

Special Feature: KOBELCO's Mission Story

Using the Group's Collective Strengths to Reduce CO₂ Emissions



The KOBELCO Group Takes on the Challenge of Solving Social Issues with Its Unique Strengths and Technologies.

Long-Term Initiatives to Address Climate Change

Around the world, the movement toward addressing climate change is gaining momentum with the start of the Paris Agreement from 2020, which was adopted at the 21st Conference of the Parties to the United Nations Framework Convention on Climate Change (COP 21).

By reducing CO₂ emissions throughout its value chain, the KOBELCO Group contributes to the achievement of goals in the Paris Agreement, as well as Japan's long-term vision and government policies, such as those embodied in Japan's Draft Commitment and Strategic Energy Plan. These ambitions also align with KOBELCO's View of the Future, which was integrated in the Group Corporate Philosophy in May 2020, stating "We envision a world in which people, now and in the future, can fulfill their hopes and dreams while enjoying safe, secure, and prosperous lives." We recognize our commitment to society is tested

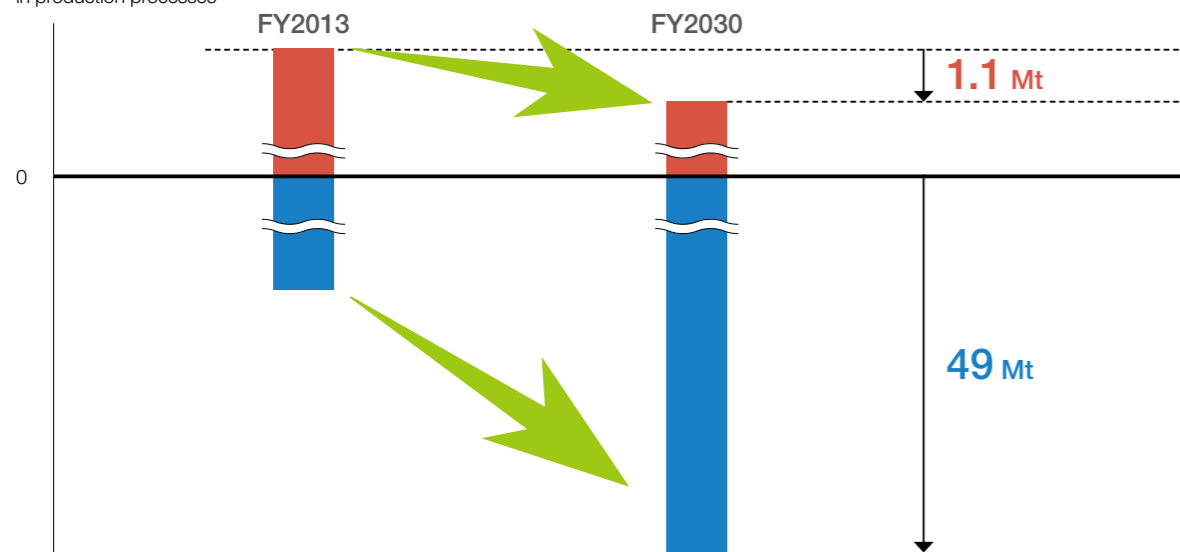
through our efforts to reduce CO₂ emissions, as we affirm it in KOBELCO's Mission, which states "Our mission is to provide solutions to the needs of society, by making the best use of the talents of our employees and our technologies."

In addition to reducing its own CO₂ emissions, the KOBELCO Group helps reduce CO₂ emissions at the stage of use in various areas of society through its innovative technologies, products, and services. In a new development, the Company has created objectives for fiscal 2030 and set two management metrics, consisting of (1) Reduction of CO₂ emissions in production processes and (2) Contribution to reduction of CO₂ emissions through technologies, products, and services.

Taking the long-term view, we are keen to reduce CO₂ emissions and achieve KOBELCO's View of the Future.

The KOBELCO Group's FY2030 CO₂ Reduction Objectives

Reduction of CO₂ emissions in production processes



Contribution to reduction of CO₂ emissions through technologies, products, and services

1 Reduction of CO₂ Emissions in Production Processes

Over 95% of the KOBELCO Group's CO₂ emissions come from the Steel & Aluminum Business and the Advanced Materials Business, making the reduction of CO₂ emissions in their production processes a key issue. The Group's steel, aluminum, and other products are used by a broad range of industries. As such, we have a responsibility to reduce CO₂ emissions while maintaining cost competitiveness in order for our products to truly contribute to society.

The Company has endeavored to reduce CO₂ emissions at its business locations, such as by installing high-efficiency power generation facilities at Kakogawa Works. We aim to reduce 1.1 million tons of CO₂ by FY2030 (vs. BAU in FY2013) by continuing to conserve energy and invest in more efficient facilities.

2 Contribution to Reduction of CO₂ Emissions through Technologies, Products, and Services

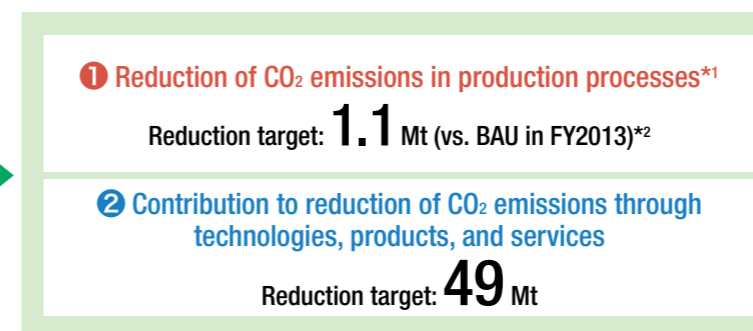
Through its innovative technologies, products, and services, the KOBELCO Group helps reduce CO₂ emissions at the stage of use in various areas of society. With the global population poised to expand, it has become increasingly necessary for society as a whole to reduce CO₂ emissions. We therefore believe reducing CO₂ emissions is an important link to our growth strategy. As more automobiles are driven, cars need to become lighter in weight to improve their fuel economy. As a leading manufacturer of steel, aluminum and welding materials, the Group can make a significant contribution to automotive weight reduction in a wider range of fields.

Midrex Technologies, Inc., a wholly owned subsidiary of Kobe Steel, has developed the MIDREX® Process, a method for making direct reduction iron (DRI) using natural gas, which emits less CO₂. The MIDREX® Process produces over 60% of the DRI in the world. We believe demand for DRI will only increase as industries move to combat climate change.

By expanding sales of MIDREX® plants, we are thus able to help reduce CO₂ emissions in the future. Midrex Technologies also has technology for a direct reduction process that uses hydrogen and is working on the development of hydrogen reduction ironmaking.

Through these initiatives, the KOBELCO Group aims to reduce 49 million tons of CO₂ by FY2030 through its technologies, products, and services.

The KOBELCO Group's FY2030 Objectives



*1 Scope of the reduction target consists of business locations of Kobe Steel and Kobelco Construction Machinery.
*2 BAU: Business as usual; emissions of greenhouse gases, or emissions per unit, assuming no additional measures are taken

Contribute to the Paris Agreement and Japan's long-term vision and government policies by reducing CO₂ emissions throughout the value chain

FACT Our Solutions to Social Issues

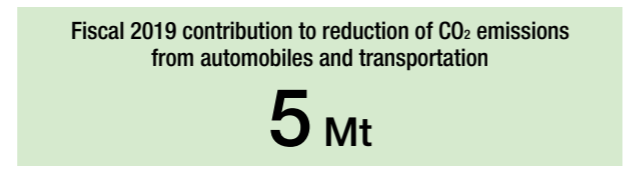
1 Contribution to Reduction of CO₂ Emissions in Automotive Field

As the importance of protecting the global environment mounts, automakers have been working to electrify and reduce the weight of automobiles in order to achieve goals for reducing CO₂ emissions (i.e., improve fuel economy). Regulations for fuel economy and exhaust gas are likely to become stricter through 2030, adding momentum to the transition to lighter weight vehicles and electric vehicles. Environmentally friendly vehicles, such as hybrid and electric cars, often have heavy batteries, making it necessary to reduce the weight of the vehicle. However, collision safety or the rigidity of the car body cannot be sacrificed just to save weight.

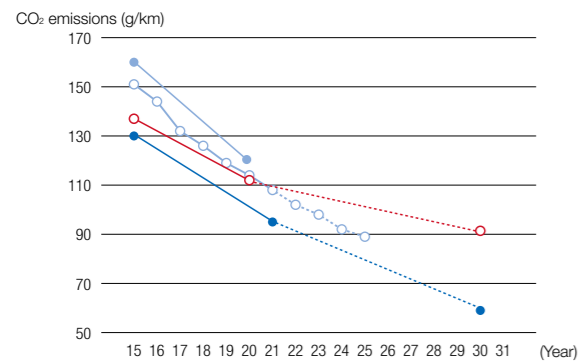
In April 2020, the KOBELCO Group reorganized the materials businesses and established the Application Technology Center to further support its customers as the only manufacturer in the world to provide steel, aluminum, and welding materials and dissimilar material joining technologies. The Company proposes ideas for weight reduction in a bid to provide value as a company with technologies for joining dissimilar materials. In fiscal 2019, we helped

reduce CO₂ emissions by an estimated 5 million tons through products that contribute to weight reduction in automobiles.

In addition to automotive weight savings, the KOBELCO Group has diverse technologies, products, and services that satisfy the need to comply with regulations on fuel economy and exhaust gas that are becoming stricter as vehicle electrification progresses. We will continue to help reduce CO₂ emissions further. Our ongoing efforts include developing compressors and heat exchangers for hydrogen stations that will facilitate the proliferation of fuel-cell vehicles (FCVs) and more.

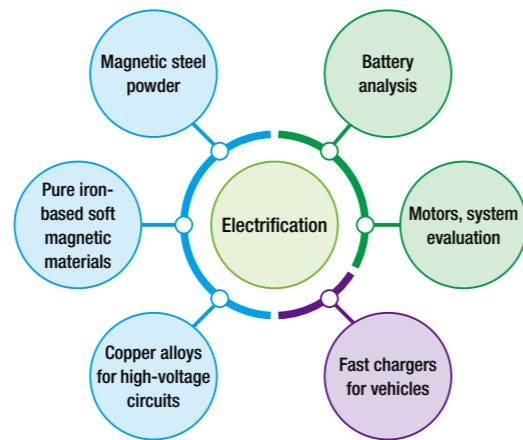


Fuel Economy Regulations by Region (CO₂ emission equivalent)



Europe: Decided to further tighten fuel economy and emissions regulations with a view to 2030
Japan: Laws currently being revised for 2030 regulatory values
Note: Created by Kobe Steel based on data from regulatory authorities in each country and region

Contribution to Automobile Electrification



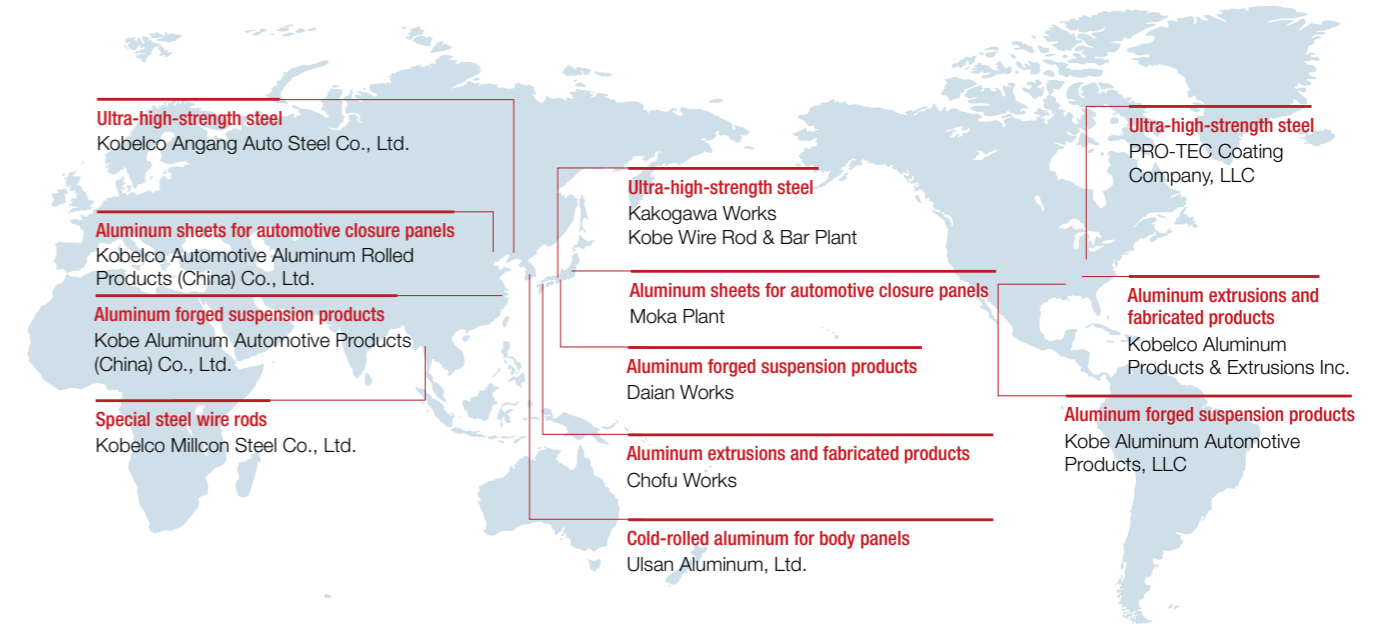
Multi-Materials That Contribute to Automotive Weight Reduction

- Hoods, fenders, doors, roofs, etc.**
Aluminum: Aluminum sheets for automotive body panels
- Body frame**
Steel: Ultra-high-strength steel
Aluminum: Aluminum extrusions
- Bumpers, door impact beams**
Steel: Ultra-high-strength steel
Aluminum: Aluminum extrusions
- Engine power trains**
Steel for high-strength bolts
High-strength steel powder for sintering gears
- Joining and analysis**
Joining: Welding materials, dissimilar material joining technology
Analysis: Structure, processing, joining analysis
- Underbody parts**
Aluminum: Aluminum forged suspensions

Expansion of Global Supply Structure

The KOBELCO Group has been expanding its global supply structure since automotive weight reduction is a worldwide issue. The Company is making strategic investments in materials for reducing the weight of automobiles, such as automotive valve spring steel

with a global market share of 50%, ultra-high-strength steel with a leading share of the industry, and forged suspensions for automobiles with a top share of the domestic market.

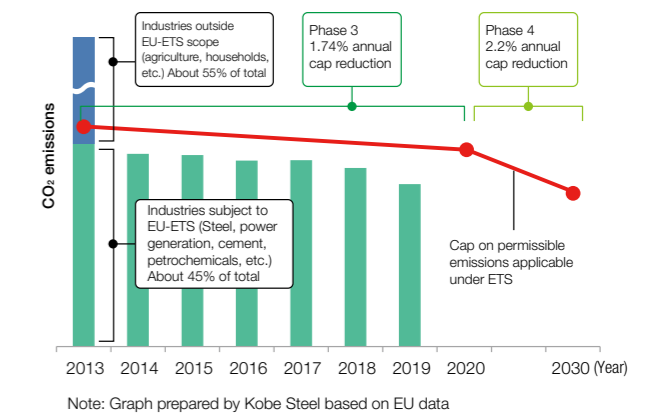


2 Reduction of CO₂ in Ironmaking Field: Direct Reduction Ironmaking by MIDREX® Process

Steel has many excellent qualities as a basic material, in terms of resource abundance, production cost, and functional diversity. Steel supports our lifestyles as a core material used in social infrastructure and durable consumer goods. It is also a highly recyclable material. However, as the world population grows and society develops, steel scrap recycling cannot satisfy all of the demand for steel. Scrap steel has many impurities, such as copper and tin, making it difficult to produce high-grade steel. Clean sources of metallics are needed to dilute impurities in recycled steel. For these reasons, new steel will still have to be produced from iron ore in the future.

Steel helps reduce CO₂ emissions at the stage of use in various products. One example is ultra-high-strength steel, which reduces the weight of automobiles. On the other hand, the steel industry is one of the largest emitters of CO₂, and reducing these emissions has been a hot topic. New steel is mainly produced by the blast furnace method, in which coke is used to reduce the iron ore. A drawback of this reduction process is emissions of large amounts of CO₂. Around the world, CO₂ emission trading systems have gained momentum, as seen in the European Union and the Republic of Korea, where the steel industry is subject to cap-and-trade emission trading systems (ETS). Companies that emit

Volume of and Limit for Emissions Applicable Under European Union Emissions Trading System



greenhouse gases in excess of their emission framework must obtain emission credits from other companies or markets. In these regions, the need to reduce CO₂ emissions has been increasing.

Special Feature: KOBELCO's Mission Story

Against this backdrop, the direct reduction process is drawing attention as a next-generation ironmaking process that can substantially lighten the burden on the environment. Direct reduction plants, which use natural gas to reduce iron ore, emit less CO₂ than the blast furnace method. Direct reduction plants are not as large as blast furnaces and do not require coke. This is why they have mainly been constructed in developing countries that have their own natural gas resources. In advanced countries as well, electric arc furnace steelmakers have been using DRI as an alternative to high-grade scrap and pig iron in recent years, since DRI is a clean source of iron with few impurities. Especially in Europe, the use of DRI has been attracting attention as a way to reduce CO₂ emissions.

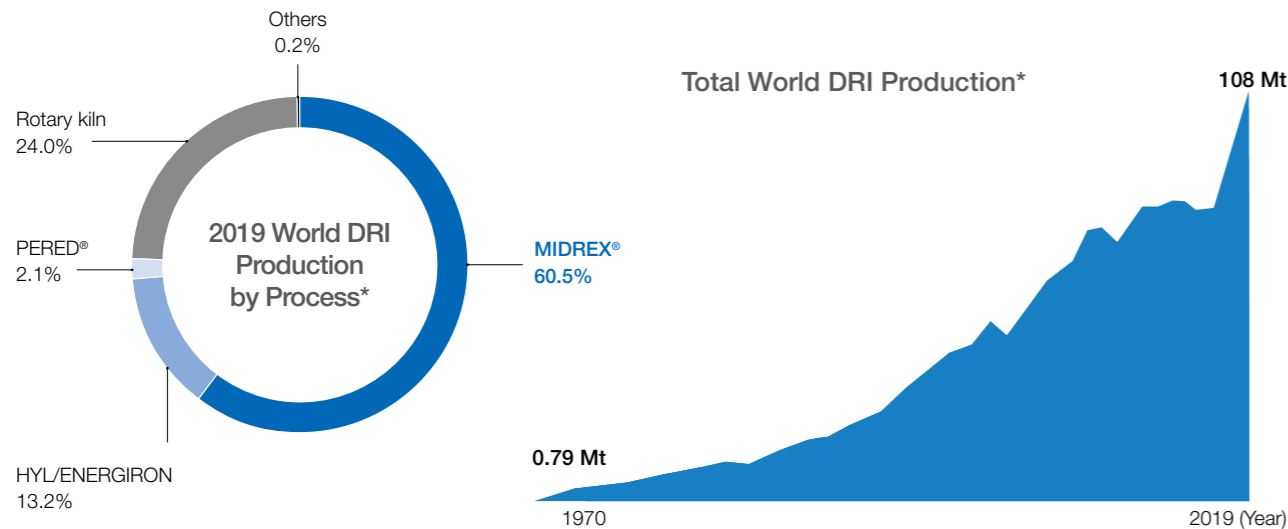
The annual global DRI production has grown dramatically, from roughly 0.8 million tons in 1970 to over 100 million tons in 2019, and it is expected to continue growing. Around two-thirds of the DRI in the world today is produced using the MIDREX® Process.

In 1983, Kobe Steel acquired U.S.-based Midrex Technologies, Inc., the company that developed the MIDREX® Process, and turned it into a wholly owned subsidiary. In the 40 years or so since then, we, as the process owner, have been promoting the MIDREX® Process around the world.

Fiscal 2019
Contribution to CO₂ reduction from MIDREX® Process
23 Mt



voestalpine's direct reduction plant in the U.S. in operation since mid-2017



* Created by Kobe Steel based on data from 2019 World Direct Reduction Statistics

NEWS Midrex Technologies, Inc. Collaboration on Low CO₂ Metallics and Low CO₂ Ironmaking Solutions with Vale S.A. and Mitsui & Co., Ltd.

Along with Midrex Technologies, Kobe Steel has agreed to collaborate with Vale S.A., the world's largest iron ore producer, and Mitsui & Co., Ltd., a global trading company with a diversified business portfolio that includes resource businesses, on providing the global steel industry with low CO₂ metallics and low CO₂ ironmaking solutions.

The KOBELCO Group will leverage its collective strengths in diverse technologies, including the MIDREX® Process, as well as its products, services and human resources, while collaborating with Vale and Mitsui & Co. on solutions for the social issue of reducing CO₂ emissions in the global steel industry.

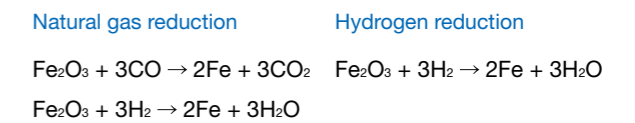
TOPICS Direct Reduction Ironmaking Using Hydrogen

Some CO₂ is inevitably released during ironmaking because the iron ore reduction process requires coke to be used in blast furnaces, while natural gas is used in the direct reduction process. Around the world, the commercialization of hydrogen reduction ironmaking is highly anticipated because CO₂ is not released during the iron reduction process that uses hydrogen as the reducing agent. The KOBELCO Group has world-class technologies for hydrogen reduction ironmaking.

The MIDREX® Process is an ironmaking technology that uses natural gas, so it emits less CO₂ than blast furnaces. The advantages of the MIDREX® Process are not limited to being a low CO₂ ironmaking method. The MIDREX® Process can reduce CO₂ emissions even more by replacing, in stages, the natural gas with hydrogen. Furthermore, without a large additional investment, it

is possible to transition to a hydrogen-based reduction ironmaking process that uses 100% hydrogen gas as the reducing agent. In this respect, the MIDREX® Process is an ideal technology for flexibly transitioning to a carbon-free society because the ratio of hydrogen can be increased in stages while keeping additional costs at a minimum, together with the proliferation of hydrogen made from renewable energy sources and improvements in cost performance.

• Reduction reaction in the MIDREX® Process



NEWS Midrex Technologies, Inc. Collaboration Agreement Signed with ArcelorMittal for Hydrogen Steel Production

Midrex Technologies has signed a Framework Collaboration Agreement (FCA) with ArcelorMittal S.A., the world's leading steelmaker, to collaborate on the research and development of low CO₂ ironmaking using hydrogen. Midrex Technologies will provide a direct reduction technology using hydrogen.

As a part of their agreement, Midrex Technologies has been commissioned to design a demonstration plant to produce direct reduced iron using hydrogen. The demonstration plant will be constructed inside ArcelorMittal's steelworks in Hamburg, Germany.

This demonstration plant will perform verification of hydrogen reduction by recovering the hydrogen contained in the top gas emitted from the existing direct reduction plant that uses natural gas as the reducing agent. The plant will produce about 100,000 tons of direct reduced iron per year, making it the world's largest direct reduction plant that uses only hydrogen as the reducing agent.



ArcelorMittal's existing direct reduction plant at its steelworks in Hamburg, Germany