Company Profile
kobelco eco-solutions

KOBE LCO ECO-SOLUTIONS CO., LTD.
To create a healthy environment and life for future generations through our innovative thinking.

In our home country, people are living a safe and peaceful life. However, problems such as climatic aberration and aging infrastructure are emerging. If we look around the world, we are facing a series of issues that threaten our daily lives, such as global warming, exhaustion of natural resources, deletion of water resources, and forest destruction, among others.

Here is the role we wish to play. We will work hand-in-hand with our customers and exchange in-depth discussions to provide the best solution. With our technology and innovative thinking, we will remove people’s concerns and anxieties about the future.

We are committed to securing not only our “present” life, but also our “future” life, and to contributing to our society and community with our manufacturing (monozukuri) capabilities and environmental technology.

We, Kobelco Eco-Solutions, strive to create a sustainable, healthy environment and life for future generations, and to secure a society that lives in harmony with the earth.

Core Values of KOBELCO
1. We provide technologies, products and services that win the trust and confidence of our customers we serve and the society in which we live.
2. We value each employee and support his and her growth on an individual basis, while creating a cooperative and harmonious environment.
3. Through continuous and innovative changes, we create new values for the society of which we are a member.

Six Pledges of KOBELCO Men and Women
We, the men and women of KOBELCO, in the spirit of honoring Core Values of KOBELCO, make the following Six Pledges:
1. Heightened Sense of Ethics and Professionalism
2. Contribution to the Society by Providing Superior Products and Services
3. Establishing a Comfortable but Challenging Work Environment
4. Living in Harmony with Local Community
5. Contribution to a Sustainable Environment
6. Respect for Each Stakeholder

Quality Charter
The KOBELCO Group will comply with all laws, public standards, and customer specifications, and make continuous efforts to improve quality, with the goal of providing Trusted Quality in our products and services.
Water Treatment

- Design, manufacturing, sales, and repair of, equipment and facilities
- Water Treatment
  - Cooling Tower
  - Sludge Treatment / Recycling
  - Wastewater Treatment Facilities
  - Industrial water processing system
  - Water treatment system for liquid crystals and semiconductors
  - Pure water / Ultrapure water production equipment
  - Leachate treatment system
  - Seawater desalination system

- Waste Product Treatment
  - Waste Treatment and Waste to Energy (Incorporator)
  - Fluidized Bed Gasification and Melting Furnace
  - Grate Type Incineration
  - Fluidized-bed furnace
  - Detoxification of PCBs
    - Sodium Pulverulent Process "SP Process"
    - Solvent Extraction and Decomposition Process "SED Process"
    - Plasma Melting Technology for PCB-contaminated Waste
    - Heated Oil Circulation Washing

Biomass

- Biogas Upgrading System
- Biogas technology for the injection into the natural gas grid

Cooling Tower

- Cooling tower for district heating and cooling
- Super-low-noise cooling tower
- Industrial cooling tower

Environmental Analysis Service

- Potable water and sewage sludge
- Wastewater from factories, research centers, etc.
- Industrial waste (PCB, metals, organics, etc.)

Technological Development

- Water Treatment
  - Sludge Treatment / Recycling
  - Waste Treatment and Recycling

- Process Equipment
  - Glasslined Reactor
  - Mixer / Dryer
  - Polymerizer / Reactor
  - Evaporator

- Hydrogen-related business
  - High-purity Hydrogen Oxygen Generator

Business Development & Innovative Technologies

- Glasslined Reactor
- Polymerizer / Reactor
- Evaporator
**Water Treatment (Water Purification)**

Our technology improves the safety and reliability of tap water, now and in the future.

**Water Purification Plant**
Water purification is a vital lifeline process to supply clean water reliably every day. We design a suitable water treatment plant according to changes in water quality and demand, and offer an appropriate system plan including maintenance work. We also meet the demand for advanced treatment to produce safer and more delicious water using cutting-edge technology.

**Open Siphon Filter**
The open siphon filter is a gravity type open filtration facility that uses a siphon mechanism. Automatic switching between filtration, backwash processes, and water dumping is achieved by utilizing a separate backwash storage tank and siphon. The downsizing of the large automatic valve and pump capacity makes maintenance work simpler. Open type filtration facilitates easy cleaning surveillance, ensuring safe and reliable filtration.

**Membrane System for Water Purification**
This water-purification system, which was developed by combining our advanced water-purification and membrane-filtration technology, helps reduce the number of maintenance personnel required thanks to its simple flocculation control. Open type filtration facilitates easy cleaning surveillance, ensuring safe and reliable filtration.

**Auto Siphon Filter**
This is a rapid gravity filter that enables fully-automated operation with no need for automatic valve operation or flow control for filtration or backwash processes. This filter eliminates the need for a wash water pump and electric power, thus reducing maintenance work.

**Non-metallic sludge-gathering system**
All the parts which are in contact with liquid are made of high-quality plastic materials. In many sewage disposal plants, long life and maintenance-free circumstances in a corrosive environment are realized.

**PABIO Mix**
Efficient mixing in the tank is made possible using a specially shaped Hypervoloidal mixer. As mixing near the bottom of the tank is performed by low-speed rotation, considerable energy savings are realized with minimum energy consumption. It has a simple structure where two types of mixing impellers are available; one of which is a single-body type, and the other is an eight-blade type that is easy to install even if the opening of the reaction tank is small.

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**Water Treatment (Sewage)**

We support comfortable living with our advanced technology.

**Sewage treatment plant**
Our wide range of technology can propose various solutions such as efficient removal of COD, removal of nitrogen or phosphate to solve the problem of eutrophication, desalination of recirculated water, energy savings etc. We have designed and supplied many sewage treatment plants and advanced wastewater treatment plants to prefectures, cities, towns, villages and housing complexes nationwide and have contributed to the improvement of community life as a reliable plant supplier.
It contributes to reducing and recycling of sewage sludge.

The spread of sewage systems throughout Japan has caused a national demand for sewage treatment. Along with offering a safe and hygienic water environment, Kobelco Eco-Solutions contributes to the development of a recycling-oriented society by actively engaging in volume reduction and recycling of raw sludge that utilizes the latest technology including our steadfast incinerating and melting know-how.

Advanced Two-stage Incinerator

Sludge incinerators emit carbon dioxide, nitrous oxide and other greenhouse gases, and people have been longing for some way to reduce the burden on the environment.

We used our plentiful experience gained over 35 plus years of sewage sludge incineration and our superior plant engineering capabilities to develop an “Advanced Two-Stage Incinerator,” a generation sludge incinerator that not only conserves energy and cuts down on greenhouse gases. Machines that use this technology in our incineration and melting systems are currently in operation.

We are employing our Gravity Belt Thickener due to its sludge concentration efficiency, ability and reduce sludge volume through thickening. An increasing number of treatment plants are employing our Gravity Belt Thickener due to its sludge concentration efficiency, ability and reduce sludge volume through thickening. An increasing number of treatment plants are employing our Gravity Belt Thickener due to its sludge concentration efficiency and ability to handle large volumes of sludge, and low Lifecycle cost thanks to its easy maintenance.

Our Gravity Belt Thickener is a sewage sludge treatment device designed to concentrate and reduce sludge volume through thickening. An increasing number of treatment plants are employing our Gravity Belt Thickener due to its sludge concentration efficiency, ability and reduce sludge volume through thickening. An increasing number of treatment plants are employing our Gravity Belt Thickener due to its sludge concentration efficiency and ability to handle large volumes of sludge, and low Lifecycle cost thanks to its easy maintenance.

We aim to promote wider use of digester tanks, and have reduced construction costs by installing sensors to make the tank interior visible. The type steel digester tank is the technological fruit of the “Breakthrough by Dynamic Approach in Sewage High Technology Project” (B-DASH project) promoted by The Ministry of Land, Infrastructure and Transport in 2011, and the first tank in commercial use, a Japanese government order, is now in operation.

* Air ratio was previously approx. 1.4 (primary air only).

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**Cooling Tower**

We are the biggest manufacturer of cooling towers, with a track record of 5000 or more units sold worldwide.

A cooling tower refrigerates cooling water from the air conditioning system in the building and factory and re-circulates it in the same way that human beings control their body functions properly by the perspiration. It contributes to the creation of a comfortable environment in a city by serving expanding industrial activities and central heating systems.

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**Biomass**

We are working hard to live together with the environment, using our biotechnology.

Carbon Neutral Energy

Biogas Upgrading System

Our Biogas Upgrading System purifies digester gas generated during the treatment of sewage sludge to produce high-purity gas equivalent to City gas 12A (97% or more methane).

Our Biogas Upgrading System is characterized by its low running cost realized by the utilization of effluent water from sewage treatment facilities, simple purification processes and equipment structure, economical and highly-efficient desulfurization, and the ability to remove siloxane.

Effective use of renewable energy

Effective use of biogas (digester gas) for power generation and heat supply

Biogas CHP Plant

Biomass has been recognized as a new energy to replace fossil fuels, and its adoption and utilization is being encouraged. Fossil fuels release carbon dioxide into the atmosphere and reserves are limited, but biomass helps to reduce the generation of greenhouse gases. Furthermore, the adoption of cogeneration means that biomass can be used as secondary energy for power generation and water heating.

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Heat Exchange Technology

(Gas & Liquid)

In industries which require cooling water, such as the power, steel, and chemical industries, and for building and district heating and cooling, re-circulation use of cooling water by wet cooling towers is promoted.

We continue to develop more compact and more efficient cooling towers through theoretical calculations, building a small pilot units in our research center, and actual heat exchange proof tests with full scale cooling towers.
Water Treatment (Industrial Water, Pure Water, Ultrapure Water, Wastewater)

We fulfill the industrial requirements for water treatment to protect the global environment.

Our solutions to the requirements for more advanced water treatment and recycling facilities.

Industrial water treatment / pure water and ultrapure water production facilities

We offer the perfect system for each application with a solid track record of efficient industrial water treatment facilities for purification, ion exchanges, and pure water / ultra pure water processing facilities.

Reclaim Water Facilities

Our solutions to for reusing water and precious materials.

Reclamation of high-efficiency, low-cost wastewater treatment

We offer high-efficiency, low-cost treatment systems ready to meet organic wastewater, inorganic wastewater, and individual restrictions.

Wastewater Treatment Facilities

Our solutions to the requirements for more advanced water.

Energy Solution

We have reduced lead time and cost by unitizing the system for each process.

Combination of units for a variety of uses

We offer the perfect system for each application.

Unit-type Water Treatment System

- High-speed Separator (Pressurized Revolution)
- Pabio Mover CM (One process using carrier)
- Super Thicker (Yac Coating/sedimentation)
- Super Fiber FF (High-speed fiber filtration)
- Belt Mini (Dehydration equipment)

Our contribution to water quality improvement for customers

Wide-ranging lineup Parts

Appropriate replacement of components is required to maintain performance of water treatment facilities. Components that we offer include a series of membranes, fiber cloths and materials, ion exchange resins, and all that are necessary to maintain their performance.

Water Treatment (Maintenance)

We offer quality and services in a “safe”, “secure” and “stable” manner.

Well-thought-out improvement solutions suggested in accordance with your system environment

Inspection, Repair

We inspect and inspect any systems/facilities related to water treatment for proactive maintenance, as well as offer appropriate suggestions based on our extensive technological capabilities and rich experience.

If necessary, our comprehensive engineering capabilities including renovation, repair, and update will minimize costs for improving energy efficiency, inspection, or repair of your systems/facilities that meets today’s need.

Our wide selection of services include comprehensive operational maintenance that collectively covers renovation, repair, update works, and all other maintenance of water treatment facilities.

Factory Total Solution

We provide a total factory solution according to the customer needs, by combining the technologies and broad expertise of our entire group.

Energy Solution

- Effective utilization of unused energy at the factory (Low-pressure steam after use, exhaust gas, excess steam/heat water, etc.)
- Improved energy recovery efficiency attained through installation of energy-saving equipment.
- Installed and inspected any systems/facilities related to water treatment for proactive maintenance, as well as offer appropriate suggestions based on our extensive technological capabilities and rich experience.

Waste Solution

- Reduced the volume of sludge by installing sludge-reducing type waste water treatment.
- Reduced the volume of waste by installing waste dryer.

Water Treatment Solution

- Water recycling and discharging waste water at a factory
- Energy-saving method (gas, energy saving)
- Energy consumption (treatment equipment), low waste (reduced excess sludge)

Chemicals for water treatment

- Inorganic chemicals, inorganic coagulants, water treatment chemicals for cooling towers, recogides, inorganic coagulants, water treatment agents for boilers, etc.

We supply water for our customers

Kobayashi Ecos Solutions supplies pure and ultrapure water while installing, operating, and maintaining systems/facilities at your plant, which should significantly reduce your burden.

Water Service

We supply water for our customers

- Easy installation, operation, and maintenance
- Low operation and maintenance costs
- Low maintenance and repair costs
- Easy installation of systems/facilities at your plant
Waste Treatment and Waste to Energy (Incinerator)

MSW (Municipal Solid Waste) Treatment Technology

Fluidized Bed Gasification and Melting Furnace

Our waste treatment facility “Fluidized Bed Gasification and Melting Furnace” is constantly evolving. This system can reduce the burden on the final disposal site and inhibit the generation of greenhouse gases since, by harnessing the energy in the waste, ash can be turned into slag without using fossil fuels. The slag may be put to effective use as road aggregate or secondary concrete products. In addition, metals such as iron and aluminium can be retrieved in an unoxidized state from the waste and utilized as recycled resources.

Our company can provide highly reliable facilities, based on the extensive experience we have amassed from constructing 17 commercial plants and 18 years of operation in Japan.

Fluidized Bed Gasification and Melting Furnace

Fluidized Bed Furnace

Grate Type Incineration

“Grate Type Incineration” is the oldest and most widespread domestically used waste treatment technique. Age-old techniques are constantly evolving to promote the realization of a resource-recycling oriented and low carbon society.

The distinctive features of our grate stoker system are its highly-efficient heat recovery and maintenance-free grates. It also has an excellent reputation as a robust furnace that can handle a wide range of waste matter, including plastics, slop oil and sludge.

Grate Type Incineration

Fluidized Bed Furnace

Waste Treatment (Maintenance)

We provide a wide variety of after-sales services to respond to various customers’ needs.

Inspection, Repair, Improvement

We live up with customer’s expectation providing a wide variety of after-sales services such as inspection, repair and improvement of municipal waste treatment plants and recycling facilities.

We also have an extensive track record regarding improvement work on a fundamental part of the facilities for service life extension. Based on the expertise and accumulated know-how, the optimum proposal for each facility can be brought to our customers.

In comprehensive service projects that include inspections and repairs, and in O&M projects, we provide meticulously customized after-sales services utilizing the latest technologies, thereby contributing to the reliable, safe and stable operation of the facilities.
Detoxification of PCBs

Advanced and Reliable Technology

Sodium Pulverulent Process “SP Process”

Although widely used for industrial products and industrial applications in the past, polychlorinated biphenyl (PCB) has been deposited for more than 30 years in an untreated condition, even after its toxic effects on the human body become clear and its production was stopped, and no effective processing method has been developed. PCB detoxification system “SP process” removes chlorofluorocarbons from PCBs and detoxify PCBs by chemical reaction of sodium and PCB. The process is adopted by The Chugoku Electric Power Co., Inc., Insulating Oil Recycling Center and Hokkaido PCB Waste Treatment Facility.

Sodium Dispersion (SD)

SD is a reactive agent in the SP process used to dechlorinate and detoxify PCBs. Fine-grained sodium particles react calmer with air or water than solid sodium as the sodium particles are constantly covered with oil. We have established SD production facilities at the Hamama Plant and Ninoya SD Production Plant to supply the PCB treatment process.

Solvent Extraction and Decomposition Process “SED Process”

PCBs are widely used for transformer and capacitor, etc. of electrical apparatus, and adhere to the cases and components of these products. The SED process is a pre-treatment technique that dismantles electrical apparatus, removes PCBs with solvent washing and heating drying under vacuum. Combination with the SP process completes an integrated treatment technology for handling electrical apparatus, and adhered to the cases and components of these products. The SED process is a pre-treatment technique that dismantles electrical apparatus, removes PCBs with solvent extraction and decomposition.

Plasma Melting Technology for PCB-contaminated Waste

Plasma melting technology allows collective processing of different kinds of PCB-contaminated wastes in a drum, and thus removes the complicated manual work which is necessary to break them down. Combining high-temperature plasma generated by electric energy with molten slag bath increases the ability to maintain high temperatures that are used as a heat source to decompose and detoxify PCBs. The technology has been used by Kitakyo PCB waste treatment facility and Hokkaido PCB waste treatment facility.

Heated Oil Circulation Washing

The heated-oil circulation washing method (on-site washing method) was developed by Central Research Institute of Electric Power Industry. This technology allows collective treatment of large waste electrical apparatus contaminated with a very small amount of PCBs, which are hard to transport, at a location where it is placed within a short period of time.

Features of Heated-oil Circulation Washing Method

1. Safety Control to Prevent Environmental Contamination

- The inside of the apparatus is washed without being dismantled. Washing of oilcirculation through the close circuit between the apparatus, washing device, and connecting pipe.
- This results in an extremely lower risk of contaminating the surrounding environment.
- As washing is completed on-site, there is no risk of transporting PCB-contaminated wastes.

2. Operational Safety

- Unlike the incineration treatment, this method does not generate combustion gas and can be conducted at a relatively low temperature of around ambient temperature to 80°C. The washing device can immediately be shut down by just pressing an emergency stop button. In case of an emergency, a prompt response is possible.
- There is no risk of operators being exposed to PCBs.

3. Difference from Incineration Treatment

- The apparatuses after being washed are recyclable as ordinary scrap (can be sold as valuable materials). Impregnated materials (paper and wood) should be incinerated.
- There is no need to contract out its costly transportation to licensed collection and transportation businesses of industrial waste subject to special control (PCB).
- There is no need to treat the apparatuses difficult to dispose of at incineration facilities.
- Large apparatuses exceeding acceptance standards established by incineration facilities
- Apparatuses too large to transport

- Apparatuses difficult to carry away from a location where they are used and/or placed.
**Most advanced production base**

The production base of our company, Harima Plant, has established high-quality, speedy and economical production systems with the most advanced techniques. The facility is ASME(U), ISO[9001], and ISO[14001] certified and is a recognized factory in China. We manufacture outstanding products based on our superior quality assurance system. In addition, our glass-lining plant established in Vietnam ensures response to our globalizing customers.

**Glasslined Reactor**

Glass lined is utilized for various reaction processes in the chemical industry and other industries. We have a wide range of product lines such as low-dissolution and high-thermal conductive glasses, including #9000 highly-corrosion resistant glasses as our main products.

**Corrosion resistant material and surface treatment technology**

Glass lining is utilized for various reaction processes in the chemical industry and other industries. We have a wide range of product lines such as low-dissolution and high-thermal conductive glasses, including #9000 highly-corrosion resistant glasses as our main products.

**Polymerizer / Reactor**

Stainless steel “FULL ZONE” Reactor  This reactor, which is equipped with “FULL ZONE Impeller” contributes to productivity and quality improvement in various manufacturing processes with its improved mixing capabilities. Various improvements have been confirmed in the reduction of coagulation and adhesion in emulsified polymerization, larger particle diameters in suspended polymerization, increased purity in crystallization, higher yield ratios in highly concentrated cultivation and shorter times in surface absorption reactions.

**Evaporator**

Wiped Film Evaporator “WIPRINE” “EXEVA” The wiped film evaporator creates thin film from treatment liquid and evaporates it at a lower temperature under vacuum. It best fits processes of purification, condensation, decolorization, deodorization and degassing of heat sensitive materials and high-boiling substances. We provide two types of thin film evaporator depending on the liquid type: WIPRINE for low viscosity and EXEVA for high viscosity.

**Hydrogen-related business**

**CO₂-free hydrogen generated from renewable energy**

**High-purity Hydrogen Oxygen Generator**

HHOG HHOG directly electrolyzes pure water and generates high purity hydrogen on-site without using any toxic chemicals. 190 units of HHOG have been installed mainly as a factory utility in Japan and overseas. In addition, HHOG has been employed in several demonstration projects in which it was combined with renewable energy technologies such as photovoltaic generation to produce CO₂-free hydrogen.
We focus our efforts on the development of new technologies which protect the abundant natural environment and comfortable life in human society. Our latest technologies are applied to our new products and services to meet complex needs. Furthermore, to make our technologies more proven, we carry out joint research programs with customers, measurement in full-scale plants and experiments in pilot plants. We are committed to development of cultivation techniques for heterotrophic growth of Euglena gracilis strain EOD-1 SD (sodium dispersion). We demonstrated the efficient energy utilization technology using high-salinity anaerobic digestion and energy-saving biogas purification at a municipal wastewater treatment plant.

We are conducting research to apply the technology cultivated in PCB decomposing to manufacturing chemical product such as pharmaceuticals, agrochemicals, and fine chemicals.

Innovative Technologies

We are committed to development of cultivation techniques for heterotrophic growth of Euglena. We demonstrated the efficient energy utilization technology using high-salinity anaerobic digestion and energy-saving biogas purification at a municipal wastewater treatment plant.

Our latest technologies are applied to our new products and services to meet complex needs. We focus our efforts on the development of new technologies which protect the abundant natural environment and comfortable life in human society.

We are conducting research to apply the technology cultivated in PCB decomposing to manufacturing chemical product such as pharmaceuticals, agrochemicals, and fine chemicals.

Environmental Analysis

We can propose solutions to various needs based on the abundant experience for water treatment technology which we have accumulated over many years. A wide range of analyses such as water, waste and soil are conducted. We continue our efforts to improve technology to contribute to society with our most advanced measurement technology.

Our numerical analysis techniques are used for optimizing the design of furnaces. We are accelerating technological development by adopting such analytic techniques as combustion/thermal hydraulics and structure.
Keep the Earth Sky-blue

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