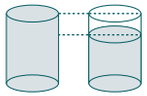
www.kobelco-kenki.com/

KOBELCO CONSTRUCTION MACHINERY CO.,LTD.

One day



= KOBELCO

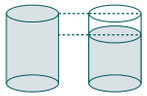
−35L

The Acera Geospec SK200-8 saves 35 liters of fuel every day*.

This amounts to savings of about $38 a day.

*Compared with the Kobelco SK200-6ES. For purposes of this comparison, the cost of diesel oil is calculated at US$1.10 per liter.

One year



= KOBELCO

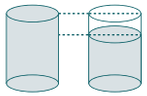
−8,800L

The Acera Geospec SK200-8 saves 8,800 liters of fuel every year*.

This amounts to savings of about US$9,680 a year.

*Compared with the Kobelco SK200-6ES. For purposes of this comparison, the cost of diesel oil is calculated at US$1.10 per liter.

Three years



= KOBELCO

−26,400L

The Acera Geospec SK200-8 saves 26,400 liters of fuel every three years*.

This amounts to savings of about US$29,040 every three years.

*Compared with the Kobelco SK200-6ES. For purposes of this comparison, the cost of diesel oil is calculated at US$1.10 per liter.

Savings in fuel are savings in cost. We've achieved a 20% reduction in fuel consumption. The longer you use the Kobelco Acera Geospec SK200-8, the more money you save.

The 20% savings refers to the Acera Geospec SK200-8 in standard operating mode, compared with a former KOBELCO model, the SK200-6ES. Figures are based on results measured by KOBELCO under certain operating conditions that include 25 days of operation a month, 8 hours a day. Actual fuel consumption varies depending on such factors as type of work, operating method, operator skill, and weather. These data do not constitute a guarantee of fuel cost performance for machines used in the field by customers.

How Did KOBELCO Build the World's Most Fuel-Efficient Excavator?

Recognized Around the World as Number One in Fuel Efficiency.
Backed by 80 Years of KOBELCO Technology.

At KOBELCO, fuel efficiency is more than a passing fad. It's an obsession.
It was one of the main things we thought about when we designed the Acera Geospec SK200-8.
We listened to excavator users in the field, who told us that fuel economy was the best way to increase profits.
The 8 Series Acera Geospec, which hit the Japanese market in 2006.
Compared with our previous 6 Series, the new series reduced fuel consumption
by 20% and increased productivity by 8%. Needless to say, that got the industry's attention.

To achieve these impressive improvements, we reviewed every element in the design,
from the engine to the hydraulic components. After a long process of trial and error, our efforts paid off.
The Acera Geospec's superior fuel economy is now recognized throughout the world,
and it was achieved without sacrificing operating efficiency.
It offers superb overall power while drastically reducing exhaust and particulate emissions.
Traditionally, operating efficiency has been considered inversely proportional
to exhaust emissions and fuel consumption.
But we have made the impossible possible with KOBELCO technology, which boasts an 80-year history
and covers a wide range of technical fields.

We use technology to solve user problems. With 80 years of experience in technical innovation,
we will continue to seek improvements that benefit our customers.

Next-Generation Performance That Demonstrates KOBELCO's Commitment to Technology and the Environment

Enhancement 【Greater Performance】
- New hydraulic circuitry minimizes pressure loss
- High-efficiency, electronically controlled Common-Rail Fuel Injection Engine
- Powerful travel and arm/bucket digging force

Economy 【Improved Cost Efficiency】
- Advanced power plant that reduces fuel consumption
- Easy maintenance that reduces upkeep costs
- High structural durability and reliability that retain machine value longer

Environment 【Features That Go Easy on the Earth】
- Meets the latest emission standards in Japan, North America and Europe
- Auto Idle Stop as standard equipment
- Noise reduction measures (with improvement of sound quality) minimize noise and vibration

Low Fuel Consumption, Excellent Productivity, Tough Durability, and Spacious Comfort: KOBELCO Technology Delivers Them All.

A 20% Drop in Fuel Consumption, Saving US$9,680 a Year.

The greatest effect of KOBELCO's superior technology is an amazing **20%** reduction in fuel consumption. The engine features next-generation electronic control with a Common-Rail Fuel Injection system, and the new hydraulic system cuts energy loss to a bare minimum for a big boost in fuel economy. Compared with our own 6 series, the new machines save **4.4 liters** of fuel for every hour of operation. Calculated over the course of a year, that's an incredible **8,800 liters**, or about 44 drums of oil. At today's prices, that means a savings of **US$9,680!**

The 20% savings refers to the Acera Geospec SK200-8 in standard operating mode, compared with an earlier KOBELCO model. Figures are based on results measured by KOBELCO. Actual fuel consumption varies depending on such factors as type of work, operating method, operator skill, and weather. These data do not constitute a guarantee of fuel cost performance for machines used in the field by customers. Calculations assume 2,000 hours of operation a year, with the price of diesel at approximately US$1.10 per liter.

Saves about 44 oil drums of diesel a year!

An 8% Increase in Productivity, with Power Boost for Even More Digging Force

Another important feature is an **8%** boost in productivity. The newly designed, electronically controlled engine greatly increases swing power and speed, as well as operating speed, with **5%** greater arm crowding force and top-of-class bucket digging force. And if that's not enough, the power boost switch provides **10%** more digging force. No matter what the site conditions, the SK200-8 gives you powerful and efficient operation.

Tough Durability and Reliability to Handle Harsh Conditions

Cast and forged components ensure strong, durable attachments. The strength of the arm tip and boom foot have been boosted by **15%** and **18%**, respectively (sectional co-efficient). The upper body has been structurally reinforced, with the bottom of the upper frame redesigned and the area of the under cover minimized to increase strength. The sectional strength of the side deck has been boosted by 50% compared with previous models.

An Attractively Designed Excavator That's Easy on People and the Environment. KOBELCO's Mission: A Commitment to Quality

Reduced CO_2 Emissions Help Save the Environment

KOBELCO technology contributes to the reduction of CO_2 emissions, by approximately 121,339t a year (factory-shipped basis, calculated by KOBELCO). This is equivalent to the CO_2 absorptive power of about **10 million trees!**

Emission reduction equivalent to the absorptive power of **10 million trees!**

Recipient of a Good Design Award for Functionality and Attractive Design

Our "KOBELCO Green" machines stand out on any construction site for their beauty and high quality, which is why we earned the Good Design Award two straight years in 2008 and 2009. A perfect marriage of functionality and attractive design, the SK200-8 points the way to the future of construction machinery both in Japan and abroad.

The Good Design Awards were established by the then Ministry of International Trade and Industry (the current Ministry of Economy, Trade and Industry) as part of the Good Design Products Selection System (commonly known as the G Mark system). Organized by Japan Industrial Design Promotion Organization (JIDPO), it is Japan's only comprehensive program for the evaluation and encouragement of design. In 2008, the SK70SR/SK75SR+ (Plus)/SK75UR and the SK125SR/SK135SR/SK135SRLC/SK130SR+(Plus) won an award; in 2009, an award was given to the SK135SRD, a demolition machine with multi-use main boom.

Low-Noise, Low-Vibration Operation That Maintains a Pleasant Environment for Operators and Surrounding People

Low noise and vibration are good not only for the peace of mind of surrounding residents, but also help to reduce operator fatigue. Anti-noise measures include both lower sound volume and the shaping of a more mellow operating sound through simulation technology that identifies and reduces problem frequencies. To prevent vibration, the position of the lower rollers has been optimized so that travel vibration is cut by about **50%**.

Easy-Access Maintenance While Standing on the Ground

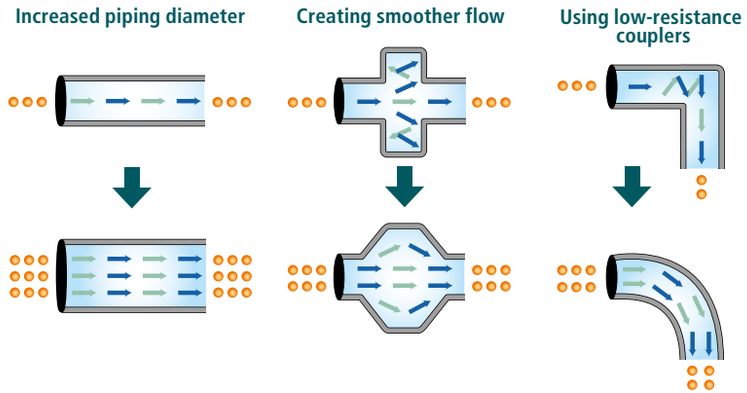
Ease of inspection and maintenance is another important feature of KOBELCO excavators. The radiator, oil cooler and intercooler are conveniently located in a row so that they can be reached easily by personnel standing on the ground. The floor mat can be disassembled for easy removal, and the air conditioner filter can be replaced without the use of tools, keeping the cab environment clean. In these and many other ways, the maintenance of a KOBELCO machine is fast, easy, and economical.

Thorough Verification of All Components Reduces Energy Loss. Excellent Productivity and Low Fuel Consumption Are Achieved at the Same Time.

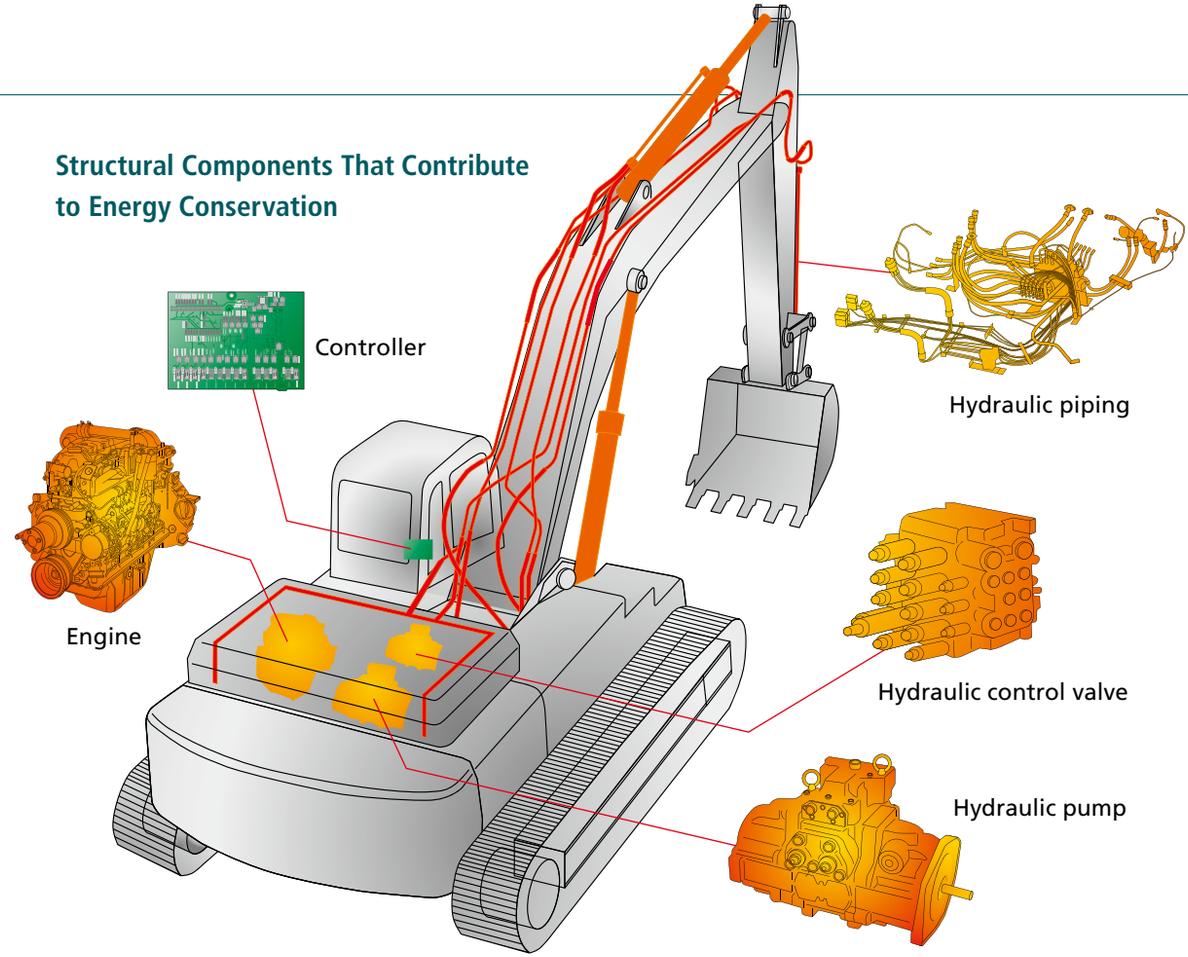
Hydraulic excavators exert high pressure on hydraulic fluid that moves various parts of the machine through hydraulic piping. If there's high resistance in the flow, energy is lost, leading to less flow volume and the generation of waste heat. To avoid this, we conducted intensive verification tests on all components to determine the amount of energy being lost, and redesigned the piping shape, the valves, and the pump control method to reduce pressure loss. This thorough redesign of the hydraulic piping, combined with KOBELCO's unique Intelligent Total Control System (ITCS), enables the onboard computer to calculate the most fuel-efficient hydraulic flow for each kind of operation. The result is a new, automatically controlled hydraulic system that maintains excellent productivity while reducing fuel consumption by 11% just through the prevention of pressure loss.

Approach to Reducing Pressure Loss

- Improve pump efficiency
- Reduce pressure loss at the control valve
- Redesign piping couplers
- Increase piping diameter



Structural Components That Contribute to Energy Conservation

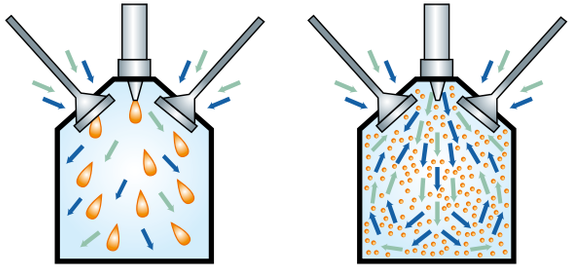


An Engine That Saves Fuel and Boosts Productivity

Common-Rail Engine Reduces Fuel Costs and Controls Pollutant Emissions

Conventional engines can't achieve better fuel economy and higher productivity at the same time. That's why we decided to adopt a common-rail type engine for the SK200-8. In this design, the diesel fuel isn't injected directly into the combustion chamber. Instead, it's temporarily introduced into a high-pressure common-rail compartment and electronically injected from there into the combustion chamber at high speed, under high pressure, and in finer droplets. This results in more complete combustion of smaller amounts of fuel, which keeps the engine running at a cooler temperature and reduces fuel consumption and noise, increases torque, and greatly decreases PM and NOx emissions.

Common-Rail Fuel Injection



Conventional Engine

Common-Rail Engine

Working with the Engine Manufacturer To Optimize Performance in Excavators

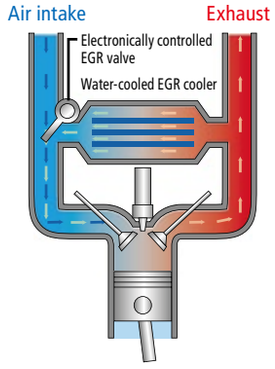
Until now, engines used in construction machinery were the same as those used in trucks. But operating conditions are different between excavators and trucks. Excavators have to travel, dig, swing, and extend/retract components, often performing these complex tasks simultaneously. This means that the engine is almost always operating at full capacity. To address this reality, we used simulation technology to perform a detailed analysis of the output environment of an excavator engine, and worked with our engine manufacturer to develop an engine that provides better fuel economy for excavator applications.

Cooled EGR System Improves Combustion Efficiency Even Further

To further enhance combustion efficiency, the SK200-8 has a cooled EGR (Exhaust Gas Recirculation) System. Exhaust gas is mixed with intake air to cool the combustion temperature, with a water-cooled EGR cooler installed on the exhaust recirculation pipe to further cool the intake temperature for more efficient burning.

In some regions, products do not feature ERG (exhaust gas recirculation) and are not Tier Ⅲ-compliant.

Cooled EGR system



The Quest for Fuel Efficiency Takes Another Leap Forward!

The Construction Industry's First Hybrid Hydraulic Excavator.

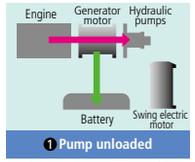
At INTERMAT 2006 in France, KOBELCO unveiled the world's first hybrid hydraulic excavator in April 2006. Almost four years later, in January 2010, we introduced the SK80H to the market, a hybrid that is amazingly fuel-efficient. It was in the fall of 1999 that KOBELCO received a commission from NEDO (New Energy and Industrial Technology Development Organization) to begin researching a hybrid hydraulic excavator, so development took more than a decade. Taking our time, we conducted repeated verification tests and carefully crafted the SK80H, which uses 40% less fuel than the most fuel-efficient conventional machine on the market*1. Depending on the application, fuel savings can go as high as 60%*2.
Unlike passenger cars, hydraulic excavators are subject to drastic load changes and must have large engines that are able to meet maximum power needs. But this means that excess energy is generated when the load is light. By recovering, storing, and using that excess energy to help handle heavy loads, the overall engine load can be evened out. This permits a smaller engine to be used without sacrificing power output. This is the principle that gave birth to the world's first full-fledged hybrid hydraulic excavator.

*1, 2: Compared with the SK70SR operated in H mode.

SK80H

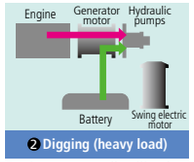
The First Construction Machine to Be Certified Low-Carbon by the Ministry of Land, Infrastructure, Transport and Tourism

In June 2010, the KOBELCO SK80H-2 hybrid excavator became the first construction machine to be certified as low-carbon by Japan's Ministry of Land, Infrastructure, Transport and Tourism. This innovative excavator has grabbed global attention as a driving force behind the hybrid market.



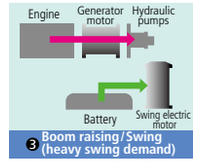
❶ Pump unloaded

Engine output converted into electrical power by generator and stored in battery.



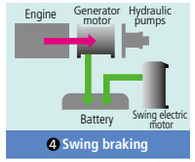
❷ Digging (heavy load)

Engine output all utilized to drive hydraulic pumps. Generator motor acts as motor to supply additional power.



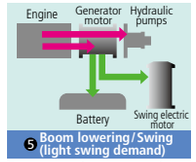
❸ Boom raising/Swing (heavy swing demand)

Engine output all utilized to drive hydraulic pumps. Battery supplies power for swing.



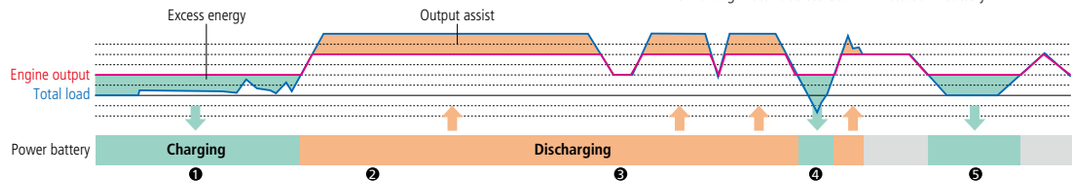
❹ Swing braking

Excess engine output from driving hydraulic pumps converted into electrical power and stored in battery. Recovered electrical energy from swing motor also stored.



❺ Boom lowering/Swing (light swing demand)

Excess engine output from driving hydraulic pumps converted into electrical power. Used as required to drive swing motor. Remainder stored in battery.



With Proprietary Simulation Technology,
We Reduce Costs While Improving Quality.

The advanced technology of KOBELCO construction machinery is supported by the Kobe Steel Group's acclaimed analysis/simulation technologies. Applicable in many fields, we have used these technologies extensively to analyze structure and vibration in order to achieve ideal designs that balance safety, product quality, and cost in products such as construction machinery, bridges and other steel structures, and manufacturing equipment such as blast furnaces and rolling mills.
Hydraulic excavators pose a special design challenge because they must perform many complex functions such as digging, travel, swing, and boom/arm extension and retraction in an integrated way that defies detailed analysis based on measurements taken of actual, working machines. Using specialized software we developed ourselves specifically for construction machinery, we run simulations that enable us to precisely evaluate the machine's overall energy efficiency by answering many versions of the same question: "What components are subjected to load when the machine moves in a given way?" Only KOBELCO among all construction machinery manufacturers in the world uses this kind of specialized, proprietary software. We could work with our engine manufacturer to develop an optimized excavator engine because we were able to give them detailed analyses on the basis of simulations.
In addition, KOBELCO has sophisticated, large-scale acoustic research facilities that aid us in the development of soundproofing technologies and products used in applications ranging from bullet trains to roads, automotive vehicles and industrial machinery. These facilities, which are among the largest in the world, are used in combination with our proprietary sound field simulation software to enable us to play a pioneering role in the area of noise prevention. With many real-world applications now under our belt, we have earned a global reputation for reliability in this important field.

Simulation Technologies That Gave Birth to the Special Features of KOBELCO Construction Machinery

Hydraulic control simulation

Technology
Reduction of energy loss

Effects
Better fuel economy and productivity

Vibration simulation

Technology
Reduction of travel vibration

Effects
Greater environmental sensitivity and operator comfort

Acoustic simulation

Technology
Reduction of noise volume and unpleasant frequencies

Effects
Greater environmental sensitivity and operator comfort

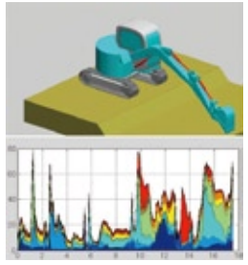
Structural simulation

Technology
Greater upper machinery strength
Greater attachment strength

Effects
Improved durability, productivity and safety

One of the largest privately-owned semi-anechoic chambers in the world.

Bench test simulation.

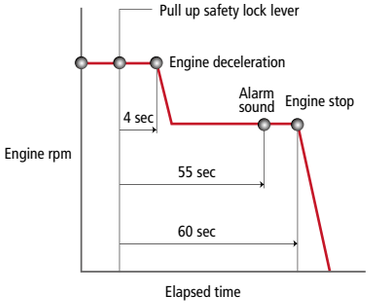


Total Tuning and Auto Idle Stop: Two ITCS Functions Created by Simulation Technology

The engine is controlled by the latest version of ITCS, which instantly responds to rapid changes in hydraulic load to minimize wasted engine output. Also, the standard auto idle stop feature shuts the engine down during idling to save fuel and reduce exhaust emissions. This also stops the hour meter to preserve machine value for resale.

ITCS (Intelligent Total Control System) is an advanced, computerized system that provides comprehensive control of all machine functions.

Auto Idle Stop



Endless New Possibilities!

Our World-Class Developmental Capabilities Are Connected to Kobe Corporate Research Laboratories That Employ About 1,100 Specialized Engineers.

Extensive Technical Expertise in the Combined Fields of Metal Materials and Mechanical Engineering

KOBELCO Construction Machinery's superior technical capabilities are supported by our connection to the Kobe Corporate Research Laboratories of the Kobe Steel Group, which is essential to our production of excavators with high added value. These laboratories provide a uniquely diverse technical foundation by combining the Group's extensive knowledge as a producer of metal materials such as iron and steel, welding products, aluminum, and copper with its expertise as a major manufacturer of industrial and construction machinery. Utilizing wide-ranging and world-leading technologies developed over the course of over a century, the Kobe Steel Group develops innovative new products in fields as diverse as aerospace, the auto industry, the environment, resources, energy, electronic materials and machinery, and many others.

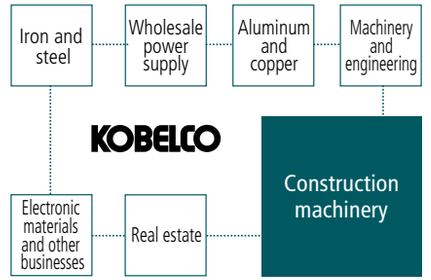
Research Laboratories

- Material Research Laboratory
- Mechanical Engineering Research Laboratory
- Electronics Research Laboratory
- Production Systems Research Laboratory
- Coal and Energy Technology Department

A Corporate Group with Over US$20 Billion in Annual Sales and More Than 100 Years of History. Dedicated to Higher Added Value Through Careful Craftsmanship.

The Kobe Steel Group's history goes back to 1905, when Kobe Steel was founded. Now a truly global corporation, we pursue business opportunities in many fields, including iron and steel, welding, aluminum and copper, machinery and engineering, environmental technologies, construction machinery, real estate, electronic materials, and many others. In each field, we strive to create and expand the sale of "Only One" products that uniquely fulfill customer needs. Our focus is on supplying products with high added value and unique characteristics, using our superior technical capabilities and innovative spirit. KOBELCO products are highly appreciated by our customers, as reflected in the commanding market share we enjoy in a number of product fields. More than half of the all of the world's automobiles, PCs and DVDs use materials produced by Kobe Steel. With over US$20 billion in annual sales, the Kobe Steel Group engages in large-scale business operations and is ranked among the Fortune 500.

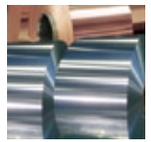
Kobe Steel Group's Fields of Business Activity



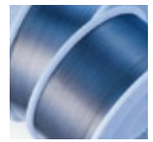
Kobe Steel Group
Sales: 2,177.2 billion yen
(Consolidated, year ended March 2009)


Iron and steel


Kakogawa Works


Aluminum and copper


Machinery


Welding

Kinder to the Environment, Safer, More Comfortable, and More Efficient! KOBELCO's "Only One" Construction Machinery Products Reflect Close Attention to Actual Needs in the Field.

The ultra-fuel-efficient Acera Geospec serves as a base machine for KOBELCO's specialized environmental machinery, which has become the mainstay of operations at automotive and building demolition sites around the world.

Environmental Machinery That Demolishes and Recycles More Quietly and Safely Using conventional methods, it takes about a day to demolish a car and sort the scrap materials for recycling and disposal. KOBELCO has designed a unique vehicle demolition machine that does the job in as little as 20 minutes with more accuracy and better safety than ever before.

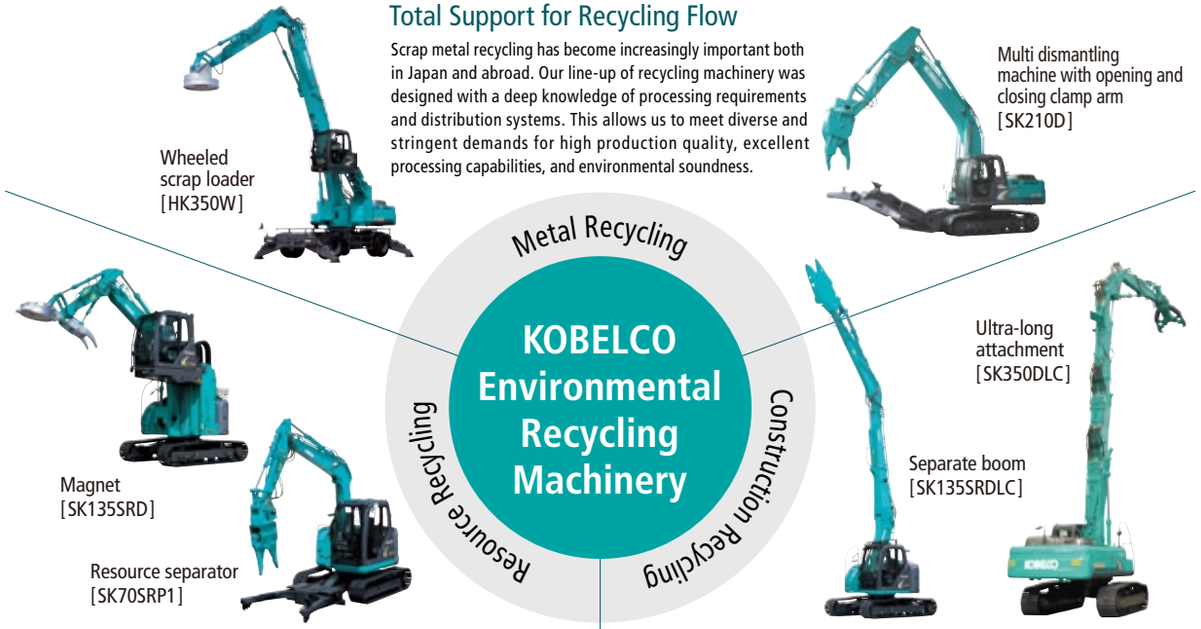
Behind every "Only One" product KOBELCO develops, there is a deep commitment to serving our customers. We want them to benefit from the use of our machines. This isn't just a matter of directly increasing their profits by improving operating efficiency and reducing costs. We are also concerned with less direct but still vital benefits, such as reducing the burden on the environment, reducing noise and vibration, and making operation both safe and easy.

Benefits

For the owner	contributing to higher operational efficiency and lower costs through better fuel economy.
For the operator	providing a work environment suited to fast, easy and comfortable operation.
For surrounding residents	maintaining a quiet living environment that doesn't disturb people.

Total Support for Recycling Flow

Scrap metal recycling has become increasingly important both in Japan and abroad. Our line-up of recycling machinery was designed with a deep knowledge of processing requirements and distribution systems. This allows us to meet diverse and stringent demands for high production quality, excellent processing capabilities, and environmental soundness.



Recycling Industrial Waste Materials

The KOBELCO Construction Machinery Group contributes to making recycling worksites more mechanized, more comfortable, and safer. Working on the basis of long years of experience and customer trust, as well as a rich store of technical expertise, we are focused on developing and expanding our line-up of recycling machinery that handles industrial waste.

Performing Each Role for Maximum Effect

KOBELCO manufactures construction machines that improve the efficiency of demolition and material sorting so that construction by-products can be reused. As one of the first to define demolition as a type of recycling, we offer a variety of high-performance machines with a reputation for durable reliability.

Fuel-Efficient KOBELCO: A Concept That Goes Beyond Economics to Encompass Human Coexistence

The DNA of KOBELCO Construction Machinery

In the past, efficiency has been the main concern of construction machinery manufacturers,
with almost no thought given to operators or people on or around the worksite.
But we at KOBELCO believe that there is an urgent need to bring a more human face to construction machinery,
and have approached our developmental efforts from the perspective of human coexistence.

Take coloring, for example.
We completely reversed the traditional practice of using an intimidating color that excites feelings of caution.
Instead, we wanted a color that would generate a deep feeling of security,
a human-friendly color that would be easy on the eyes. That's the reasoning behind our change
from the uncompromising, heavy colors of yellow and black to a trim, stylish, and bright blue-green.
By changing construction machinery's somewhat threatening appearance to something more gentle,
we harmonized it better with its surroundings and made it a more comfortable presence in the human community.

Another example is the rounded counterweight, an innovation first introduced by KOBELCO.
As part of our commitment to "active" safety, we also pioneered the use of swing flashers on machines of all sizes,
providing onsite personnel with a vivid warning (going beyond words painted on the carbody)
that the machine is swinging.
We believe "passive" safety is just as important in our effort to minimize accidents.
That's why, on our midsize and large machines, we were also the first in the industry to design
the counterweight so that it stays almost completely within the crawler width when swinging.

Consideration for Operators

We cut vibration, which is the main cause of operator fatigue,
and introduced a high-strength cab to improve safety.
In these and other ways, we continue our efforts to ensure safe and comfortable operation.

Consideration for Surrounding People

We provide an automatic idle-stop function as standard equipment,
and developed an excavator with a tiny rear swing radius with an operating noise
level of 95dB, far below the lowest official noise rating.
We also adopted both active and passive safety features.
Our goal is to make the presence and operation of
KOBELCO machines as unobtrusive as possible for surrounding people

1930	Japan's first construction machine introduced: the 50K electric mining shovel
1963	Japan's first hydraulic wheel excavator introduced: the TY45
1977	Japan's first hydraulic crusher (nibbler) introduced
1981	Demolition machine with a 41m boom introduced: the YMN40W
1987	First hydraulic excavator series with electronic control introduced: the New Mark II Series
1989	The Acera Series of hydraulic excavators introduced, designed for comfortable operation in residential areas
1990	SK100W wheeled loader introduced for urban civil engineering projects
1992	Coupe Series of mini excavators introduced, embodying the KOBELCO commitment to safety
1993	Acera Super Version full-sized hydraulic excavators introduced, with blue-green coloring to harmonize urban and natural environments
1993	Multi-Dismantling Machine introduced to support recycling companies
1998	Grand Beetle Series hydraulic excavators introduced with tiny rear swing radii
1999	Dynamic Acera Series introduced as standardized international models consistent with KOBELCO's global business strategy
2005	SK3500D introduced as a specialized building demolition machine with the world's highest reach (at the time), recognized by Guinness World Records.
2006	Acera Geospec Series of hydraulic excavators introduced featuring fuel economy far better than any competitor
2007	Acera Geospec SR Series of hydraulic excavators introduced with iNDr technology that drastically reduces operational noise and provides dust protection
2010	SK80H hybrid hydraulic excavator introduced, a fully-functional hybrid that points the way to the future of excavator technology

The KOBELCO Brand Name: A Global Reputation for Reliability

"KOBELCO" was adopted as Kobe Steel's unified brand name about 30 years ago, in 1979. In 2006, it became the consolidated brand name of the entire Kobe Steel Group, and its use was greatly expanded. Formed by combining KOBE+STEEL+COMPANY, KOBELCO is today found on all of the Group's diverse material and machinery products, although it is probably best known in connection with construction machinery. As a globally recognized name, it symbolizes our unending quest for high product quality and reliability.