excavator system

We developed an autonomous excavator construction system to address labor shortages and issues regarding skills transfer in the construction and civil engineering fields. Development is currently underway with an eye toward real-world social implementation.



Image of route data generation

2025
Launching hydrogen compressors

We developed a hydraulic booster type hydrogen compressor for hydrogen refueling stations serving large commercial vehicles. This will contribute to the realization of a hydrogen-based mobility society.

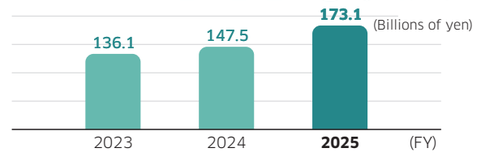


Hydraulic booster type hydrogen compressor

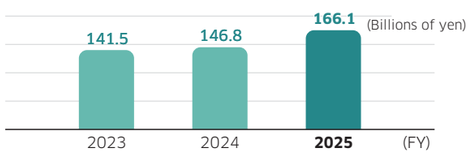
The Precision Machinery Business Division by the Numbers (FY2025 Results)

Financial results (consolidated)

Orders received* **¥173.1 billion**



Revenue* **¥166.1 billion**



* Excluding transactions within the Group

Business operations (non-consolidated)

Hydraulic components & systems production volume
Annual: approx. **320,000 units**
* Production volume of finished hydraulic components and systems for construction machinery and industrial vehicles (excluding parts for overseas assembly)

Overseas sales ratio
47.1%

Number of supplier companies
539

Research and development expenses
¥3.73 billion

Capital expenditures
¥3.64 billion

Education and training expenses per employee
* Internal personnel
Approx. **¥350,000**

Production, sales, & service sites
7 countries worldwide
18 sites



Number of patents
Domestic & overseas: **720**

Number of trademarks
Domestic & overseas: **46**

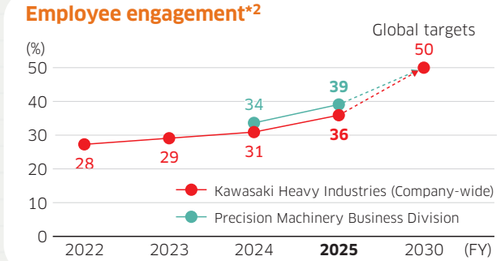
Human resources (non-consolidated)

Number of employees*1
1,546
(Up 126 compared to the previous fiscal year)

Ratio of women employees*1
15.3%
(Up 0.5 percentage points compared to the previous fiscal year)

Ratio of foreign national employees*1
3.4%
(Up 1.9 percentage points compared to the previous fiscal year)

Employee engagement*2

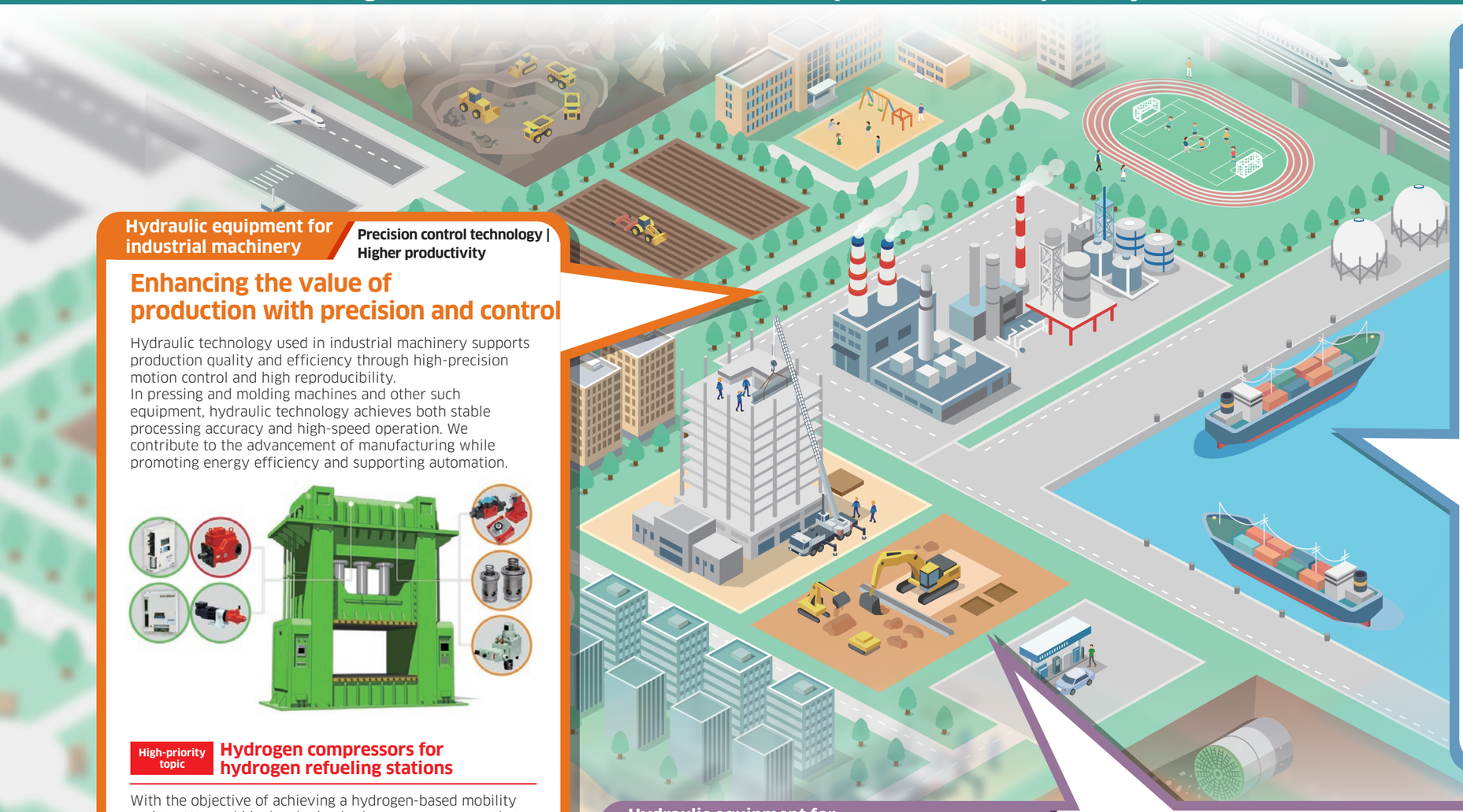


Engagement*2
Percentage of employees who feel a sense of job satisfaction
64%
(Up 6 percentage points compared to the previous fiscal year)

Enablement*2
Percentage of employees who feel they work in a productive work environment
60%
(Up 3 percentage points compared to the previous fiscal year)

*1 Number of employees as of March 31, 2026, including external personnel
*2 Survey conducted of internal personnel in November 2025

Kawasaki Heavy Industries' hydraulic technology supports diverse worksites around the world. We offer a wide range of solutions from individual components to complete systems.



Hydraulic equipment for industrial machinery

Precision control technology | Higher productivity

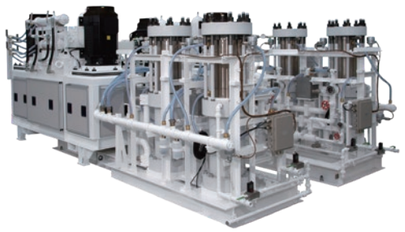
Enhancing the value of production with precision and control

Hydraulic technology used in industrial machinery supports production quality and efficiency through high-precision motion control and high reproducibility.
In pressing and molding machines and other such equipment, hydraulic technology achieves both stable processing accuracy and high-speed operation. We contribute to the advancement of manufacturing while promoting energy efficiency and supporting automation.

High-priority topic

Hydrogen compressors for hydrogen refueling stations

With the objective of achieving a hydrogen-based mobility society, Kawasaki is developing hydrogen compressors that support hydrogen refueling stations for fuel cell vehicles. Since 2023, our initiative for developing technology for high-capacity, high-pressure gas booster-type hydrogen compressors has been selected as a NEDO-subsidized project. Development of higher-capacity hydrogen compressors is currently advancing. By achieving both high reliability and energy efficiency and enabling efficient hydrogen gas filling through greater capacity, we aim to grow this initiative into a future core business that will support a decarbonized society.



Hydraulic equipment for marine products

Stable vessel performance | High reliability

Reliable technology supporting uninterrupted operation

Hydraulic equipment used in vessel steering gear and deck machinery plays an important role in supporting safe and stable vessel operation.
Built with the reliability to withstand long-term use and harsh marine environments, such equipment supports vessel maneuvering and cargo handling operations.
Our equipment supports maritime transportation, a foundation of social infrastructure.



High-priority topic

Tension Monitoring System for Mooring Line™

Tension Monitoring System for Mooring Line™ is a digital solution that monitors and analyzes mooring line tension on vessels in real time. It was developed by combining the Precision Machinery Business Division's technology with the Marine Machinery Division's expertise. By visualizing mooring conditions and enabling remote monitoring, the system improves safety and reduces the need for specialized skills. Kawasaki is developing this system as a future business that promotes DX in the shipping industry and supports safe and secure maritime mobility.

Hydraulic equipment for construction machinery and industrial vehicles

High output × Durability | Harsh environment resistance | Infrastructure support

Overwhelming driving force to support demanding worksites

Hydraulic equipment installed in construction machinery and industrial vehicles is core technology that supports challenging work such as excavation and transportation.
By combining high output with durability, this equipment delivers stable performance even in harsh environments. It also supports infrastructure development and resource extraction sites by improving work efficiency and reducing energy loads.

High-priority topic

Autonomous excavator construction system

Kawasaki developed an autonomous excavator construction system to address labor shortages and issues regarding skills transfer in the construction and civil engineering fields. By combining hydraulic control and robotic control technologies with terrain sensing technology, we achieved autonomous construction. Development is currently underway with an eye toward real-world implementation to contribute to labor savings and improved productivity at demanding worksites.





A Talk Between President Matsuda and General Manager Marui



Yoshimoto Matsuda
Managing Executive Officer,
President, Precision Machinery & Robot Company

Joined the Company in 1994. After working in design and development at Kawasaki Motors (then Kawasaki Heavy Industries), he served in the Engineering Division, the Business Planning Department, and the New Business Promotion Department, among others.
After serving as the General Manager of the Presidential Project Management Division at the Head Office, he assumed the position of the President of the Precision Machinery & Robot Company in April 2025.

Hideo Marui
Executive Officer,
General Manager, Precision Machinery Business Division,
Precision Machinery & Robot Company

Joined the Company in 1987. For over 20 years, he was engaged in the design and development of hydraulic components and systems in the precision machinery business, after which he worked in the Human Resources Department, the Quality Assurance Department, and the Planning Department.
After serving as the Group Manager of the Quality Assurance Group and the General Manager of the Planning & Control Division, he became the General Manager of the Precision Machinery Business Division in April 2024.

Starting with customer value and leveraging our strengths to transform existing businesses and create new ones

Amid significant changes in the market environment, how should we reevaluate the strengths we have cultivated to date and use them to drive transformation in our existing businesses and foster new growth? President Matsuda and General Manager Marui discussed the changes beginning to take shape within the organization and the vision for the Precision Machinery Business Division.

Where we stand today

Recognizing our strengths and fostering change within the organization

Matsuda ● It has been one year since I assumed the position of President of the Precision Machinery & Robot Company in April 2025. Before taking on this role, I did not have a deep understanding of every detail of the precision machinery business. However, since joining Kawasaki Heavy Industries, I had been involved in mass-production manufacturing—primarily engines—in the motorcycle business, so I assumed there would be many commonalities in terms of machining and production technology. When I saw the production line for the first time after taking office, I was frankly impressed by the high level of automation. Each process is linked with high precision, enabling stable production. There, I sensed the manufacturing expertise that the Precision Machinery Business Division has cultivated over many years.
Marui ● Since joining the Company, I have been consistently involved in the precision machinery business and have witnessed its progress from the inside. Here at the Nishi-Kobe Works, we have spent many years honing our technical capabilities and production capacity while meeting each and every one of our customers' high expectations. I believe what Mr. Matsuda sensed was precisely the strength built up through that daily accumulation of efforts.
Matsuda ● After taking office, I launched the "Ano Ne Kai" as a forum for direct dialogue with employees. I chose the name with the hope that anyone could feel free to approach me and say, "Matsuda-san, you know (ano ne, or "you know" in Japanese)..." During these sessions, one question I was frequently asked was, "How is the Precision Machinery Business Division viewed from the outside?" Despite having so many strengths, we didn't have enough confidence in our own abilities. I sensed a gap between how the Precision Machinery Business Division is perceived from the outside and how the employees working there see it themselves.
Marui ● That's right. I think part of the reason for this is that, up until now, we've worked on our business by always prioritizing reliably meeting our customers' needs above all. Because we've devoted so much energy to meeting the expectations of the customers right in front of us, we haven't had many opportunities to reassess our strengths from an outside perspective or to consider how we could apply the technologies we've cultivated to other fields.
Matsuda ● Kawasaki Heavy Industries possesses numerous strengths that serve as the foundation for growth—not only in technology, but also in human resources, internal and external networks, and an organizational culture that fosters cross-departmental collaboration. Therefore, over the past year, I have focused on "connecting" these strengths. By connecting technology with technology, business with business, and people with people, we can generate ideas and new initiatives that did not exist before. I believe that accumulating such experiences would help us recognize our strengths and the untapped potential we have yet to fully realize.
Marui ● In fact, we're starting to see gradual changes within the organization. In the past, whenever we tried to start something new, reasons why it couldn't be done emerged right away in some cases. Lately, though, the first questions we hear are, "What can we do to move in the direction we want to go?" I feel that it's not just a matter of increased motivation for work; the way we approach challenges and our very attitude toward tackling tasks have changed.

Business environment

Charting a growth strategy by anticipating market ups and downs

Marui ● As the Precision Machinery Business Division aims for its next phase of growth, it must contend with significant fluctuations in demand for hydraulic components and systems. If construction machinery manufacturers increase production due to an economic recovery or an expansion in public investment, demand for hydraulic components and systems will also rise. On the other hand, if the market slows down and inventory adjustments begin, demand will drop rapidly. Additionally, Chinese manufacturers of hydraulic components and systems have been gaining ground in recent years, intensifying price competition.
Matsuda ● I think that having experienced market downturns so many times, even when demand picked up, we were wary of the next downturn and found it difficult to fully commit to investment. However, if we simply fear downturns, we'll miss out on growth opportunities. We need to develop plans based on the assumption that the market will have its ups and downs, and transform our business so that we can step on the gas when demand grows.
Marui ● In fact, when demand has actually grown, we've had experiences where our supply capacity couldn't keep up with the rising demand, and in the meantime, competitors took advantage of the situation and stole business opportunities from us. It's not easy to regain market share once it's been lost. Currently, demand is growing, driven by the overseas expansion of Chinese construction machinery manufacturers. We will steadily convert this opportunity into profits while also moving forward with investments to prepare for the next market fluctuation.
Matsuda ● To that end, it's important to accurately assess our own competitiveness. If we focus solely on price, we won't be able to determine where we should truly be investing. We need to consider how our products and technologies add value to our customers' businesses—and base our growth strategy on that.

Strengths

Recognizing value beyond price as a source of competitiveness

Matsuda ● When I first took office as president, company officials explained to me, "Although our products are of high quality, their high price compared to other manufacturers is a challenge." However, if competitiveness were determined solely by price, our products would not be chosen by customers. Since so many customers continue to choose them today, there must be value that cannot be measured by price alone. I felt that the first step was to accurately identify what that value actually is.
Marui ● Currently, Chinese construction machinery manufacturers are expanding their exports overseas. In the countries and regions to which they export, construction machinery is often used for long periods in harsh environments, so hydraulic components and systems must offer high durability and reliability. There are actual instances where end users specifically request hydraulic components and systems manufactured by Kawasaki Heavy Industries. When we take a fresh look at this, it becomes clear that the reliability we have honed over many years has become a type of value that cannot be measured by price alone.
Matsuda ● That's exactly right. Furthermore, the ability to supply the necessary quantity when it's needed is also a form of value. Once, when I asked a customer, "Which is more important: a 5% price reduction in three months, or an additional 1,000 units right now?" they immediately replied, "1,000 units right now." We need to be mindful not only of price but also of the value we bring to our customers' businesses.
Marui ● To be sure, it's true that, for construction machinery manufacturers, ensuring that hydraulic components and systems arrive when needed helps them avoid missing out on sales and business opportunities. And for end users, it's crucial that the machinery continues to operate reliably even after installation. When you look at it this way, it becomes clear just how important it is to view the value of our products and technologies from the customer's perspective.
Matsuda ● What underpins that reliability is the hardware technology that the Precision Machinery Business Division has continuously refined. To integrate digital and AI technologies with the actual movement of machinery, materials technology, machining technology, and hydraulic technology are indispensable. While these fields may at first glance be viewed as "low-tech," we believe they cannot be easily replaced and are critical technologies that will determine our future competitive advantage.
Marui ● To turn these hardware strengths into future competitive advantages, we must also adapt to technological changes. As construction machinery becomes increasingly electrified, the power source for hydraulic pumps will shift from engines to electric motors, and the required specifications will change as well. While advancing research to support this shift toward electrification, we will also continue to refine our core hydraulic technology itself.

Initiatives

Transforming our approach to customers, revenue, and supply

Marui ● To turn the strengths we've discussed so far into growth, the Precision Machinery Business Division is moving forward with initiatives to transform three key areas:

customer relationships, our revenue structure, and our supply system. The first of these is “BinB.”

Matsuda ● While terms like “BtoC” and “BtoB” exist, we refer to the approach of immersing ourselves in our customers’ businesses and working together to solve their challenges as “Business in Business,” or “BinB” for short. This mindset goes beyond simply expanding the scope of our business transactions; it involves treating the results our customers aim to achieve as our own challenges.

Marui ● We don’t just meet the specifications provided by our customers; we listen to their challenges and goals from an early stage and work together to develop solutions. Our goal is to move beyond a relationship based solely on supplying products to one where we are deeply involved in our customers’ businesses and create new value together.

Matsuda ● In doing so, we don’t need to limit ourselves to finding solutions within the Precision Machinery Business Division alone. By combining the diverse technologies and talent available across the Kawasaki Heavy Industries Group, including robotics, we aim to propose the optimal solutions for our customers.

Marui ● The second is “Advanced Services.” This effort builds on our traditional after-sales service—which has primarily focused on supplying replacement parts—to expand our contacts with our end users who actually utilize construction machinery. Currently, Chinese construction machinery manufacturers are accelerating their overseas expansion. For these manufacturers, establishing a service infrastructure overseas is a critical management challenge, and it also presents a significant business opportunity for our division. Against this backdrop, we are visiting overseas operation sites—such as in South America and Africa—to hear firsthand about the environments in which our products are used and the nature of challenges they face.

Matsuda ● By gathering and utilizing information obtained on-site, we can not only produce what construction machinery manufacturers request but also proactively suggest, “You may need features or services like these.” Through these repeated proposals, we build relationships that go beyond simply supplying products to provide ongoing support for overcoming issues.

Marui ● The needs we identify on-site can also be leveraged for the development of new products and services.



Furthermore, we are considering collaborating with construction machinery manufacturers to complement regional service systems. We will create a system that delivers value to both end users and construction machinery manufacturers.

Matsuda ● The Advanced Services initiative is not only about deepening our relationships with customers, but also about transforming our business structure. The service business does not experience the same peaks and troughs in demand as new machine sales. We are building a business foundation that is less susceptible to fluctuations in the new machine market.

Marui ● The third is the “Flexible Value Strategy” (→See p. 10 for details). To respond flexibly to various global demands, we do not fix the product lines manufactured at the Nishi-Kobe Works or our overseas plants. Instead, we aim to establish a system that allows for flexible production and supply close to locations in which demands exist by taking advantage of the strengths of our domestic and international bases and partners. One concrete example is our collaboration with partners such as EDDIE Precision in China and Bosch Rexroth in Germany.

Matsuda ● By flexibly using the production and supply capabilities, and the procurement networks, of our various locations and partners in response to specific demand locations and timing, we can enhance our ability to respond to demand fluctuations. Furthermore, this approach allows us to capitalize on growth opportunities without having to shoulder the burden of capital investment entirely on our own.

A new challenge

Tough Robots: A new business venture addressing labor shortages and dangerous work

Matsuda ● Alongside the transformation of our existing businesses, we are also taking on the challenge of expanding the technologies cultivated by the Precision Machinery Business Division into new business areas. A symbol of this effort is the “Tough Robot Concept” (→See p. 9 for details). As part of the research into this concept, development of the dual-arm excavator had been underway even before I took office. Although we had exhibited it at industry trade shows, we were at the stage of determining what to aim for next. Therefore, rather than simply improving the performance of the dual-arm excavator, I set the direction to develop a robot that makes good use of the unique power of hydraulics to support tasks that are difficult for humans to continue performing.

Marui ● One of the reasons we are moving forward with the Tough Robot Concept is the labor shortage at construction and civil engineering sites, as well as the declining number of skilled operators handling construction machinery. While the number of people supporting these sites is decreasing, the work itself, which involves danger and physical strain, will not disappear. We believe these challenges also present an opportunity to capitalize on the technologies we have developed to create new value.

Matsuda ● By having the Tough Robots handle these tasks, we can improve on-site safety, allowing people to focus their efforts on work that requires judgment and experience. This is made possible by the hydraulic technologies of the Precision Machinery Business Division and the control technologies of the Robot Business Division. We believe that by combining these two elements, we can create value that differs from that of conventional industrial robots.

Marui ● Until now, we hadn’t been able to present a concrete vision for how the Precision Machinery Business Division’s technology would lead to new business ventures. With the emergence of the Tough Robots as a clear goal, the mindset of the development team has shifted. In the development of the dual-arm excavator, every time they make an improvement, they come to me and say, “Please try it out. It’s gotten better,” actively showing me their results. I feel that now that they can see where their technology is leading, a positive change has taken hold in their development efforts.

Matsuda ● That’s true. Clearly defining our vision not only aligns the goals of our development members but also serves as a rallying cry to attract technical expertise and talent from both inside and outside the Company. By encouraging individuals and companies who think, “Maybe we can apply our own technology here” or “We’d like to work on this together” to join us, and by combining our respective strengths, we can further accelerate development. We don’t want the Tough Robots to remain a concept; we aim to nurture it into a new business that contributes to solving social issues such as labor shortages and hazardous work.

Moving forward

Toward an organization that takes the initiative and connects resources both inside and outside the Company

Marui ● To turn the strategies we’ve discussed so far into tangible results, we need to build an organization where every employee on the front lines can think and act independently. Our strategies and visions have become clearer than ever before, and the organization is beginning to move in a unified direction. Our role as leaders is to demonstrate the connection between our strategies and each employee’s work, and to translate them into concrete actions. To that end, we will continue to engage in ongoing dialogues with our front-line staff.

Matsuda ● I believe an organization is strong when, after agreeing on a common direction, frontline staff can think, make decisions, and take action on their own. The people who directly observe customers’ expressions and reactions can identify what’s needed in the moment and act accordingly. As these decisions accumulate, the organization should be able to quickly identify changes in the market and among customers and respond flexibly to risks.

Marui ● Even if management sets the direction, simply communicating it unilaterally won’t get the front-line staff moving. It is crucial that each individual who interacts directly with customers and products be able to candidly share the changes and challenges they observe on the front lines with their supervisors and senior management. To achieve this, we must foster a workplace where everyone, regardless of



position, feels comfortable voicing their opinions, and where those around them take those opinions seriously. I believe it is our role as leaders to review our strategies and initiatives as needed, based on feedback from the front lines.

Matsuda ● The members of the Precision Machinery Business Division already possess advanced technical skills and the ability to utilize them for future growth. If we think everything through and wait for the conditions to be just right, we won’t be able to move forward. We need to take that first step and learn through action. Then, we should incorporate the insights gained through this process into our next actions and make continuous adjustments. I believe that this cumulative process will give us the strength to implement our strategy as part of our daily work.

Marui ● In the Precision Machinery Business Division, there is a close-knit atmosphere where departments work closely together, and we can easily reach out to one another when we face difficulties. When it comes to executing our strategies, it’s important not to try to find answers on our own, but rather to bring to the table the knowledge and experience of those around us. We hope to extend this spirit of cooperation beyond our own departments to the outside world as well. By exchanging frank opinions with our customers and suppliers and pooling our knowledge and experience, we aim to resolve issues and create new value. While cherishing the relationships of trust we have built so far, we will continue to foster even deeper collaborative partnerships.

Matsuda ● That’s right. Going forward, I believe we won’t be able to fully understand our relationships with others based solely on traditional categories such as customers, suppliers, and competitors. There will be times when we collaborate on development by bringing our technologies together with companies that were once competitors, and other times when we join forces with customers and partner companies to create new products and services. Rather than viewing our counterparts through the lens of fixed relationships, it’s important to consider how we can combine our respective technologies and insights based on what we want to achieve. Joining forces with members of the Precision Machinery Business Division and the Robotics Business Division, as well as our customers and partner companies, we take action first. Then, we’ll apply the insights gained from those efforts to our next initiatives. Through these repeated challenges, we will build the next generation of the Precision Machinery Business Division together with all stakeholders.

Message from the Group Manager of the Business Development Group

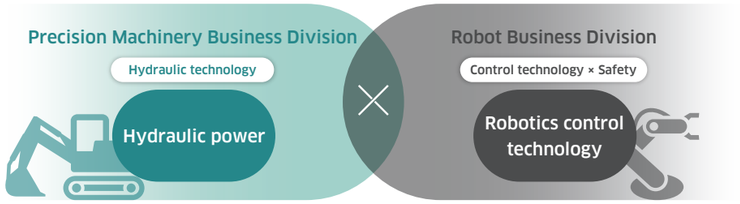
Tough Robot Concept



Ryuji Sakai
Deputy General Manager and
Group Manager of
Business Development Group
Precision Machinery Business Division

What is the Tough Robot Concept?

Social issues Shortages of workers and skilled technicians in construction, shipbuilding, and infrastructure maintenance



Enabling remote and automated performance of dangerous and physically demanding work

Making dangerous and physically demanding work safer Launch of the Tough Robot Concept

Responding to shortages of workers and skilled technicians as well as improving safety and productivity have become major issues not only at construction, shipbuilding, and forestry worksites, but also sites for maintenance, management, and renewal of roads, bridges, tunnels, underground facilities, and other infrastructure. Solving these issues will require enabling remote operation and automation of dangerous and physically demanding work. This objective also overlaps with the direction of strategic fields promoted by the Japanese government, including disaster prevention and national resilience, and as a result, expectations for related technologies are rising.

The Tough Robot Concept was created to address these types of social issues. We seek to make it possible for non-routine tasks involving heavy objects in challenging environments, such as outdoor settings, to be carried out safely and intuitively through remote operation and automation. In the background to this concept is the idea of fusing the hydraulic technology developed by the Precision Machinery Business Division with the control technology and safety expertise accumulated by the Robot Business Division.

The Precision Machinery Business Division, which has focused on hydraulic components and systems, such as hydraulic pumps for construction machinery, has been searching for growth opportunities that can become the next pillars of its business even as it confronts changes in the business environment including advancing electrification and intensifying global competition. Within this process, through repeated discussion on synergies with the Robot Business Division in the same company, the idea of combining hydraulic power with robotics control has been given concrete form.

The Tough Robot Concept is both a response to social issues and a challenge to leverage the technologies and expertise developed by both business divisions to create new business value.

Transforming from a manufacturer of hydraulic components and systems to a solution provider that supports on-site operations

Kawasaki Heavy Industries' strength in achieving the Tough Robot Concept is not just having hydraulic and robotics technologies, but also its ability to combine them in response to actual on-site issues and refine them to create solutions.

The Precision Machinery Business Division has experience and a track record of developing and designing hydraulic components and systems from the ground up. Another strength is to use this expertise as a base to develop elemental technologies, mechanisms, and control in an integrated manner according to the specific work and safety requirements of each site.

The Kawasaki Group engages in business in diverse domains including shipbuilding, plants, railway, and aviation. The ability to collaborate with departments familiar with operations at each business site, identify needs for each site, and reflect them in products and solutions is a major strength of the Group.

With the Tough Robot Concept, the Precision Machinery Business Division is responsible for the core hydraulic mechanisms and control technology. Meanwhile, for peripheral mechanisms, such as mobility mechanisms and end-unit gripping mechanisms, we aim to deploy them across a wide range of on-site applications by collaborating with customers and partners and combining them with core technologies according to the application.

The Tough Robot Concept, which leverages these strengths, is also a challenge for the Precision Machinery Business Division to evolve from a manufacturer of hydraulic components and systems into a solution provider that can solve on-site problems. The concept will be realized by bringing together the comprehensive abilities that we have developed until now, including design, control, production technology, and quality management. It is for this very reason that I want every employee to bring the knowledge and ideas that they have cultivated through their day-to-day work so that we can build new business together.

Message from the Group Manager of the Production Group

Flexible Value Strategy

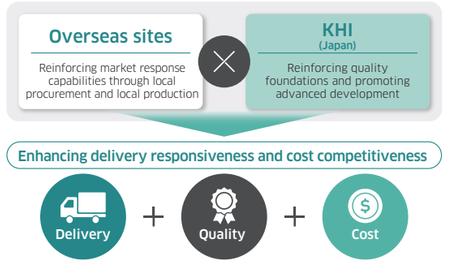


Yasuo Konishi
Group Manager of Production Group
Precision Machinery Business Division

What is the Flexible Value Strategy?

Vision When needed, where needed: optimal supply using global production networks





Toward a flexible production system that responds to market changes

Our hydraulic components and systems business has a history of more than 100 years, and we have consistently produced at the Nishi-Kobe Works finished products including hydraulic pumps, hydraulic motors, and control valves as well as the core parts that determine their performance and durability. The machining technology for rotating bodies and the fitting technology, both of which require high precision, are particularly critical technologies that directly affect product performance and durability and have supported our competitiveness over many years.

At the same time, in overseas markets, particularly China, the technological capabilities and quality levels of local manufacturers have improved, and their price competitiveness has also increased. In addition to trust in quality and durability, price competitiveness and delivery responsiveness are now required more than ever. Situations that require rapid production increases or short delivery times are increasing, and there are now cases where existing systems for supplying products from Japan are unable to adequately supply products at the pace demanded by customers.

To respond to these changes, we are promoting the Flexible Value Strategy, a flexible review of our approaches to production and procurement while carefully balancing quality, cost, and delivery (QCD). Specifically, we are promoting local procurement of heavy items and local production of some key parts with the objectives of shortening lead times and enhancing cost competitiveness.

The strategy is not simply an initiative to transfer production functions overseas. It is an initiative to transform our entire production approach so that we can deliver products that leverage the technologies and quality we have cultivated until now when and where needed. By maintaining high quality while meeting the speed and cost requirements of each market, we will continue to build a global production system that enables us to remain the preferred choice for our customers into the future.

Making the Nishi-Kobe Works into a site that supports the next stage of growth

As we carry out the Flexible Value Strategy, it will be important to clarify the roles of sites in Japan and overseas. Overseas sites will strengthen market responsiveness by conducting business close to customers, while sites in Japan will be responsible for advanced development functions and accumulating and enhancing core technologies.

To ensure that this division of roles functions effectively, we will specify the scope of operations transferred to overseas sites and establish rules for information management. Based on this, we will build systems that enable flexible global production while preventing technology leaks and decreases in quality.

Expanding production at overseas sites is also an opportunity to advance the roles of the Nishi-Kobe Works. Going forward, we will seek to make the Nishi-Kobe Works into a production base that can not only manufacture existing products, but can also support new growth in the future in areas such as hydrogen, defense, and the Tough Robot Concept. To do this, we will leverage existing facilities and human resources and build a production foundation that supports our next businesses while also considering automation and the adoption of smart factories.

The Flexible Value Strategy will not end once we have established these systems. Optimal production systems will continuously adapt in response to market conditions, customer trends, geopolitical risks, and technological evolution.

By positioning the Nishi-Kobe Works at the center of technology and quality and by closely collaborating with overseas sites, we will build flexible production systems that can deliver value when needed and where needed and continue to advance the Flexible Value Strategy.

Tough Robot Concept Initiatives



Hideki Tanaka

Senior Manager of Synergy Technology Development Office
Business Development Group
Precision Machinery Business Division

To ensure that the Tough Robot Concept does not remain just a concept but is developed into technology that is used in the field, this interview discusses current initiatives and future possibilities from the perspective of a person on the front lines of development.

Origins of the Tough Robot Concept

After working on control technology and controller development for industrial robots in the Robot Business Division, I worked on development of hydraulic products in the Precision Machinery Business Division. During this work, I noticed that construction machinery and work machinery equipped with hydraulic equipment still rely heavily on the operation of skilled workers in the field.

I had the idea that if we could incorporate robot control technology, we could expand the possibilities of hydraulic machinery even further. Based on this, in 2021, I proposed a dual-arm robotic excavator, a hydraulic excavator operated by a robot controller, through Kawasaki Heavy Industries' in-house Synergy Challenge Project.

Development advanced with volunteer members from the Precision Machinery and Robot Business Divisions, and the excavator was exhibited at the International Fluid Power Exhibition 2024 (IFPEX2024). It attracted attention as a hydraulic machine that can be operated remotely and intuitively and is even capable of autonomous operation, and this led directly to the tough robot development currently underway.

Current initiatives and vision for the future

I am currently working on technology development for the Tough Robot Concept in the Synergy Technology Development Office. What I am placing importance on is making sure that development does not stop at concepts or CG renderings, but that we actually build things that work so that people can see and touch them and experience their potential firsthand. For a robot to handle the enormous force generated by hydraulics safely and precisely requires that we continuously refine the control technologies.

At the same time, real-world implementation requires that we identify the tasks that are actually causing problems at worksites. We work closely with related departments, including sales and marketing departments, to confirm concrete needs as we move forward with development.

Through the Tough Robot Concept, I hope to make it possible for dangerous and physically demanding work in areas such as outdoor construction and infrastructure maintenance and management to be performed remotely and automated. While reflecting feedback from worksites in the development, we will make this a reality one step at a time as a new solution that can actually be used.

Flexible Value Strategy Initiatives



Satoshi Matsumoto

Senior Manager of Production Engineering Department of Production Group and Senior Manager of Production Planning Office
Precision Machinery Business Division

How can we implement the Flexible Value Strategy at worksites and develop it into a business strength?
In this interview, current initiatives and future possibilities are discussed from the perspective of a person on the front lines of production system reforms.

Launch of the Production Planning Office and commitment to transformation

The Production Planning Office was launched in April 2025 and is a new organization for thinking strategically about a global production system. It is somewhat separated from day-to-day production operations, and its role is to envision optimal production five and 10 years in the future.

As we carry out the Flexible Value Strategy, what has become apparent is not limited to technical challenges and risks. How we will evolve existing methods of doing things in line with changes in markets and customers is also important.

The Production Planning Office is currently a five-person organization. We will be unable to drive this transformation by ourselves. Rather than unilaterally issuing instructions, we emphasize leveraging the knowledge and experience of each individual at plants and overseas sites and engaging in repeated dialogue to create a situation where people feel ownership of initiatives as their own projects and become proactively involved.

Current initiatives and vision for the future

We are currently expanding production in China and India in order to make this concept a reality. We are confirming the strengths of local production bases and partner companies and preparing to transition to actual production in the second half of fiscal 2026. We will expand implementation in stages while verifying effects and issues.

In rapidly-changing markets, spending too much time thinking about things can also be a risk. What is important is to understand what is actually happening in the field and to consider the value that we can provide. Taking action first, trying things, and making improvements as we learn—it is through the accumulation of this process that we will keep the Flexible Value Strategy from remaining a drawing board concept and develop it into an initiative that can produce real results.

By having each individual participate in the creation of production systems as an extension of their own work and bringing together technologies and on-site capabilities unique to Kawasaki Heavy Industries, we will develop new competitiveness.



Hajime Yamada

Team Leader and Captain,
Ship Technology Team,
Ocean Technology Group

Joined Kawasaki Kisen Kaisha, Ltd. as a marine employee in 2003. Was engaged in work at sea as a captain and navigator for a long time. Currently engaged in work on land (second year). Utilizing the know-how gained on the front line, he is promoting the realization of safe transportation and better work efficiency through the introduction of onboard DX, AI, and IT.

Tetsuya Okazumi

Team Leader,
Front Engineering Team,
Ship Technical Group

Joined Kawasaki Kisen Kaisha, Ltd. in 2008. Has experience in a wide range of fields, including not only technological matters but also shipbuilding supervision and operations. Currently belongs to the Front Engineering Team, which was newly established in 2025. He is engaged in the building of new ships from the concept stage to planning and surveys, seeking to realize a new form of technology-based shipbuilding.

Kawasaki's hydraulic equipment has been steadily supporting the safe operation of vessels. Its reliability has been recognized in the field for many years. Now, on the basis of this reliability, it is hoped that Kawasaki will roll out automation and operational support technologies toward future maritime transportation. We asked Mr. Yamada and Mr. Okazumi of Kawasaki Kisen Kaisha, Ltd. about firsthand insights and future prospects.

Mr. Yamada: Kawasaki's proven technological capabilities trusted on the front lines

When Kawasaki's logo is displayed on marine equipment, it is reassuring. That is the feeling I got on the front lines.

Kawasaki's hydraulic marine machinery gives consistent support to the flow of ship operations, from leaving port to docking and mooring. Speaking from the standpoint of seamanship, the important thing is whether your judgments and steering are being properly communicated in the form of the ship's movement. In particular, hydraulic machinery is greatly influenced by such factors as oil temperature. Kawasaki's equipment **responds stably to operations**, though, and there is almost no sensory gap at all. Not having to think too much about differences in operation for piece of equipment leads to stable control, so you can concentrate on making judgments in response to conditions without being distracted by unnecessary worries.

Because operational noises are stable under normal conditions, slight changes can be noticed immediately. This easy detection of invisible small changes prior to any serious trouble occurring is an extremely important point leading to safe operations.

Since ships travel worldwide, a response system in times of trouble is essential too. Kawasaki has sites around the world and provides integrated support from response during voyages to regular maintenance. This certainty that Kawasaki can be relied on at any time is another reason for the trustworthiness.

Going forward, I am very much interested in support technology at times of berthing and unberthing, tasks that put much load on the steersman. Until now, for the most part I have relied on my own experience and senses as a navigator. But if we can support the judgments of the crew member by utilizing sensing and communication technologies, not only can we enhance the safety of operations but also **we can create an environment in which crew members can concentrate on the voyage**. In recent years it has become possible, through the utilization of data, to catch signs of abnormalities. But the new technology will make these signs even more detailed and expand the scope to areas that cannot be dealt with by experience and intuition alone. Together with Kawasaki, we will interconnect frontline know-how and technology to address these issues and facilitate even safer maritime transport.

Mr. Okazumi: Co-creating with Kawasaki to shape the future of maritime transportation

After joining the Company, my first assignment involved an LPG carrier built by Kawasaki Heavy Industries (formerly Kawasaki Dockyard Co., Ltd.). And ever since then, to this very day, I have been involved in various Kawasaki shipbuilding projects.

With our sights on future maritime transportation, the Front Engineering Team, to which I currently belong, is challenging the reform of vessels and their operation itself. Our team, which was newly established in 2025, is tackling future-oriented technological development and operational transformation based on the investigation of new technologies and on-site know-how.

Among our endeavors, one important topic is the utilization of robots in ships. The Front Engineering Team is in charge of bunkering vessels that refuel ships. At the time of refueling, the vessels need to approach each other, anchor, and connect via a hose. Even today these tasks for the most part are done manually, and they are not only burdensome but also dangerous. Therefore, it is my hope that if we can reduce the dangerous workload on human beings by introducing the Tough Robot conceived by Kawasaki, it will be possible to both **ensure crew safety and improve work efficiency**.

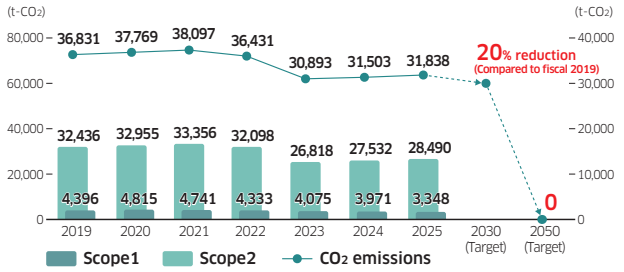
These new initiatives stem from the daily conversations that we have with Kawasaki in which we ask whether such and such a thing can be done. At present we receive introductions to technologies covering a wide range of areas from mainly the Precision Machinery Department but also the Ship & Offshore Structure Department, the Social Robot Strategy Department, and so on, and we engage in lively discussions through technology exchange meetings and other occasions. I feel **that Kawasaki's possession of wide-ranging technologies relating to ships and ability to hold cross-sectional discussions are its big strengths**.

In addition to on-site know-how, diverse expertise is essential for the installation of new mechanisms in ships. The frank exchange of opinions based on the trustworthy relations that have been built so far is sure to lead to co-creation giving birth to new value. By interlacing the on-site know-how of Kawasaki Kisen Kaisha and the technological capabilities of Kawasaki Heavy Industries, I look forward to deepening our co-creation toward the realization of safe and efficient next-generation vessels.

In fiscal 2021, the Precision Machinery Business Division launched the Precision Machinery Carbon Neutrality Realization Project, aiming to reconcile business expansion with the reduction of environmental load, and is promoting activities designed to achieve carbon neutrality.

Electricity accounts for approximately 90% of the energy used at the Nishi-Kobe Works. We are aiming to achieve a 20% reduction by fiscal 2030 (compared to fiscal 2019 levels) and to realize full carbon neutrality by fiscal 2050. We will do so through various initiatives, including the installation of energy-saving equipment; the use of solar power generation; improvements to work processes; and the streamlining of production.

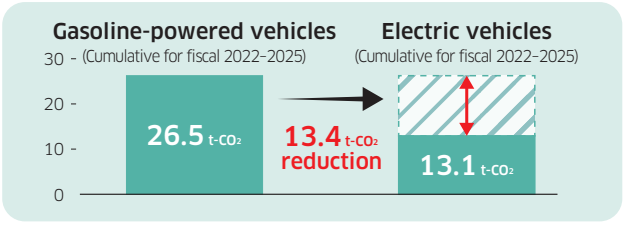
CO_2 emissions and reduction targets (Scope 1 and 2)



Various Initiatives of the Precision Machinery Business Division

Introduction of electric vehicles (fiscal 2021)

We have introduced the "MIRAI" hydrogen fuel cell vehicle and replaced five company cars with electric vehicles, ahead of the Company-wide carbon neutrality initiatives. Feedback from those using these vehicles includes: "Not having to refuel is convenient and the driving is smooth." We also introduced one new electric vehicle in July 2026.





Introduction of EVs as company cars

Recipient of the Kawasaki Heavy Industries Decarbonization Initiative Grand Prize and the Cost Reduction Initiative Excellence Award (fiscal 2024)

The production divisions (represented by the Production Engineering Department) received the Decarbonization Initiative Grand Prize and the Cost Reduction Initiative Excellence Award in the Kawasaki Heavy Industries Company-wide Energy Conservation and Decarbonization Awards. These were awarded in recognition of improvement initiatives for the "Reduction of standby power consumption through optimization of shutdown protocols" and "Reducing air consumption by implementing intermittent operation of process pumps."

Standby power reduction
475 t-CO_2

Air consumption reduction
170 t-CO_2



Second from left: Mr. Itose; fourth from the left: Mr. Inoue
(both from the Production Engineering Department)

Expansion of energy-saving initiatives through collaboration

Working closely with the manufacturing divisions, we achieved energy savings by shutting down standby equipment. These outcomes were made possible by the understanding and cooperation of all our personnel working on the frontlines. We will continue to deepen our collaboration with those on the frontlines and actively promote energy-saving initiatives with their unwavering support while maintaining our sense of gratitude toward them.



Masaaki Inoue
Production Engineering Department

Cost savings achieved through insights and ingenuity!

We reduced air consumption by switching to intermittent operation, after turning our attention to the wastefulness of continuous operation. We were furthermore able to achieve cost reductions through the in-house development of an intermittent operating device. We will continue to undertake energy-saving initiatives and strive for cost reductions while taking encouragement from the positive response to this initiative.



Kazuyasu Itose
Production Engineering Department

Q What is carbon neutrality (CN)?

A CN is the balancing of greenhouse gas emissions and removals.

"Net-zero emissions" refers to achieving a combined total that is effectively zero by subtracting "removals,"* including those resulting from afforestation and forest management initiatives, from "emissions"* of greenhouse gases (primarily CO_2).

* Only anthropogenic emissions and removals are included in emissions calculations.

Visual representation of carbon neutrality

