





HITACHI

EX8000



HITACHI



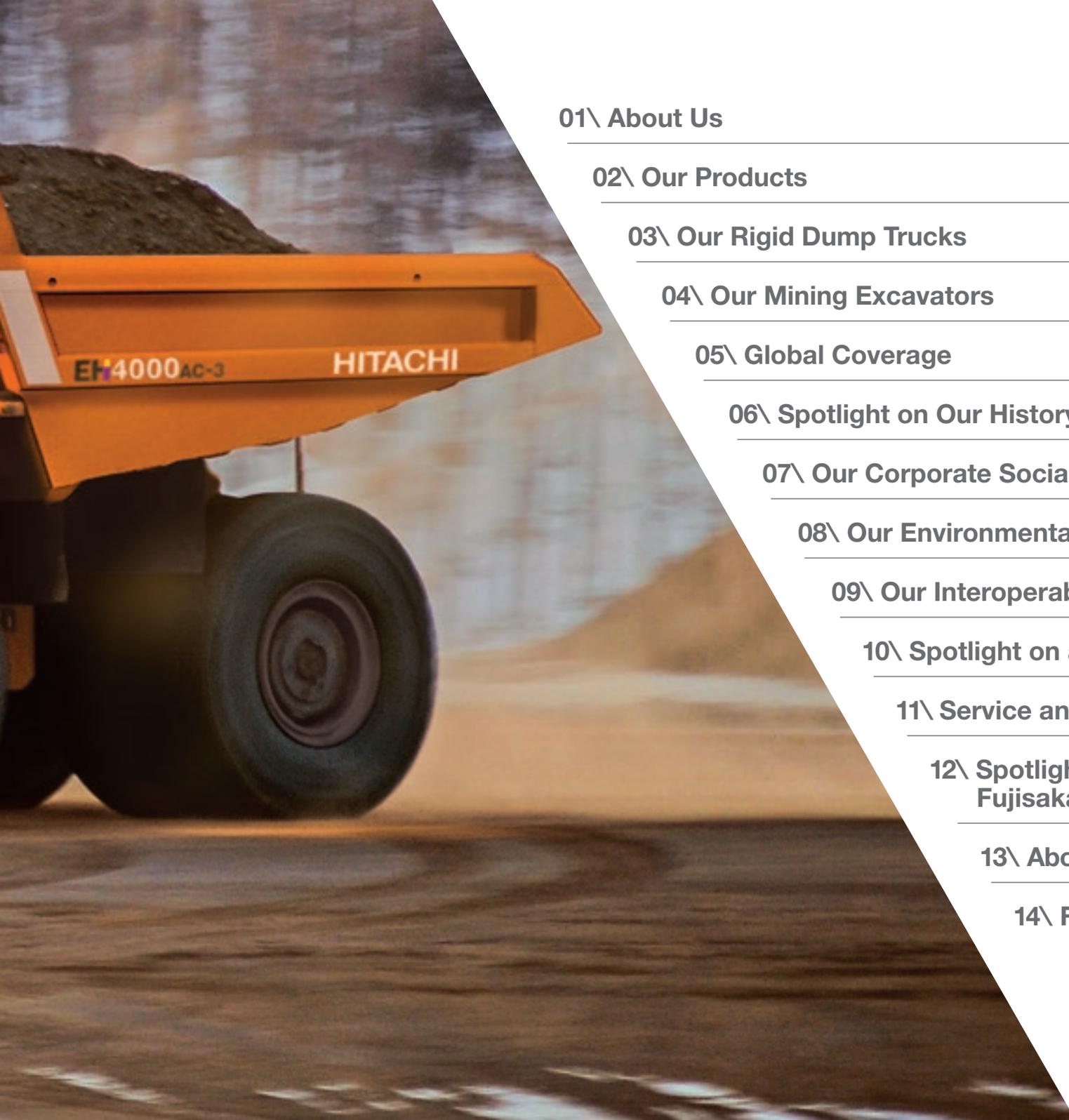
Reliable solutions



Hitachi  
Construction  
Machinery

**GLOBAL  
MINING  
CORPORATE  
BROCHURE  
2022**





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# 01\ About Us



# Introduction to Hitachi Construction Machinery

Hitachi Construction Machinery Co., Ltd. is a leading global manufacturer of construction and mining equipment, headquartered in Japan. The Hitachi Construction Machinery Group provides services to its customers through a global network of company-owned or independent dealers and has approximately 27,873 staff worldwide.

We are committed to making positive contributions to society through the constant development of new technologies, products and services. Hitachi Construction Machinery always follows the founding concepts of Hitachi, Ltd.: Wa, Makoto and Kaitakusha-Seishin.

## About Us

Hitachi Construction Machinery Group provides mining and construction machinery, services, parts, remanufacturing of parts, used machines, rentals and job reports to industries and businesses worldwide, contributing to social infrastructure and resource development.

## We Believe Safety Starts With Us

We hold ourselves to strict safety standards and carry out extensive training with all employees.

We encourage and support our employees to work together to create secure work environments that are accident free, and we are constantly looking for ways to make our practices even safer.

## Safety First, For Us and For You

The safety of our customers and employees is our absolute top priority.

To achieve this, our machines come with a range of innovative safety features as standard.

Initiatives such as Elimination of Live Work (ELW) remove people from live testing environments, keeping our employees safe with zero impact on our productivity.

和

Wa  
harmony

誠

Makoto  
sincerity

開拓者精神

Kaitakusha-  
Seishin  
pioneering  
spirit



# Kotaro Hirano

Representative  
Executive Officer,  
President,  
Executive Officer  
and Director,  
CEO

A portrait of Kotaro Hirano, an older man with grey hair and glasses, wearing a dark suit, white shirt, and pink tie. He is gesturing with his right hand. The background is a light grey wall. The image is split diagonally by an orange shape on the left side.

**“I feel that  
[today, due  
to COVID-19]  
there is an even  
stronger need  
to address the  
customer issues  
of improving safety,  
increasing productivity,  
and reducing  
lifecycle costs.”**

Fiscal 2020 was a year that saw changes in the values of the Hitachi Construction Machinery Group (the Group) management and employees, including myself, as well as our customers. To be honest, I think this is a big change for us, as we are now faced with unprecedented events that we used to think were in the distant future.

In addition, as customer cash flows and business performance worsened, we received more requests than ever for reducing fuel costs and lowering other [business] costs. The COVID-19 pandemic has strengthened our mission to solve customer issues of improving safety, increasing productivity, and reducing lifecycle costs.

Along with the COVID-19 pandemic, climate change risk is another global challenge facing humanity. But we would rather tackle these issues in a positive manner. In particular, we recognize that the growing need for decarbonization is an important business opportunity. Emissions regulations are becoming increasingly stringent; however, levels vary among countries and regions. We must understand the trends in environmental regulations as well as the issues faced on-site by our customers if we are to propose suitable zero emissions solutions.

For example, we have a lineup of electric construction equipment and experience with supplying trolley dump trucks for mining that run on electricity from overhead wires. We recently agreed to collaborate with ABB Ltd., which is a company that possesses strengths throughout the mining process, including mining equipment management systems. Together, we will continue working toward achieving net zero emissions in all aspects of mining.

Also, as fuel consumption and efficiency vary greatly depending on the operator, we focus on customer data to propose suitable solutions. The Group uses ConSite® Mine, a solution that incorporates IoT and AI to solve issues at mining sites. We also use an operation management system to improve the operating efficiency of our products and reduce CO<sub>2</sub> emissions during use. In other words, we achieve our own goal to reduce machine CO<sub>2</sub> emissions while also achieving customer goals by proposing CO<sub>2</sub> reductions and total efficiencies in construction and mining machinery operations.

In light of the regional trends around the world, the Group will partner with customers and fulfil our mission to offer optimal products and solutions that help customers reduce CO<sub>2</sub> emissions proactively.

The ultimate goal of our activities, however, is neither to make nor sell machines, but to continue to supply the best machines and solutions that help our customers develop countries and regions, maintain their production activities, and sustain their efforts in supporting society. With the announcement in 2021 of the dissolution of our joint venture with Deere & Company (John Deere) in the Americas, this goal is even more significant as we look to strengthen our position and provide greater value and support to our customers in this region.

The results of our businesses lead to the building of roads, waterworks, and cities. Nations prosper and people's lives are enriched. This is the ultimate corporate vision of the Group.



## Kenkijin Spirit

“Kenkijin” is a term coined from the Japanese name of Hitachi Construction Machinery – Hitachi Kenki K.K. – combined with “jin”, a suffix that means “person”.

Kenkijin can be translated as “citizen of Hitachi Construction Machinery”.

Kenkijin are people who understand what Hitachi Construction Machinery aspires to be, and they think and act independently to turn those aspirations into reality.

They are people who are consistently committed to high quality in all situations and can approach customers with an accurate understanding of their individual needs. It is the actions of Kenkijin that raise Hitachi Construction Machinery's brand value.

## Our Vision

To pass on a productive environment and prosperous cities to future generations. Hitachi Construction Machinery Group helps to create comfortable living spaces.

## Our Mission

### Mission One

To actively develop machinery to make the relationship between people and work more comfortable, advanced, and efficient.

### Mission Two

To consistently develop and provide our customers with technology, products, and services that generate new value.

### Mission Three

To act as a decent corporate citizen maintaining harmony with the environment, contributing to society, participating in cultural activities, and striving for a symbiotic relationship with society, while maintaining profitable operations.

# Toshiko Oka

Independent Outside  
Director



**“I am very honored to have been appointed as an independent Outside Director of Hitachi Construction Machinery.”**

I have been engaged in Mergers and Acquisitions (M & A) consulting for a long time and have been a member of the committees of the Ministry of Economy, Trade and Industry and the Cabinet Office. But from this April, I have been teaching at the business school at Meiji University (Graduate School of Global Business). I teach in the fields of M & A and management.

I became a member of society in 1986, the year after the Plaza Accord. It's been 35 years since then. At that time, the "30-year corporate life theory" was popular. The theory is that a company has a lifespan, which is 30 years. Hitachi Construction Machinery is celebrating its 70th anniversary in 2020, rather than reaching its end of life in 30 years. It can be said that this is the result of Hitachi Construction Machinery's many years of inheriting the aspirations of its predecessors and its continuous transformation.

In the future, the environment surrounding companies will change even faster and more significantly due to factors including the promotion of digitalization, the shift to greening – including carbon neutrality – and the shift of investors to ESG investment.

In order to survive, constant change is required. The key for Hitachi Construction Machinery will be working out how best to utilize M & A methods such as acquisitions and business splits in order to promote further self-reform and effectively utilize other powers. Hitachi Construction Machinery is expected to take advantage of M & A in order to review its business portfolio and expand its business domain in order to continue to grow and transform into the future.

## Hitachi Construction Machinery's Outside Directors

Our Outside Directors bring a wealth of experience to our company. They each provide us with advice on the overall management of Hitachi Construction Machinery as well as supervising the execution of duties by our Executive Officers from an independent position.

### **Kazushige Okuhara**<sup>o</sup>

*Outside Director*

In 1970, Mr. Okuhara joined Fuji Heavy Industries, Ltd. (currently Subaru Corporation). He served as the Director of the Board, Corporate Executive Vice President, and General Manager of Human Resources Dept. at Fuji Heavy Industries, Ltd., President and Chairman of the Business Reforms Promotion Committee at Subaru System Service Co., Ltd. Representative Director of the Board and Deputy President of Fuji Heavy Industries Ltd., and Representative Director of the Board and President of Subaru Kohsan Co., Ltd., before joining Hitachi Construction Machinery Co., Ltd. in June 2016.

### **Maoko Kikuchi**<sup>■</sup>

*Outside Director*

In 1992, Ms. Kikuchi was appointed as a prosecutor in the Public Prosecutor's Office of the Ministry of Justice. After serving as a lawyer at law firms in the U.S. and Japan, and the Japan Fair Trade Commission, she worked for Softbank Corp. as its CCO, Microsoft Japan Co., Ltd. as an Executive Officer, and Mitsui-Soko Holdings Co., Ltd., as a Member of Audit and Supervisory Board. She has been an Outside Director of the Company (since July 2020), an Outside Director of Mitsui-Soko Holdings Co., Ltd., and a Member of Audit and Supervisory Board of KADOKAWA Corporation.

### **Haruyuki Toyama**<sup>▲</sup>

*Outside Director*

Mr. Toyama joined the Bank of Japan in 1982. After serving as Director General of the Financial Markets Dept., General Manager for the Americas, and Director General of the International Dept. there, he retired from the Bank in 2014. He was registered as an attorney-at law in 2015. Since January 2019, he has been Special Counsel at IWATA GODO (current position), and since March 2021, Non-Executive Director of Horiba, Ltd. (current position). He has been an Outside Director of the Company since June 2015.

### **Toshiko Oka (pictured, left)**

*Outside Director (Newly Appointed)*

In 1986, Ms. Oka joined Tohmatsu Touche Ross Consulting Ltd. She had served as President and Representative Director of ABeam M&A Consulting Ltd., after Asahi Arthur Andersen Ltd. She also had served as Partner at PwC Advisory LLC,. Currently, she is Outside Director at Sony Group Corporation, Outside Director at Happinet Corporation, Outside Director at ENEOS Holdings, Inc., and full-time professor at Meiji University Graduate School of Global Business, and has been an Outside Director of the Company since June 2021.



JUST A FEW OF OUR  
**24,873**  
EMPLOYEES



consolidated  
base (as  
of March  
2021)





# 02\

# Our

# Products

A large orange excavator bucket with teeth, positioned over a pile of grey and white rocks in a quarry setting. The bucket is the central focus, with its teeth pointing downwards. The background shows a rocky cliff face and a clear blue sky.

## Hitachi Construction Machinery offers a diverse range of mining and construction machinery designed to cater to the needs of our customers.

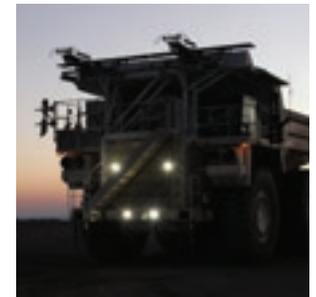
From the day Hitachi, Ltd.'s first electric motor repair shop opened in Japan in 1910 to the introduction of Hitachi Construction Machinery's recent EX-7 Series mining excavators, our commitment to efficiency, reliability and durability has remained strong.

We are industry pioneers, combining 100 years of engineering experience with a dedication to quality to make a variety of machines – from mining excavators and rigid dump trucks to forestry machines and metal recycling equipment.

**Hitachi Construction Machinery manufactures highly efficient, safe and reliable machines\* so you get maximum performance no matter which machine you're running or which industry you're working in.**

• We're committed to the evolution of machinery and parts, constantly developing new technological innovations to:

- » increase efficiency and safety
- » offer world-leading performance, and
- » reduce our impact on the planet.



**We offer an extensive range of reliable, durable, efficient machines for customers in a variety of industries, including:**

- » mining and quarrying
- » infrastructure
- » construction
- » waste and recycling
- » demolition
- » forestry
- » and more.



## Mining Excavators & Loading Shovels

Hitachi Construction Machinery is a world market leader in large hydraulic excavators. We make tough machines with a long life that meet the challenges of mining. Read more on page 20.



## Wenco Mine Performance Suite

Wenco's Mine Performance Suite includes fleet management, high-precision machine guidance, predictive maintenance, collision avoidance and mining business intelligence systems. Read more on page 50.



## Rigid Dump Trucks

Hitachi Construction Machinery's rigid dump trucks are designed with cutting-edge technologies to make them safe and reliable in a variety of operations. Read more on page 14.



## ConSite Data Reporting

The ConSite automated data report service – designed for Hitachi Construction Machinery's construction and mining machines – offers satellite system access and real-time alerts to notify operators when their machine requires maintenance.



## Interoperability

Our machines are part of a developing interoperable platform that will offer simplified connectivity between systems, greater access to data analytics and operation-wide insights, including our Autonomous Haulage System.



## Metal Recycling Equipment

Instead of disposing of the vast amount of byproducts from construction activities, Hitachi Construction Machinery's material handling and recycling equipment allows them to be reused as valuable resources.



## Construction Excavators

Just like our mining excavators, Hitachi Construction Machinery's construction excavators are famous for their reliability.



## Wheel Loaders

Hitachi Construction Machinery's environmentally conscious wheel loaders offer safe and easy operation so that even beginners can work like veteran operators.



## Compaction Equipment

Our range of compaction equipment offers world-class performance, with a safety- and environmentally conscious design.



## Mini Excavators

Our mini excavators are engineered to the same quality as our industry leading hydraulic excavators, designed to operate comfortably, efficiently and safely in confined and complex spaces.



## Forestry Machines

Hitachi Construction Machinery's forestry machines are specially engineered to handle every step of the forestry process, cutting and processing trees safely and efficiently.



## Demolition Equipment

With more than 20 types of machines designed for heavy demolition work, we're at the forefront of the industry, offering the greatest variety of demolition machines.

Hitachi Construction Machinery's reliable solutions extend far beyond the sale of each machine: our highly trained technicians at every dealership are there to support our customers to get more from their machines (see page 58 for more).

# 03\ Our Rigid Dump Trucks



# Our Rigid Dump Trucks

Hitachi Construction Machinery's AC-3 rigid dump trucks set a new standard in the surface mining industry.

With refined engineering and a range of advanced and eco-friendly technologies, our AC-3 series can be relied on to achieve more for your site.

## Environmental Features

Hitachi Construction Machinery's rigid dump trucks are designed with a range of environmental features to help you significantly reduce your fuel costs and your CO<sub>2</sub> emissions too, including:

### Trolley Truck Configuration

an eco-friendly option that can significantly reduce CO<sub>2</sub> emissions by switching from diesel power to an overhead electric power source.

### EH Tuning Package

where we can customize a fleet's AC Drive System to work more efficiently with the actual gradients, surfaces and other conditions at a mine, reducing fuel consumption.

See page 16.



See page 17.



# Trolley Truck

The trolley truck configuration is kinder to the environment with significantly lower emissions than standard equivalent models.

A trolley truck configuration is a cost-saving and environmentally friendly feature available for Hitachi Construction Machinery AC-3 trucks. At the flick of a switch, you can alternate between powering the truck remotely in *diesel mode* to raising the trolley to an overhead catenary power source in *trolley mode*.



## EH Tuning Package (EHTP)

**EHTP is a software-based program designed to optimize Hitachi Construction Machinery trucks to consume less fuel.** To install EHTP, Hitachi Construction Machinery first studies a mine site to configure its trucks to work more efficiently in the actual conditions of its haul road (considering its gradients, surfaces and length).

### How does it work?

- 1 We will conduct testing of EHTP on one truck at a mine site, with minimal downtime of only 10 minutes per testing cycle
- 2 We will then run through the testing results with the client and together determine the optimal tuning pattern for their operation, and
- 3 In just one day, Hitachi Construction Machinery will install the optimized EHTP software on an entire truck fleet to let the fuel savings begin.

## AC-3 Drive Control

All of our AC-3 trucks are equipped with our Hitachi Advanced IGBT AC-Drive system.

Featuring Hitachi, Ltd. proprietary technology, AC-3 Drive Control offers:

**Slip slide control** that utilizes speed sensors on front and rear wheels to determine speed differential and adjust torque accordingly, increasing safety and stability

**Pitch control** that continuously monitors speed and suppresses pitching motions that can occur through braking and suspension changes to increase operator comfort, and

**Side skid control** that utilizes speed sensors, steering angle sensors, lateral acceleration and dual brake sensors to minimize understeering and oversteering by reducing traction as needed.



## Aerial Angle With Object Detect Assist

**Aerial Angle with Object Detect Assist for AC-3 trucks allows for automatic detection of moving objects surrounding the haul truck while the truck is stationary.** It measures the relative speed of objects ahead – using millimeter-wave radar located on the front of the truck – to avoid collision and reduce the incidence of false alarms.



Picture is for illustration purposes only.

## Full-Battery Dump Trucks

**Development of zero emissions solution to help tackle climate change.** In partnership with ABB, we are developing a full-battery rigid frame dump truck, in turn helping the mining industry transition to electrification and reduce greenhouse gas emissions from their operations.

The battery dump truck will utilize an ABB-supplied onboard battery system and dynamic charging option via pantograph and overhead trolley lines (similar to our current diesel trolley truck) to simultaneously charge the battery and provide energy to power the truck.

- All required components for the trolley configuration are provided and serviced by Hitachi Construction Machinery, simplifying setup and maintenance.

- Trucks set up with trolley configurations can run up to nearly twice as fast when in Trolley Mode.



**By curbing maintenance costs and CO<sub>2</sub> emissions through reduced engine load, Hitachi Construction Machinery's Rigid Dump Trucks help customers lower costs and reduce environmental impact at the same time.**

	<b>EH3500AC-3*</b>	<b>EH4000AC-3*</b>	<b>EH5000AC-3*</b>
<b>Pairs with:</b>	EX2600-7, EX3600-7 and EX5600-7 excavators	EX3600-7, EX5600-7 and EX8000-7 excavators	EX5600-7 and EX8000-7 excavators
<b>Target GMOW:</b>	322 000 kg	384 000 kg	500 000 kg
<b>Gross Power:</b>	1 491 kW (2 000 HP)	1 864 kW (2 500 HP)	2 125 kW (2 850 HP)
<b>Nominal Payload:</b>	181 tonnes	221 tonnes	296 tonnes
<b>Drive System:</b>	Hitachi Advanced IGBT AC-Drive	Hitachi Advanced IGBT AC-Drive	Hitachi Advanced IGBT AC-Drive
<b>Brake System Front/Rear:</b>	Dry disc/Dry disc	Dry disc/Oil-cooled wet disc	Dry disc/Oil-cooled wet disc

• All specifications shown are for standard Cummins engine configurations. Specifications may change between Cummins and MTU engine configurations.

The EH3500AC-3 has lower operating and maintenance costs and delivers exceptional efficiency to sites.

The EH4000AC-3 is a versatile and efficient machine with powerful production for a range of operations.

The EH5000AC-3 brings more productivity to sites and is our largest rigid dump truck.



# 04\

# Our Mining Excavators



## Our Mining Excavators

Hitachi Construction Machinery hydraulic mining excavators have evolved over decades of engineering and technological advancement. Today, our innovative EX-7 series excavators are packed with features\* that not only empower operators to dig more than ever, but help them achieve their sustainability goals too.

## Environmental Features

Our EX-7 excavators have been designed with environmental features to help you significantly reduce your fuel costs and your CO<sub>2</sub> emissions too.

### Electric Motor Option

Each of our excavators\* comes with an electric motor option, giving you the power to:

- ▶ Go greener by significantly reducing machine emissions
- ▶ Reduce costs by saving money on engine oils, filters, coolants and services, and
- ▶ Work smarter by reducing machine downtime due to engine maintenance and enjoying more comfortable operation with less machine noise and vibration (see page 41 for more).

### Improved Fuel Consumption:

All EX-7 model excavators have improved fuel consumption, consuming significantly less fuel than the EX-6 series with their Tier 4 Final and Fuel Consumption Optimization (FCO) engines. Options are available to suit all local environmental regulations and requirements.

### Aerial Angle



Aerial Angle can boost the safety of your operation by giving the excavator operator a 360° view around their machine in real time.

Cameras mounted around the excavator allow operators in the comfort of the cab to see both a wide-range and close-range of their surroundings, even during nighttime operations.

\*excluding EX1200.

	<b>EX1200-7°</b>	<b>EX2000-7° / EX2000-7E</b>	<b>EX2600-7° / EX2600-7E</b>	<b>EX3600-7° / EX3600-7E</b>	<b>EX5600-7°° / EX5600-7E</b>	<b>EX8000-7°^ / EX8000-7E</b>
<b>Operating Weight (Backhoe):</b>	117 000 kg	195 000 kg / 191 000 kg	257 000 kg / 248 000 kg	370 000 kg / 350 000 kg	549 000 kg / 531 000 kg	842 000 kg / 820 000 kg
<b>Operating Weight (Loading Shovel):</b>	118 000 kg	194 000 kg / 190 000 kg	259 000 kg / 250 000 kg	369 000 kg / 353 000 kg	544 000 kg / 527 000 kg	830 000 kg / 808 000 kg
<b>Gross Power:</b>	567 kW (760 HP)	746 kW (1 000 HP) / 610 kW (818 HP)	1 119 kW (1 500 HP) / 860 kW (1 153 HP)	1 450 kW (1 944 HP) / 1 200 kW (1 609 HP)	2 x 1 119 kW (1 500 HP) / 2 x 860 kW (1 153HP x 2)	2 x 1 450 kW (1 944 HP) / 2 x 1 200 kW (1 609 HP)
<b>Bucket Capacity (Backhoe) ISO7451:2007:</b>	5.2–7.0 m³ / 8.0 m³	12.0 m³ / 14.0 m³	17.0–18.0 m³ / 19.5 m³	22.0 m³ / 24.0 m³	34.0–36.0 m³ / 38.5 m³	43.0–48.0 m³ / 52.0 m³
<b>Bucket Capacity (Loading Shovel) ISO7546 Heaped 2:1:</b>	5.9–6.5 m³	12.0 m³ / 12.0 m³	15.0–16.5 m³ / 15.0 m³	22.0 m³ / 22.0 m³	29.0 m³ / 29.0 m³	40.0–43.0 m³ / 43.0 m³

**The EX1200-7** is engineered for the most precise mining tasks with its efficient design.

**The EX2000-7** brings greater productivity and savings on fuel consumption to smaller operations.

**The EX2600-7** boosts productivity on your site while offering the operator unparalleled control.



The **EX3600-7** is our most popular excavator, striking the delicate balance between precision and power.

The **EX5600-7** will tackle large scale mining operations with impressive productivity and efficiency.

The **EX8000-7**, our largest excavator, delivers incredible output for the toughest bulk mining jobs.

- EX-7 specifications shown are for standard Cummins engine/Tier 4 Final fuel configurations. Model specifications may vary between Cummins/MTU configurations, and Tier 4 Final/Fuel Consumption Optimization fuel configurations.



# 05\ Global Coverage





## Hitachi Construction Machinery's worldwide coverage comprises more than 9,000 dealers in diverse locations across the globe:

What's vital for a subcontractor in Austria might be different for a fleet owner in Zambia, and that's why Hitachi Construction Machinery offers a vast network of local dealers and liaison offices all around the globe. With Hitachi Construction Machinery's worldwide network, you'll be supported by experts who talk your language.

From the demands of remote locations with extreme temperatures to those of precise work in tight spaces in a busy city location, our machines are designed to get the job done safely and efficiently, no matter how testing the conditions.

Not only can our dealers supply the right machines to suit your market and working conditions, we also provide the high quality aftersales support you'd expect from a globally recognized brand (see more on page 58).

- Each of our dealers is backed by the knowledge-bank and support of their local Regional Headquarters and our worldwide Technical Training Center (TTC) in Japan. Our TTC offers extensive training courses and materials to ensure we deliver an unparalleled level of service.





10

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4



## Hitachi Construction Machinery Locations

<b>1</b>	<b>Japan</b>	Sales Representatives	Tokyo, Japan
		Manufacturing Facilities	Ibaraki, Japan
<b>2</b>	<b>China</b>	Sales Representatives	Shanghai, China
		Manufacturing Facilities	Hefei, Anhui, China
<b>3</b>	<b>SE Asia</b>	Sales Representatives	Singapore, Singapore
		Manufacturing Facilities	Jawa Barat, Indonesia
<b>4</b>	<b>Oceania</b>	Sales Representatives	Sydney, Australia
		Assembly Facilities	Brisbane, Australia; Perth, Australia
<b>5</b>	<b>Russia &amp; CIS</b>	Sales Representatives	Moscow, Russia
		Manufacturing Facilities	Tver Region, Russia
<b>6</b>	<b>India</b>	Sales Representatives	Bengaluru
		Manufacturing Facilities	Jamshedpur, Jharkhand; Dharwad, Karnataka; Kharagpur, West Bengal
<b>7</b>	<b>Middle East</b>	Sales Representatives	Dubai, UAE
<b>8</b>	<b>Africa</b>	Sales Representatives	Johannesburg, South Africa
		Manufacturing Facilities	Lusaka, Zambia
<b>9</b>	<b>Europe</b>	Sales Representatives	Amsterdam, Netherlands
		Manufacturing Facilities	Amsterdam, Netherlands
<b>10</b>	<b>Americas</b>	Sales Representatives	Atlanta, USA

# 06\

## SPOTLIGHT ON OUR HISTORY:

# Rigid Dump Trucks





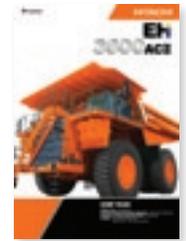
## Dump Trucks: Then and Now

Hitachi was founded 110 years ago by Namihei Odaira, an electrical engineer.

Since then, the company has followed its corporate mission “to contribute to society through the development of superior original technology”.

Throughout its history, the Hitachi Group has produced many groundbreaking technologies such as the company’s first transistor-based computer in 1959. More recently, in 2018, Hitachi Rail and Rio Tinto collaborated to build the world’s first driverless heavy freight train.

Over the past few decades, Hitachi Construction Machinery has revolutionized the mining industry through the design and manufacture of world-class technology across its entire mining product range, including our rigid dump trucks. But to find out the origins of these trucks, we need to go back to 1934.



### Did you know?

Launched in 2008, the EH3500ACII was one of the largest Japanese-made rigid dump trucks.

These trucks incorporate Hitachi engineered AC Drive system technology, developed by Hitachi, Ltd. in 1992 and currently used by Japanese Shinkansen bullet trains, monorails and electric cars. This advanced technology has created superior hauling capabilities that are well recognized among our products in the mining industry.

# Dump Trucks

## Then

Hitachi Construction Machinery's rigid dump truck has a distinctive orange body, but it was originally a green body manufactured under the name **Euclid Inc.**

Founded in 1907, Euclid specialized in off-road heavy equipment for earthmoving. In 1934 they introduced the first off-highway dump truck: the 1Z model. These self-powered trucks were used in the Mesabi Iron Range and at Boulder (now Hoover) Dam in Arizona. They proved to be so rugged and indestructible, yet easy to maintain, that "Eucs" became the standard of the industry. The company went on to pioneer the use of rigid dump trucks in global mining and major construction projects.

Fast forward to 1992, when the Euclid-Hitachi Heavy Equipment, Inc. company was formed. The strong partnership between the two companies resulted in a range of next-generation dump trucks being released to the market.

Hitachi Construction Machinery took major ownership of Euclid in 1998, but the Euclid-Hitachi partnership still produced dump trucks that bore the name "Euclid" on certain components. Over time, the green finish was phased out and the distinctive orange color of today's Hitachi Construction Machinery dump trucks became the standard.

The Euclid name was eventually phased out from 2004, however there's no denying the impact the Euclid company had in helping us achieve great success with our dump truck range.

Read on to find out how the future of Hitachi Construction Machinery's Rigid Dump Trucks would see them go from green in color to green in nature.



# Now

**Hitachi Construction Machinery trucks have earned a reputation for durable and dependable performance at mining operations across the world.**

Our dump trucks – the EH3500ACII released in 2008 and the EH4000ACII released in 2010 – were built upon the historic design of the iconic “Euclid” trucks. However, the new models incorporated the latest advancements in innovative engineering.

With lightweight bodies specifically designed to maximize payload capabilities and AC drive technology, our dump trucks continue to deliver superior performance and productivity to mining operators, enhancing production capabilities. AC drive technology is a very efficient means of powering large haulers: it allows smoother acceleration at slow speeds, better gradeability, and higher top speed. AC drive technology also minimizes routine maintenance thanks to a brushless design.

Hitachi Construction Machinery’s product range is continually expanding, with the next-gen AC-3 models now available. These trucks feature more environmentally friendly options such as electrification in the trolley trucks\* (already available) and the battery dump truck (under development) to help customers achieve their sustainability goals.

Hitachi Construction Machinery is the only truck manufacturer in the world that builds its own AC drive systems. So, the new Advanced AC-Drive System is perfectly matched to the EH3500AC-3. It delivers higher torque, faster acceleration, smoother retardation and lower operating costs. Find out more on page 17.

Our dump trucks continue to deliver superior performance and productivity to mining operators.

## • The advantages of electrification

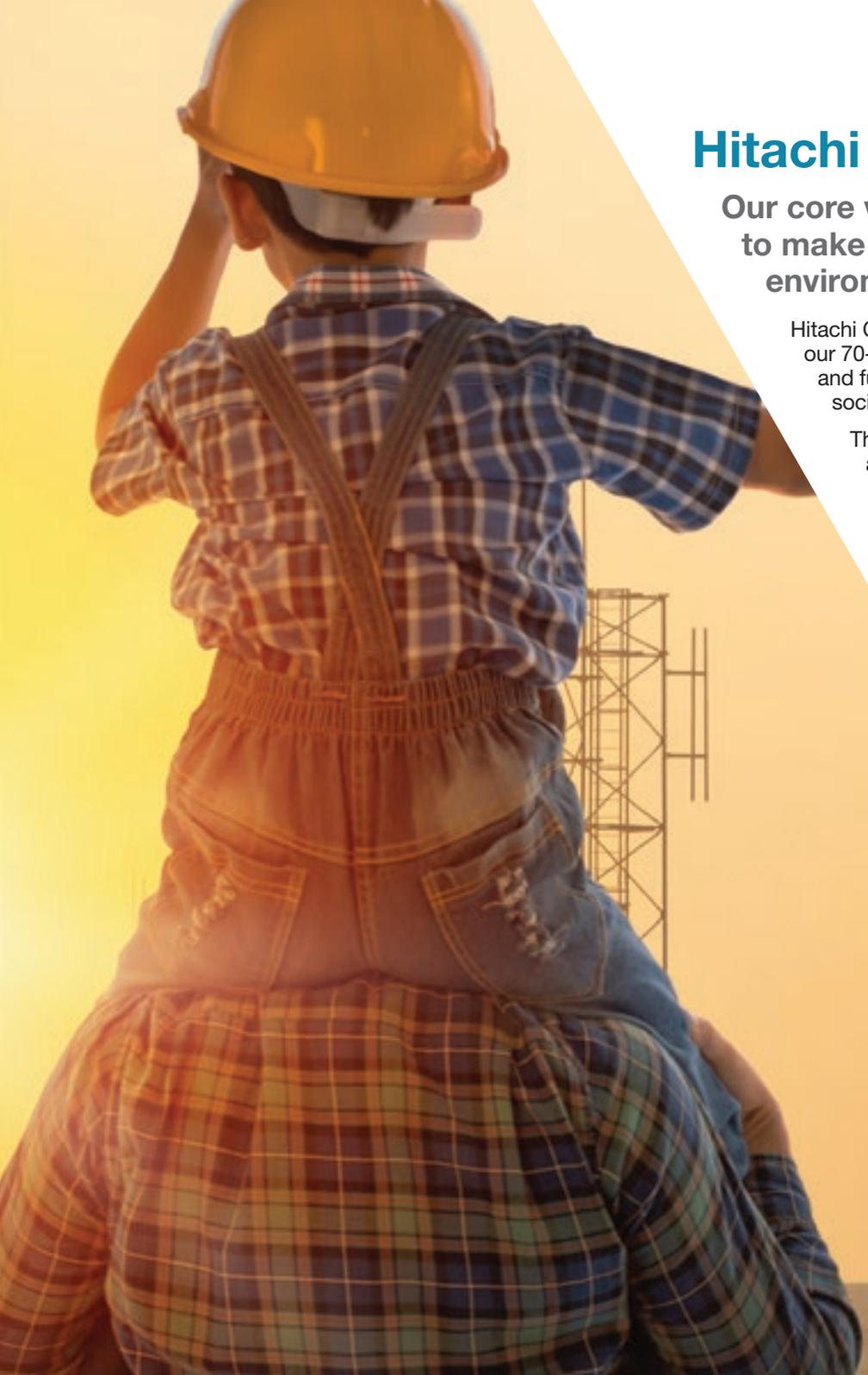


Trolley-assisted dump trucks achieve significant fuel savings, reduce CO<sub>2</sub> emissions and improve productivity. They also allow trucks to drive uphill faster than they could using diesel engines. This is made possible by receiving electric power from overhead contact lines powering their AC motors (instead of the truck’s diesel engine). Find out more on page 16.

A construction site at sunset, featuring several cranes and buildings under construction. The sky is a warm orange and yellow, with the sun low on the right. The text is overlaid on the left side of the image.

# 07\

# Our Corporate Social Responsibility (CSR)



# Hitachi Construction Machinery CSR

**Our core values guide everything we do as we work to make a positive difference to communities and environments all over the world.**

Hitachi Construction Machinery has fostered and grown diverse strengths during our 70-year history. These strengths help us meet the expectations of stakeholders and fuel the Hitachi Construction Machinery Group's ability to sustainably create social, environmental, and economic value.

The Hitachi Construction Machinery Group considers local communities to be an important stakeholder. We believe that in order to develop and grow in a region, a company must understand the various characteristics of each community and grow together with them.

## Social Contribution Policy

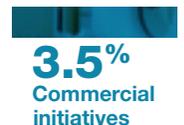
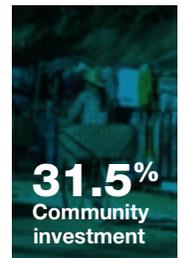
Hitachi Construction Machinery Group acts as a good corporate citizen, lending our business strengths to social and environmental causes, solving problems in society.

To ensure we never forget the importance of social contributions, we formulated the "Hitachi Construction Machinery Social Contribution Policy". Under this policy, we genuinely recognize our role as a member of society and continually engage in activities that address social issues.

We understand the importance of acting locally and globally, and we contribute to society by:

- ▶ resolving global environmental issues (see more on page 36)
- ▶ increasing social infrastructure, and
- ▶ contributing to community development.

In financial year 2020, Hitachi Construction Machinery Group contributed **160 million yen** to various activities, via:



# Selected CSR Initiatives

A few of the ways Hitachi Construction Machinery has been supporting society:

## Providing Wellbeing Support to Construction Workers and Their Families in the UK

Hitachi Construction Machinery United Kingdom recently pledged £5,000 to support the Lighthouse Club, a charity that provides wellbeing support services to construction workers and their families.

The donation will provide vital mental, physical and financial support to members of the construction industry. The Lighthouse Club has been providing free resources and support to members of the construction industry since 1956, and they are continuing to provide crucial help to workers and their families during the COVID-19 pandemic, which has been a difficult period for the industry.

David Roberts, CEO of Hitachi Construction Machinery UK said:

“The Lighthouse Club has suffered like most through this crisis, but they continue to provide the same high quality and varied support across the country when it’s needed more than ever. That’s why it was an easy and unanimous decision by the team at Hitachi Construction Machinery UK to make this donation.”



## Helping Pediatric Patients in Australia

Hitachi Construction Machinery Australia recently donated a machine to an Australian hospital that helps children who have to undergo painful urgent procedures in the emergency room (like setting a fracture). The machine – a Porter MDM Fraser Digital Continuous Nitrous Mixer – administers short-acting sedation safely to children and babies, so that they can undergo procedures without having to be awake and experience the pain.

In partnership with the Humpty Dumpty Foundation,<sup>■</sup> Hitachi Construction Machinery Australia donated the Porter MDM Fraser Digital Continuous Nitrous Mixer valued at over AUD\$14,000 to Queensland’s Metro South Health QEII Jubilee Hospital, where approximately 50,000 patients are admitted to the Emergency Department each year.

Hitachi Construction Machinery Australia has a longstanding partnership with the Humpty Dumpty Foundation<sup>■</sup> – the second largest supplier of medical equipment to hospitals in Australia – having supported the charity since 2012. To date, Hitachi Construction Machinery Australia and the Humpty Dumpty Foundation have donated over AUD\$771,000 worth of medical equipment: comprising 135 items donated to 62 hospitals across Australia.



## Helping Communities in Cambodia to Become Self-sufficient

Since 2007, the Hitachi Construction Machinery Group has been donating to Good Earth Japan (GEJ) – a not-for-profit organization – to foster the self-reliance of local people from various villages in the Battambang Province in Cambodia. As the country with the highest density of landmines in the world, the people of Cambodia are still injured or killed by landmine accidents long after the end of its civil war.

Over the past 13 years, Hitachi Construction Machinery has supported GEJ in agricultural training for 8,507 people in 27 villages as well as many construction projects to build local infrastructure.<sup>▲</sup>

And, after 13 years of support, the community is now self-sufficient. Hitachi Construction Machinery Group and GEJ have chosen to end their support activities because of this excellent outcome, leaving the region now able to support its own future. As a parting gift, GEJ and Hitachi Construction Machinery donated funds and two road maintenance machines to the Provincial Department of Rural Development to help the community maintain the infrastructure built thanks to Hitachi Construction Machinery’s support over the years.



lighthouseclub.org



humpty.com.au



Hitachi Construction Machinery has supported GEJ in building:

- » 5 schools
- » 57.5 kilometers of road
- » 1 bridge
- » 39 ponds
- » 8 water wells.

Editorial credit: ammat30 / Shutterstock.com

Editorial credit: Tanes Ngamsom / Shutterstock.com



# 08\ Our Environmental Initiatives

# Environmental Initiatives

**At Hitachi Construction Machinery, we prioritize environmentally friendly activities that support the planet and the sustainability of society.**

We are committed to environmental leadership in all of our business activities across the globe, incorporating long-term environmental initiatives into our management strategy across our entire value chain.

## The global context

Social expectations of companies and industries are increasing in relation to:

- (i) ESG (environment, society, governance), with the adoption of the United Nations' 2030 Agenda for Sustainable Development, and
- (ii) climate change, with the Paris Agreement adopted at the 21st Conference of the Parties (COP21).

Back in September 2016, Hitachi, Ltd. released their Environmental Vision and Hitachi Environment Innovation 2050. The Vision is a strategic initiative to resolve environmental issues and achieve a higher quality of life and a sustainable society. Acting as a good corporate citizen, Hitachi, Ltd. has made a commitment to help resolve global environmental problems via the activities of its Social Innovation Business, which combines superior products with OT and IT digitalization expertise.

•  
**“We have an environmental vision to pass on a prosperous planet to future generations.”**

Alistair Dormer,  
Chief Environmental Officer,  
Hitachi, Ltd.

■  
**To achieve our vision, Hitachi, Ltd. aims to realize a society that is:**

- » low carbon
- » resource efficient, and
- » harmonized with nature.



# Road to Zero

The impacts of climate change are being felt across the world. Many industries and corporations are committing to a zero emissions future and working towards eliminating greenhouse gas emissions from their operations.

Now and into the future, Hitachi Construction Machinery is fully committed to decarbonizing our internal processes, products and services to help achieve a zero emissions society.

# Hitachi Construction Machinery's 2030 Goal:

Reduce our CO<sub>2</sub> emissions by 33%

**TO ACHIEVE THIS GOAL, WE PLAN TO:**

**Reduce emissions & prevent pollution by:**

- ▶ reducing water usage in all business activities, and
- ▶ managing chemical substances to reduce water contamination risks

**Develop clean technologies & environmentally conscious technologies:**

- ▶ including developing hybrid and electric construction machinery

**Utilize renewable energy by:**

- ▶ installing solar panels where possible

**Reduce the environmental impact of manufacturing processes by:**

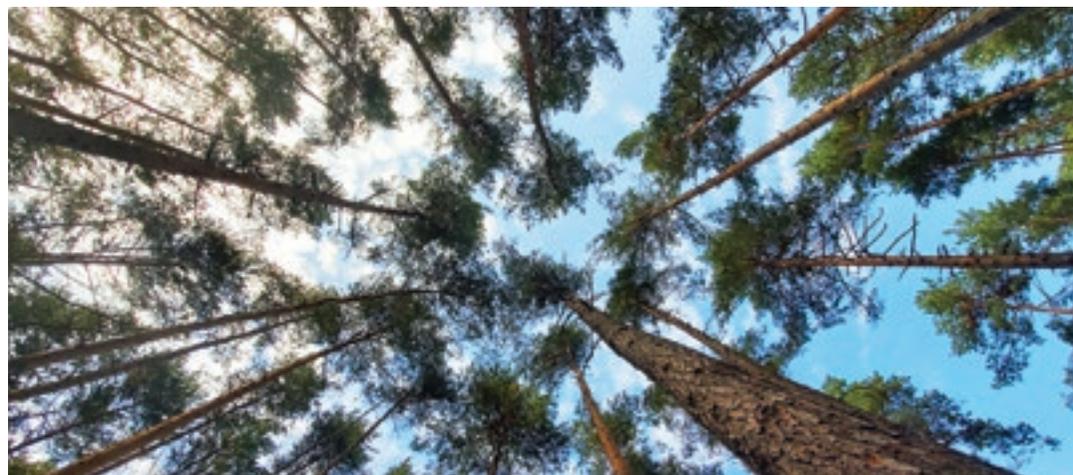
- ▶ introducing an electric power monitoring system that visualizes electricity consumption details and recovers unused energy

**Reuse & recycle products by:**

- ▶ increasing remanufacturing of parts and components
- ▶ offering quality second-hand parts, and
- ▶ giving customers the option to rent machinery

**Address risks of climate change by:**

- ▶ introducing solar power generation
- ▶ introducing internal carbon pricing, and
- ▶ conserving water resources where possible.



**At Hitachi Construction Machinery, we are working to reduce CO<sub>2</sub> emissions in all our activities across the mining value chain, including:**

- ▶ the “use” stage – which accounts for more than 90% of greenhouse gas emissions in the value chain – meaning our machines are more efficient onsite, and
- ▶ our own “production” stage too.

**Hitachi Construction Machinery established a set of long-term targets for Greenhouse Gas (GHG) Emission Reduction:**

Indicator		Target for absolute emissions reduction	
Reduction in greenhouse gas emissions	Scope 1 & 2	By FY2030 (Compared to FY2010)	<b>45% reduction</b>
	Scope 3		<b>33% reduction</b>

**Scope 1:**  
Direct emissions of greenhouse gases from emission sources owned or managed by companies or households

**Scope 2:**  
Indirect emission of greenhouse gases associated with the use of electricity, steam, and heat

**Scope 3:**  
Other indirect emissions excluding Scope 2

- as of March 2019.

- In May 2019, the Science Based Targets Initiative (SBTi) approved the long-term targets for greenhouse gas emission reduction established by Hitachi Construction Machinery as targets based on science.



# Zero Emissions Solutions

## ROAD TO ZERO

By switching from fossil fuels to electrification, we're significantly reducing the CO<sub>2</sub> emissions our machines produce.

# See our Zero Emissions Initiatives in action in our:

IN DEVELOPMENT



## Fuel Cell Drives

Our hydrogen-powered fuel cell battery would replace the engine completely, eliminating CO<sub>2</sub> emissions and the need for fuel, plus the only by-product of the fuel cell is water. The fuel cell system is proposed as part of the scalable platform design of our truck.

IN DEVELOPMENT



Picture is for illustration purposes only.

## Full-Battery Dump Trucks

Our engineless, full-battery rigid frame dump truck will utilize an onboard electrification system and dynamic charging options to simultaneously charge the onboard battery while providing energy to power the truck.

AVAILABLE NOW



## Trolley Trucks

By providing an electric option – via an overhead cable – we've significantly reduced CO<sub>2</sub> emissions and fuel consumption (see page 16 for more).

AVAILABLE NOW



## EH Tuning Packages

Hitachi Construction Machinery can tune your machines to the actual conditions of your site to further lower their CO<sub>2</sub> emissions and fuel consumption (see page 17 for more).

AVAILABLE NOW



## Electric Motor Mining Excavators

These environmentally-friendly machines remove the need for consumables – from fuel and engine oils to disposable oil filters – and help reduce CO<sub>2</sub> emissions (see page 21 for more).

# Selected Environmental Initiatives

A few of the ways Hitachi Construction Machinery has been supporting our planet:

## Planting Mangrove Trees in Indonesia

PT Hexindo Adiperkasa Tbk. (Hexindo) – a Hitachi Construction Machinery group company in Indonesia – is planting mangrove trees to help clean the country's water and air.

Mangroves are beneficial to the ecosystem. Their dense roots can help bind soils and prevent coastal erosion. Both their roots and shade create habitats and refuge for many bird and animal species. But Mangroves are helpful to humans as well. Their complex root systems filter nitrates, phosphates, heavy metals and other pollutants from the water. Mangrove forests can also filter pollutants from the air as well as capturing CO<sub>2</sub> and other greenhouse gases too.

In November 2019, 40 Hexindo directors and employees planted 2,811 mangrove seedlings in a protected area of Mundu Beach in West Java. Mangrove tree planting has also been undertaken by Hexindo in Marunda Beach in North Jakarta and at the Balikpapan Mangrove Center in East Kalimantan. Hexindo plans to repeat their mangrove planting each year, with more than 5,500 mangrove seedlings planted to date.



## Switching Off Lights For Earth Hour Around the Globe

Every year since 2015, Hitachi Construction Machinery Group has participated in Earth Hour – a global grassroots movement led by the World Wide Fund for Nature (WWF), which aims to prevent climate change. Earth Hour involves not only the symbolic switching off of lights to save power and draw public attention to the cause, but also acts as a catalyst for positive environmental impact by inspiring collective action.

Despite the physical distancing and restrictions imposed by the global pandemic, Earth Hour 2021 broke all previous records. And Hitachi Construction Machinery joined in force, digitally speaking up for the planet and raising awareness by posting their efforts on various social media accounts.

Hitachi Construction Machinery turned off the lights – including outdoor signage and indoor lights – at 9 companies and 17 offices and factories in Japan, China, Singapore, the Netherlands, France and Russia from 8:30pm to 9:30pm on March 27, 2021. The lights-off period was also extended at many bases resulting in an approximate reduction in electric power consumption of 5,500 kWh.

Earth Hour is just one small way in which Hitachi Construction Machinery Group is engaging in environmental protection, being a good corporate citizen, and building towards a low-carbon society.

## Encouraging Recycling and Supporting Disadvantaged Communities in South Africa

A striking 5-meter wire fish called “GOBY” with signage asking to be fed plastic bottles has been visiting primary schools in disadvantaged communities in South Africa to educate children on the importance of recycling. Hitachi Construction Machinery Southern Africa has sponsored Project GOBY – which stands for “Global Organisation for Brighter Youth” – since it began.

In partnership with UNICEF South Africa, FIFA Beach Soccer Worldwide Foundation, Hitachi Construction Machinery Southern Africa and the Durban Regeneration Project 2022, the GOBY Environmental Project launched in July 2019 on Durban New Beach to combat marine pollution while educating South African families on the importance of reducing, reusing and recycling waste. Along with the environmental conservation activities GOBY encourages, the program also creates socio-economic benefits for communities. GOBY facilitates sports programs for disadvantaged children, collecting the materials required to create sports equipment from recycled plastic.



Hitachi Construction Machinery (Europe) before and during Earth Hour.



### Since its launch, GOBY has:

- » visited 127 primary schools
- » educated 17,342 children, and
- » collected 2,891 kg of plastic waste for recycling.

# Snapshot of Our Remanufacturing

Hitachi Construction Machinery is helping to achieve sustainability by reducing waste by up to 85%.





**The traditional approach to servicing and maintaining equipment is to discard components as they reach the end of their life and then replace them with a completely new component. This process is time consuming and can mean significant machine downtime and significant parts costs for companies.**

**We're doing our bit to help the environment by reducing waste and creating a circular economy.**

We've set up component remanufacturing plants around the world to remanufacture used parts so that they are as good as new.

Our remanufacturing plants are helping:

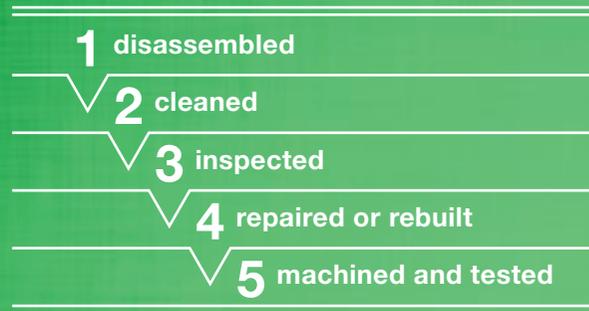
- ▶ reduce component costs for our customers by 70% compared to purchasing new components
- ▶ minimize machine down time
- ▶ reduce industrial waste, and
- ▶ achieve sustainability.

Hitachi Construction Machinery's remanufacturing facilities take components that would normally be discarded and remanufactures them to have the same functionality as new parts, allowing customers to use them again.

Our remanufactured parts are high quality and are made using the same manufacturing process as new parts. All our remanufactured parts are tested to the highest possible standards under rigorous quality control measures and come with a manufacturer's warranty.

## The Remanufacturing Process

Components are:



**85%**  
parts re-use rate\*

up to  
**85%**  
energy saved compared to traditional manufacturing

**6,630** tonnes of parts salvaged from disposal\*

**16,243** tonnes of CO<sub>2</sub> saved and not dumped in the environment\*

• Components that can be remanufactured:

- Hydraulic cylinders
- Swing devices and motors
- Center joint
- Hydraulic pumps and motors
- Pump transmissions
- Travel devices
- AC generator
- Front suspensions
- Rear suspensions
- Hoist cylinders
- Hydraulic accumulators
- Hydraulic pump
- Grid boxes
- Travel reduction gears and AC motors.

■ By Hitachi Construction Machinery's Remanufacturing in FY2020.

# 09\

# Our Interoperable Technology



# Technology of the Future Today: Driverless Trucks

Hitachi Construction Machinery's Autonomous Haulage System (AHS) combines Hitachi advanced technologies and Wenco's Fleet Management System to make unmanned operation at open-cut mines a reality, simultaneously optimizing the efficiency and safety of mine sites.

## Autonomous Haulage System

Hitachi AHS enables unmanned operation of mining trucks at open-cut mining pits, helping mines around the world reach their potential.

AHS delivers the insights required to boost efficiency, increase safety, and improve productivity.

When combined with Wenco's Fleet Management System and Hitachi, Ltd. Traffic Control System, Hitachi AHS provides strong support for surface mining operations.

Hitachi Construction Machinery's AC-3 series dump trucks are equipped with smart technologies, making the truck itself part of the Hitachi AHS solution. Plus – as AHS is retrofittable – our trucks can be purchased for use today with minimal operational impact in the future when converting to AHS.

## The innovative technologies in Hitachi AHS enable:

- ▶ Automated navigation and route optimization
- ▶ Negotiation of traffic conditions
- ▶ Self-correction for unplanned obstacles
- ▶ Optimized acceleration and braking
- ▶ Optimized steering control
- ▶ Collision avoidance, and
- ▶ A Fleet Management System (Wenco) for overall supervisory control.

- AHS is expected to minimize human variability and improve safety while bringing a range of economic benefits that include:

- ▶ hours of operation

- ▶ life-cycle costs

- ▶ human exposure to safety hazards.



# Interoperability

As the world changes and industries become more connected, Hitachi Construction Machinery is pioneering smarter, safer and more sustainable mine sites.

**We're leading the industry in developing an open and interoperable autonomous mining platform.**

Interoperability is about creating a base platform that connects and integrates all of the technologies, processes and people in an operation.

Interoperability describes a simplified connectivity between systems that increases the sharing of information across sectors and the visibility and control across the entire mining process.

This open approach provides customers with the greatest flexibility and control for integrating new autonomous solutions into their existing operations, reducing the associated risks and costs of alternative approaches.

Interoperability gives mines a better systems-level understanding of their operation and access to more robust data analytics. With this connected approach, interoperability allows mine management to make superior decisions, thanks to their operation-wide insight.

## Smarter Machines

We're bringing to life our vision of smarter mining excavators to help sites improve productivity and lower costs.

Our smarter excavators will be designed to connect with other elements of a mine site to create a seamless operating experience.



## Our Interoperable Vision



### Interoperability

We're developing our platform to be interoperable, meaning we will allow other vendors to connect to it so customers have an integrated solution.



### Open Innovation

We're encouraging vendors to "open" their systems so they can be integrated with other vendor systems to reduce customer costs and set an industry benchmark for safety, quality and reliability in autonomous mining technologies.



### Partner Ecosystem

We're collaborating with other autonomous mining technologies and services to build an integrated ecosystem where everything is interconnected, which allows data across an operation to be combined and analyzed to give valuable insights, reducing associated risks and costs.

- We're developing our excavators to:
  - » operate semi-autonomously
  - » self diagnose when they require maintenance or repairs
  - » monitor their operator's fatigue levels, and
  - » deliver incredibly detailed data reports.



# Wenco International Mining Systems

Advancing the  
digital future  
of mining.



**Wenco extracts unrealized value for the mining industry through open interoperability, autonomous technologies, and the Industrial Internet of Things (IIoT).**

**By leveraging our suite of solutions, Wenco customers worldwide transform their end-to-end operational performance shift by shift, hour by hour – even second by second.\***

**Fleet management. Machine guidance.  
Asset health. Fatigue management.  
Business intelligence. Cloud computing.  
Autonomous haulage.**

Grounded in our open systems philosophy, this line of Wenco solutions empowers customers with the freedom and flexibility to interoperate with any preferred solution for their unique data requirements and business processes.

A Hitachi Construction Machinery Group Company since 2009, Wenco regularly works with Hitachi's global leadership on systems research, data sciences, and IIoT initiatives. The leading-edge solutions that come from this research help mines uncover even more value as they approach a future of increased digitization, data intelligence, and autonomous processes.



● **Explore the Wenco solutions below to learn how you can extract more unrealized value from your mine.**

**Optimize Productivity**  
11% more tonnage each shift. 164 extra running hours per truck. Double digit jumps in utilization. Wenco has a full set of solutions to drive these gains and more throughout the mining process.

**Decrease Operating Costs**  
Fleet management and machine guidance solutions streamline production for smooth, efficient operations that cost less to run.

**Extend Equipment Life**  
Asset health and predictive maintenance solutions track equipment performance to predict failures, prevent unplanned downtime, and extend the lifespan of equipment.

**Enhance Mine Safety**  
With improved situational awareness, industry-leading precision in proactive fatigue management, and V2X proximity detection, Wenco implements practical solutions for safer operations across site.

**Gain Actionable Insights**  
Discover opportunities for improvement by accessing all your mine's data at your fingertips.



A close-up photograph of a copper mineral specimen, showing a complex, crystalline structure with a rich, metallic orange-brown color. The surface is highly textured, with many small, sharp facets and a shimmering, metallic sheen. The background is dark, making the mineral stand out prominently.

# 10\

## SPOTLIGHT ON A MINERAL:

# Copper

# Every time you turn on an appliance, start your car, turn on a tap or even flick a light switch, copper is responsible for delivering the light, power and water you're about to consume.

Copper is an attractive, strong, versatile metal that's been in use for more than 10,000 years. It was one of the first metals used by ancient humans because, unlike most other metals, copper occurs in nature in a usable form. As it is malleable (can be shaped easily), copper was used for cookware, containers, utensils, jewelry, tools and many other practical uses.

Known as a noble metal, copper is highly resistant to corrosion, which is why ancient Romans chose copper for their coins, doors and plumbing. It's also one of many reasons why this adaptable metal has thousands of uses today.

Copper was the first metal to be smelted from sulfide ores, the first metal to be cast into a shape in a mold, and the first metal to be purposely alloyed with another metal (tin) to create bronze.

Copper is mined by both open-cut and underground methods and there are numerous ways to process copper ore, including leaching, smelting and flash-smelting (see more on page 56).

Thanks to its strength and versatility, you'll find this unique metal all around you today.

**Copper is even used for the sophisticated electronics of the same Hitachi Construction Machinery excavators and rigid dump trucks that are used to mine copper!**



Copper is used for:



wiring



plumbing



circuit boards



cookware



coins



jewelry



human nutrition



blue fireworks



decorative art



farming

# Copper and Sustainability

At Hitachi Construction Machinery, we're working towards a zero emissions future and are actively reducing greenhouse gas emissions in all our activities.

Copper is a key component for meeting this challenge.

## Copper: Paving the Road to Zero

This versatile metal is playing an integral role in the changing face of our mining products as we look to more environmentally friendly solutions – from electrification to battery cells – to help power our machines.

## A Truly Green Material

Copper has an important role to play in decarbonization across the planet thanks to its:

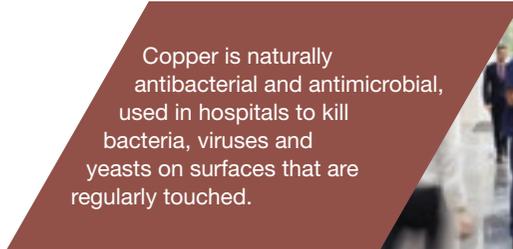
- ▶ ability to be 100% recyclable with no reduction in quality or integrity, one of the reasons nearly 80% of the copper ever mined on the planet is still in use today
- ▶ superior thermal and electrical conductivity, meaning copper requires less energy to produce electricity and ensures optimum performance in many new sustainable technologies (from photovoltaic cells to electric motors)
- ▶ high conductivity, which allows components to be made smaller and installed closer together
- ▶ longevity, which means components made from copper last longer and need to be replaced less often, and
- ▶ stable nature as a noble metal (one that resists corrosion and oxidization), meaning components not only have longevity and durability, but they also do not emit pollutants or off-gas and are therefore safe for humans.



Copper is the third most consumed metal in the world after iron and aluminum.



In Roman times, copper was mostly mined in Cyprus, hence its original name "cuprum" which means "metal of Cyprus".



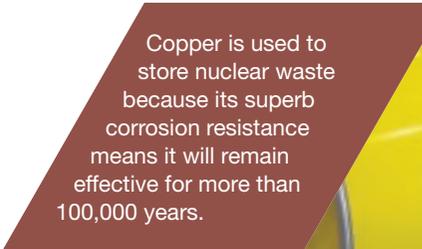
Copper is naturally antibacterial and antimicrobial, used in hospitals to kill bacteria, viruses and yeasts on surfaces that are regularly touched.



Ships hulls are often coated in a copper-nickel alloy to prevent barnacles and other marine life from growing on them, increasing fuel efficiency.



Every car contains between 20 and 45 kg of copper, mostly in electrical and electronic components.



Copper is used to store nuclear waste because its superb corrosion resistance means it will remain effective for more than 100,000 years.



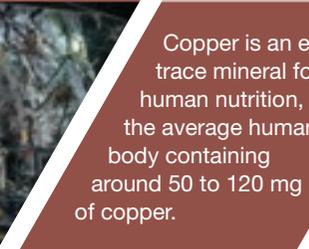
Tools made from copper and copper alloys don't produce sparks, so they're ideal for use around hazardous and volatile materials.



It's the action of copper and chlorine together that can turn blonde hair green after a swim in a chlorinated pool.



Copper is an essential trace mineral for human nutrition, with the average human body containing around 50 to 120 mg of copper.



All of the copper on Earth was formed in exploding white dwarfs and massive stars, before the solar system formed.



Copper is one of the most widely recycled of all metals, with around a third of all copper in use worldwide going on to be recycled.



## Did You Know?

**Hitachi's legacy was built on copper.**

It was at the Kuhara Mining Company's copper mine in Hitachi-City where our founder Namihei Odaira worked and produced the first ever Hitachi product in 1910: a 5 hp induction motor designed for use in the mine.

Now, over 110 years later, copper will continue to play an important role in Hitachi's journey as we look towards the future at more sustainable practices and electrification. For example, as we develop our engineless, full-battery rigid dump truck, we will rely on a greater amount of copper for electrical conductivity compared to our standard rigid dump truck (see page 41 for more).

# FROM COPPER IN THE GROUND

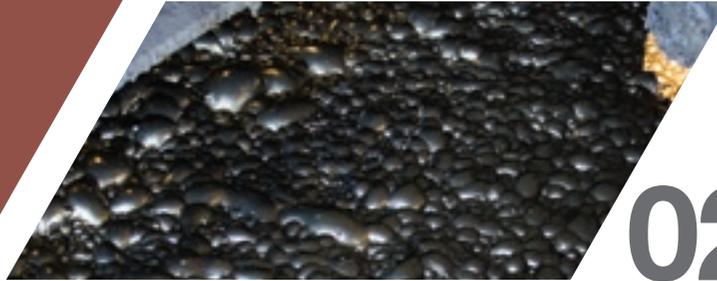
# TO THE WIRES IN YOUR CAR



# 01

## Mining

Using mining machinery, earth containing traces of copper – copper ore – is extracted from the ground, sorted and ground to begin to separate the copper from waste rock.



Alexey Rezykh / Shutterstock.com

# 02

## Concentration

The copper is further concentrated by mixing with water and chemical reagents. When air is blown through this mixture, the copper floats and is skimmed off.



# 03

## Flash Smelting\*

In a refining plant, copper is fed through a flash smelting furnace where it is melted and separated into “coppermatte” with a purity of 65% and “slag”, which is discarded.



# 04

## Blister Copper\*

The copper matte enters a converter furnace to help change the chemistry of the copper and remove the majority of any remaining impurities to produce “blister copper”, which now has a purity of 99%.

\*Reaction inside the furnace:  $\text{CuFeS}_2 + \text{SiO}_2 + \text{O}_2 \rightarrow \text{Cu}_2\text{S} + \text{FeS} + 2\text{FeO} + \text{SiO}_2 + \text{SO}_2 + \text{reaction heat}$



05

## Refining

The blister copper is then fire refined in an anode furnace where butane gas is used to remove oxygen from the copper, which now has a purity of approximately 99.5%.



06

## Electrolysis

The blister copper is then further refined via electrolysis to a purity of 99.9% and cast into ingots, which are shipped to a wire manufacturing facility.



07

## Wire Making

The copper ingots are heated, stretched, shaped into wires, and cooled in water to make them flexible and strong. The copper wire is then added to other wiring and typically insulated with a cover.



08

## Installation

The wires are installed in the interior assembly phase of car manufacturing or earlier as part of the construction of an individual electronic component.

**DID YOU KNOW?**

Even the smallest, most affordable car has at least 1 kilometer of copper wiring inside.

■ Reaction inside the furnace:  $\text{CuFeS}_2 + \text{SiO}_2 + \text{O}_2 \rightarrow \text{Cu}_2\text{S} + \text{FeS} + 2\text{FeO} + \text{SiO}_2 + \text{SO}_2 + \text{reaction heat}$

# 11\

# Service and Support





## With our expert service and superior quality parts, the purchase of your machine is just the beginning.

Our comprehensive global network gives you access to personalized local support backed by a worldwide training, parts and service system, to help you get the most out of your equipment.

## Our Service

Hitachi Construction Machinery's reliable solutions extend far beyond the sale of a machine. Each dealership has highly trained technicians who provide exceptional support for our customers so they can lengthen the life – and maximize the reliability – of their machine.

Our dealerships are backed by knowledge and support from Hitachi Construction Machinery, all the way back to our Technical Training Center.

## Genuine Parts

Our genuine parts are your assurance of guaranteed reliable performance and longevity, with high quality manufacturing and strict quality control.

• Hitachi Construction Machinery genuine parts include:

- » Premium hydraulic oils
- » Hydraulic components including pumps, cylinders and motors
- » Undercarriage components
- » Hydraulic, air and fuel filters
- » High-pressure hoses, and
- » Ground Engaging Tools (GET), including bucket lips, teeth, shrouds and rippers.



# Extended Warranty

All new Hitachi Construction Machinery equipment comes with our comprehensive manufacturer's warranty.

But for those who want extra assurance against severe job conditions or unpredictable equipment repair costs, we offer a unique Extended Warranty.



**When you sign up for our Extended Warranty with the purchase of new equipment, you can choose from the following selection of benefits:**

## Full Coverage

Everything covered in standard warranty is also covered in Full Coverage, but the customer has the flexibility to extend this warranty on a matrix of operating hours and months since purchase.

## Power Train Warranty

This program extends the warranty of a large range of travel components, from hydraulic cylinder to certain transmissions and motors.

## Structural Warranty

Structural Warranty covers other major structural components, which are determined by the local dealer depending on the performance priorities of their local operations.

To learn more about our Extended Warranty, please get in touch with your local Hitachi Construction Machinery dealer who best understands your market and region and can recommend what will best suit your operation's needs.

## Hitachi's AC Drive System

As the wheel motors turn, the final drives mechanically connected to them turn the tires.

## Interactive Product Viewer

We've designed a new innovative, virtual solution for you to learn about our mining machinery that brings our excavators and trucks to life right before your eyes.

With our Interactive Product Viewer (IPV), you can take a virtual walking tour of four EX-7 mining excavators and our EH-5 rigid dump truck as well. Experience a detailed, live-action view of their working components and compare features across different models.

Our IPV enables you to take a look at our machines up close, even when you can't visit a mine site or factory in person.

The IPV is available for:



More IPV's are in development and coming soon.

To experience any of our IPV's for yourself, contact your local Hitachi Construction Machinery dealer.





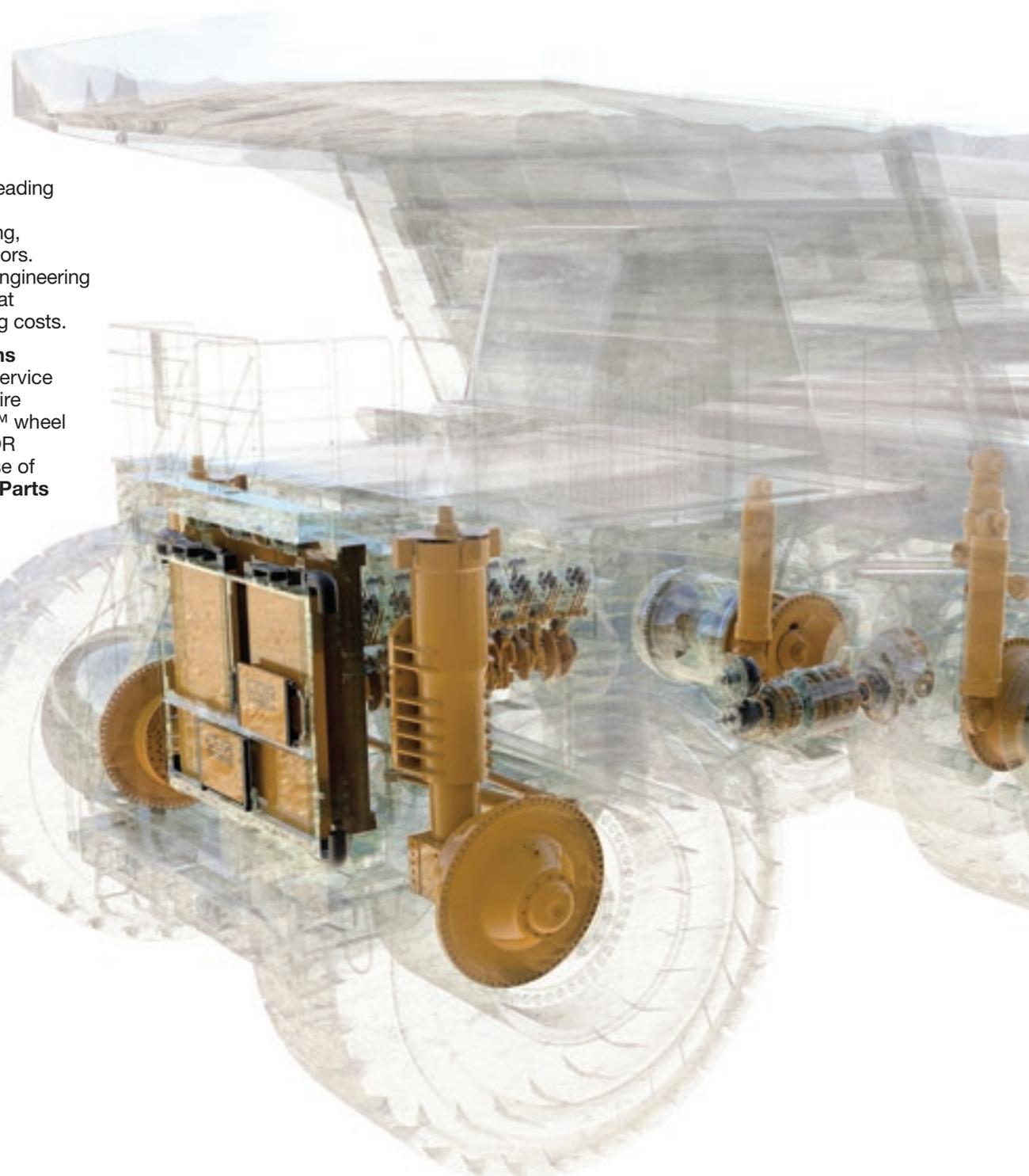
**H-E Parts International**, LLC (H-E Parts) is a leading independent supplier of parts, remanufactured components, and equipment to the global mining, quarrying, heavy construction, and energy sectors. H-E Parts leverages technical expertise and engineering capabilities to provide innovative solutions that enhance component life and lower operating costs.

**H-E Parts International Mining Solutions** provides mobile plant components and service support that provide solutions for the entire drivetrain. Proprietary enhanced Birrana™ wheel groups, StaTerra Power™ engines and COR Cooling™ solutions deliver extended life, ease of maintenance, and superior performance. **H-E Parts International Crushing Solutions** provides fixed plant mineral processing wear parts, components and service support. H-E Parts CME™ range of crusher liners are application specific and proven in the industries we serve for providing extended life and increased performance.

#### **Customer Satisfaction**

H-E Parts achieve their added value by providing fit-for-purpose design, innovation through engineering, and quality through service performance. H-E Parts live by our promise to customers by committing to provide Innovation. Not duplication.™

For more information or to find your local branch, visit: [h-e-parts.com](http://h-e-parts.com)





### **Our Customer Experience**

Bradken delivers innovative, custom-designed wear parts, services and solutions that optimize machinery performance, productivity and safety. Leveraging almost 100 years of design and manufacturing experience, Bradken provides its mining customers with world-class solutions, fit for their unique environments. Bradken's reputation for quality products and superior customer service is built on solid regional service to international companies, serving our customers through more than 40 manufacturing, sales and service centers across the globe.

### **Our Product Base**

Key products include crawler systems, GET and buckets, mill liners and crushing solutions. From pit to port, Bradken products and solutions solve our customers' challenges with initiative, innovation and customer care.

For more information or to find your local contact, visit: [bradken.com](http://bradken.com)



# ConSite Mine

version: 2.5.4

**ConSite**  
Consolidated Solution for Construction Sites

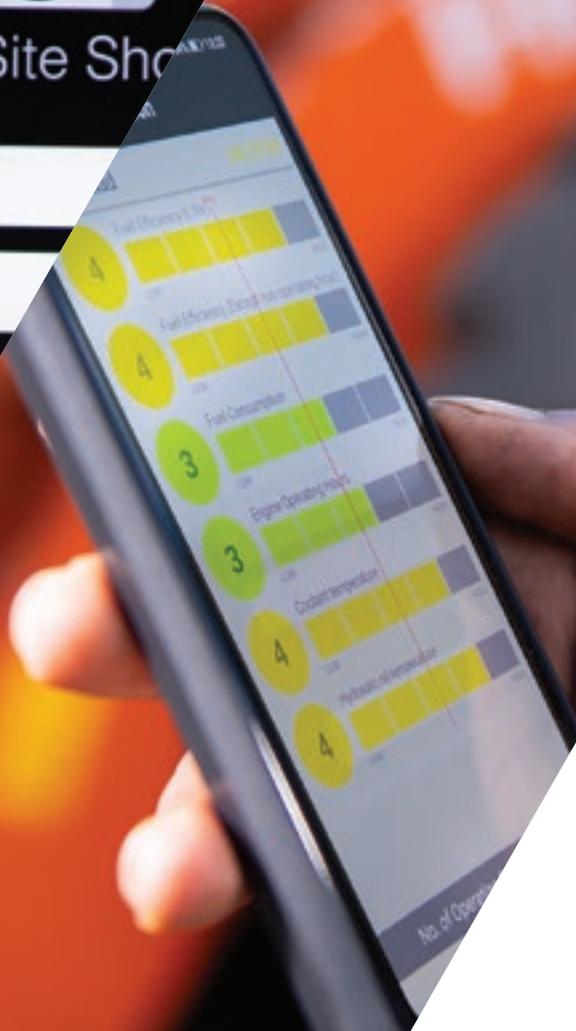


ConSite Show

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Save the us

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**ConSite Mine is Hitachi Construction Machinery's remote machine monitoring system that connects the customer, site and dealer, sending automated operational data reports monthly to your computer or smartphone.**

Intelligently monitoring your machine, ConSite Mine sends emergency service and maintenance alerts in real time, keeping your machines and your business running smoothly. ConSite Mine improves machine availability, decreases maintenance costs and improves machine performance.

# Hitachi Genuine Bucket Lineup

Hitachi Construction Machinery has expanded its excavator bucket range to include three new bucket options to enhance your mining operations.

Available for hydraulic mining excavators (EX1200-7 to EX8000-7), the Hitachi Genuine Bucket Lineup has been engineered to offer optimized bucket capacity and increased performance capability. Achieve even greater levels of productivity by simply choosing the right bucket option and GET to suit your digging application.

## **Genuine Bucket Lineup:**

Light Duty (LT) bucket

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General Purpose (GP) bucket

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Heavy Duty (HD) bucket

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Hitachi Construction Machinery also offers two types of wear packages to protect and prolong the life of your bucket.

Now, with the right tools on hand, you'll achieve the best possible performance, efficiency and reliability on site, even in the toughest of mining conditions.



# Snapshot of Hitachi Construction Machinery Service

Because of their sheer size and weight, Hitachi Construction Machinery excavators are shipped to customers as separate parts to be assembled onsite. This is when Hitachi Construction Machinery steps in to provide some of its most valuable resources: a support team who fly in to coordinate the assembly process.

However, in 2020, when a local dealer – DEM Ghana – was ready to assemble two EX1900-6 backhoe excavators at the Damang Gold Mine in South Ghana, Hitachi Construction Machinery Europe NV were faced with a new challenge. With travel restrictions in place due to the global pandemic, they were unable to fly in their usual team to help onsite. To ensure continued support in such challenging times, the team at Hitachi Construction Machinery Europe had to get creative.

Using their pioneering spirit, the team achieved direct, real-time communication via video calls paired with a helmet-mounted camera worn by the support engineer at the mine. The real-time view and ability to give moment-by-moment instructions ensured all the vital checks were performed as the excavator was assembled – getting it right first time – so that all valves, cables and hoses were properly mounted and configured.

The two EX1900-6s assembled via remote collaboration were put into operation in June 2020. Since then, Hitachi Construction Machinery Europe has supported the mine in assembling another EX1900-6 that started operating in February 2021. The Damang Gold Mine now has four EX1900-6 in action.

By conceiving a new way to share our most precious resources – our people and their expertise – remotely, we ensured the quick assembly and successful operation of three new excavators now working hard to extract overburden and ore at Damang Gold Mine.

•  
“This is the first time that we have had to work in this way. Thanks to the technology involved and the excellent cooperation between us and DEM Ghana, the machines were fully assembled within two to three weeks.”

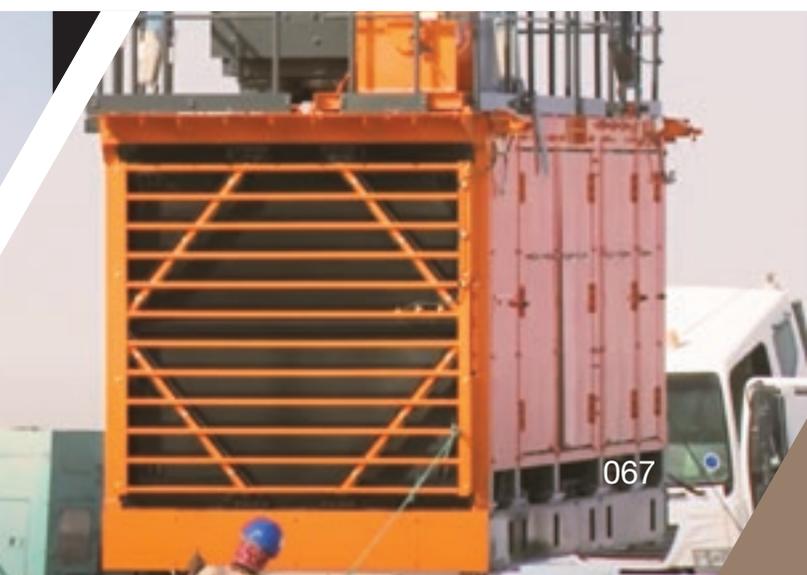
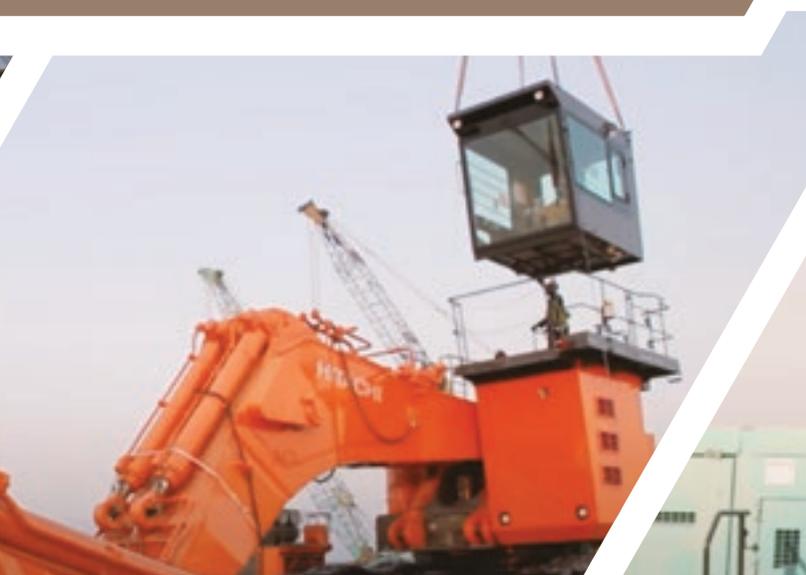
Hitachi Construction Machinery Europe  
Support Engineer  
Tom Verweij





**“We are proud to be a dealer of Hitachi Construction Machinery and part of their sales and support teams in West Africa. Together, we will keep on building exceptional relationships in the mining industry.”**

DEM Group's Mining Operations Sales Manager  
Cyril De La Guerre Ramsay



# 12\

## SPOTLIGHT ON INNOVATION:

# Fujisaka Co. Ltd.



# Our hydraulic excavators changed the history of construction machines.

Since the early 1980s when Fujisaka Group first purchased a UH50 loading shovel, the company has been a constant and satisfied Hitachi Construction Machinery customer.

As one of Japan's leading crushed stone producers, Fujisaka supplies stone nationwide for use in roads and highways, skyscrapers, bridges and more. With eight companies spread between the Kanto and Tohoku districts, productivity and reliability have always been key to the company's growth and success. Fujisaka are passionate about the evolution of machinery, and make full use of the world's largest heavy machinery, manufactured by Hitachi Construction Machinery.

"The UH50 was the first Hitachi Construction Machinery machine that we introduced. At all events, its productivity per hour was outstanding and it contributed greatly to our company's sales results..."

"Hitachi Construction Machinery's hydraulic excavators are so well balanced...we tried other similar-sized manufacturer's machines but to be honest, there was a big difference. Hitachi Construction Machinery's hydraulic excavators, including the UH50, were so revolutionary they could be said to have changed the history of construction machinery."

Shoji Yamanoi  
Founder and  
Director,  
Fujisaka  
Group

## Upgrading and growing together

Over the years, the Fujisaka Group has purchased 41 of our machines, with a variety of newer models – including the EX1200 and EX5500\* and more – replacing the UH50 at Fujisaka production plants. In July 2021, Hitachi Construction Machinery completed the assembly of the Fujisaka Group's:

- ▶ EX5600-7 Ultra Large Hydraulic Excavator, and
- ▶ one of two EH3500AC-3 Rigid Dump Trucks.

Both machines will be used at the company's newly established crushed stone plant to excavate and transport crushed stone.

"I am grateful that we have finally reached the day upon which the ultra-large hydraulic excavator and the rigid dump truck are being delivered according to schedule.▲ Because we are engaged in the production of crushed stone, the ability to ensure a sufficient volume of production in a short period of time will lead to the development of our business itself. The increase in size of heavy machinery at the crushed stone plant is an extremely important factor."

Masaya Okada  
Fujisaka President

## Watched over by the UH50

And while the latest models are in use at the company's production plants today, their operation is overseen by the original UH50 excavator. This vintage machine stands like a statue in its own honor on the hill overlooking Fujisaka's head office. The arm of the UH50 has been engraved with "Wa" (as seen on the EX5600-7, pictured left) – which means harmony and is both the symbol of Fujisaka Group unity and also one of Hitachi Construction Machinery's own values. The vintage machine is so highly acclaimed by Fujisaka's founder that he "wanted to paint it gold and display it for everyone to see."



"Hitachi Construction Machinery's technical capabilities always amaze me."

Shoji Yamanoi

Founder and  
Director, Fujisaka  
Group



# A Word From Our Customers



**“In my opinion, Hitachi Construction Machinery excavators are the best, because they are so responsive due to the hydraulic system.”**

Roger Knipe  
*Operator*  
DMJ Drainage  
United Kingdom

**“Reliability and operational safety are highly important to us, and Hitachi Construction Machinery’s machines allow us to benefit from minimal downtime.”**

Even Gausen  
*General Manager*  
Farbu & Gausen  
Norway

**“The technology of GPS grade guidance that Hitachi Construction Machinery offers makes my good operators even better. It makes them move material once instead of twice, and all efficiency is money. The technology and ability to see what they need to do is very crucial in this business. I’m a firm believer that you need to keep up with technology.”**

Curtis Rogers  
*President and Owner*  
Rogers Construction Company  
USA



**“It’s just so reliable. I’ve run plenty of other machines. Hitachi Construction Machinery’s excavator is smoother and has more power.”**

Robert Bohanon  
*Operator*  
Usibelli Coal Mine  
USA

**“Hitachi Construction Machinery’s excavator is a better machine. The hand controls and functions are great. The tracks of the machine make it very stable.”**

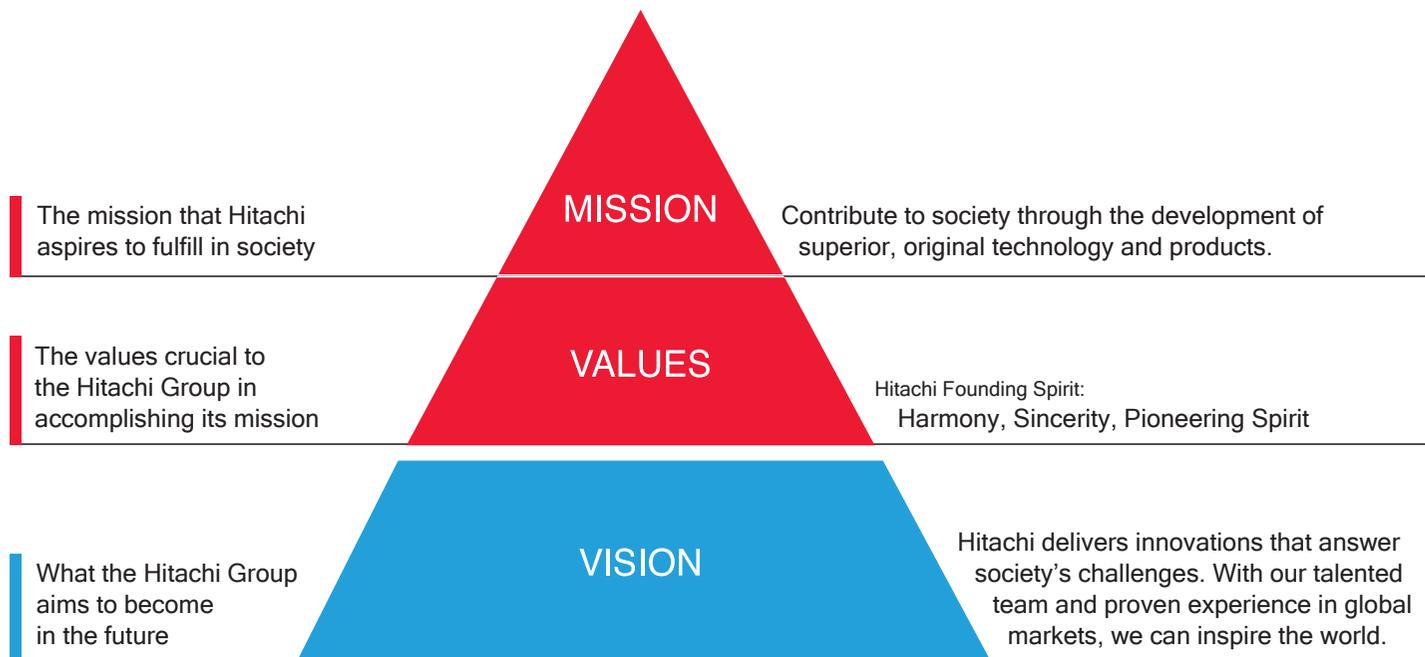
Wan Hee Kim  
*Operator*  
Kang Construction Ltd.  
Canada

**“Our older Hitachi Construction Machinery excavators are still running in our fleet. It’s a testament to the durability.”**

Kyle Haley  
*Project Manager and Operator*  
M&H Logging and Construction  
USA

# 13\

# About Hitachi, Ltd.



# Introduction to Hitachi, Ltd.

For more than a century, Hitachi has been delivering innovations to answer society's challenges, thanks to our commitment to always **"Inspire the Next"**.

## Hitachi Group Identity

Originally set by Namihei Odaira, the Mission has been carefully passed on to generations of employees and stakeholders throughout the company's 100-year history.

The Values reflect the Hitachi Founding Spirit, which was shaped by the achievements of our company predecessors as they worked hard to fulfil Hitachi's Mission. The Vision has been created based on the Mission and Values. It is an expression of what the Hitachi Group aims to become in the future as it advances to its next stage of growth. The Mission, Values and Vision are made to be shared in a simple concept: Hitachi Group Identity.

Hitachi, Ltd.  
Values:

Harmony



Sincerity



Pioneering Spirit



# Hitachi Business Segments

**Hitachi Group<sup>®</sup> is developing smarter technologies that drive growth in the industries shaping our future.**

From energy equipment and railway systems to industrial machinery and information technology services, we're moving the world forward.

As an innovation partner for the IoT (Internet of Things) era, Hitachi will continue to develop innovative technologies to help solve the challenges faced by our increasingly complex global society.

## IT

**Accelerating customer innovation with advanced IT solutions**

- ▶ Consulting Systems Integration
- ▶ Cloud services
- ▶ Software
- ▶ IT products (storage, servers)
- ▶ Control systems
- ▶ ATMs



## Energy

**Contributing to a stable energy supply for customers and the realization of a low carbon and decarbonized society**

- ▶ Energy solutions
- ▶ Power grid systems



## Industry

Increasing the efficiency of customers' production and processing systems and providing safe and secure water environments

- ▶ Industry & distribution systems
- ▶ Water & environment systems
- ▶ Industrial products

## Smart Life

Designing smart cities to be more convenient and environmentally friendly

- ▶ Medical electronics
- ▶ Smart life & eco-friendly systems (refrigerators, washing machines, room air conditioners, airconditioning equipment)
- ▶ Automotive systems (powertrain systems, chassis systems, advanced driver assistance systems)

## Mobility

Providing people with safe, secure and comfortable transportation

- ▶ Building systems (elevators, escalators, building services)
- ▶ Railway systems

**872**

Number of Hitachi Group companies

**350,864**

Number of employees in Hitachi Group

• consolidated base (as of March 2021)





## Snapshot of a Hitachi Group Company: Hitachi Energy Ltd.

**We're powering good for  
a sustainable energy future**

Hitachi Energy Ltd. is a global technology leader with a combined heritage of almost 250 years, employing around 36,000 people in 90 countries.

Headquartered in Switzerland, we're helping make the world's powergrids stronger, smarter and greener by pioneering grids that are more reliable and intelligent and that move us towards a sustainable future for all.

Through our advanced portfolio of sustainable, digital energy solutions, we will create even more value for customers spanning the energy (utilities) and industry sectors, the mobility, IT and Life (cities) sectors and emerging areas including sustainable mobility, smart cities, energy storage and data centers.

With a proven track record, global footprint and unparalleled installed base, our company balances social, environmental and economic values.

Our globally-connected team of world-class power experts are passionate about working in partnership, solving the tough challenges faced by utilities, industry and transport and infrastructure as well as the communities they serve.

**The needs of our customers drive everything we do.**

[www.hitachienergy.com](http://www.hitachienergy.com)

•  **Hitachi Energy**

We have a long heritage of strong, enduring and value-creating partnerships.

We believe that the most effective solutions only come from collaboration and co-creation with the people closest to the challenges: **our customers.**

# 14\ Future Vision

## INTO THE FUTURE

**When we work together,  
no challenge is too  
great to solve.**

**With the Hitachi Group's  
talented team and  
proven experience  
in global markets,  
we can deliver  
innovations  
that inspire  
the world.**

## Hitachi, Ltd. Goals

- 1 Improve the quality of people's lives
- 2 Raise customers' corporate value and
- 3 Achieve a sustainable society, via:



### SOCIAL VALUE

- ▶ Accelerate customers' innovation with advanced IT solutions
- ▶ Provide stable, high-efficiency energy and its management systems
- ▶ Increase the efficiency of customers' production and processing systems, and provide the supply of safe, secure city water and sewage water systems
- ▶ Design smart cities to be more convenient and environmentally friendly
- ▶ Provide safe, comfortable transportation systems and services



### ENVIRONMENTAL VALUE

- ▶ Reduce CO<sub>2</sub> emissions through the value chain
- ▶ Enhance efficiency in the use of water
- ▶ Enhance efficiency in the use of resources



### ECONOMIC VALUE

- ▶ Reallocate economic value to stakeholders
- ▶ Improve profits at customer companies
- ▶ Enhance employee compensation
- ▶ Share earnings with partners and others.





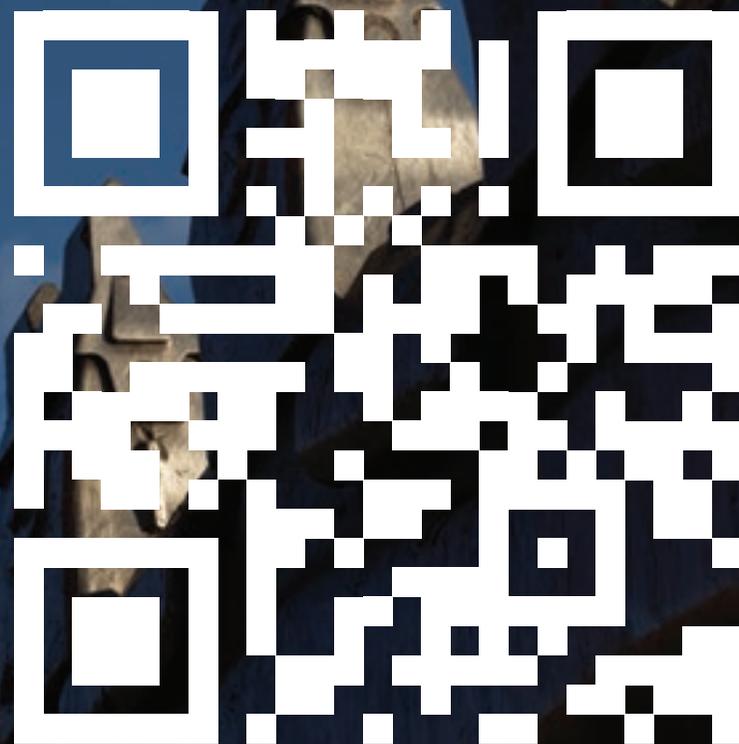
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# Thank you

If there is anything we can help you with, please get in touch.



[hitachicm.com](http://hitachicm.com)

Specifications are subject to change without notice. Illustrations and photos may or may not include previous machine models, optional equipment and accessories. Standard equipment may have differences in color and features. Before use, read and understand the relevant Operator's Manual for proper operation. The machines shown in this brochure are so positioned for the sake of demonstrations. When leaving the machine (excavator), be sure to rest the bucket on the ground.



