

# Engineering Business

## Adding Value Through the Integration of Advanced Technologies

This business has an impressive track record in plant engineering, mainly in the ironmaking and energy sectors. It has done pioneering work in developing direct reduced iron processes requiring no blast furnace and a new ironmaking method, playing a leading role in this field. We remain committed to expanding our business around the world.



### Main Products and Services

#### Ironmaking Processes

- MIDREX® Direct Reduction Process
- FASTMET® Process
- FASTMELT® Process
- ITmk3® Process

#### Nuclear Power

- Radioactive waste disposal plants
- Nuclear equipment (spent fuel casks for transport and storage, fuel channels)

#### Chemical Weapons Destruction

- Demilitarization system and facilities for destroying chemical weapons
- Total services to eliminate abandoned chemical weapons with the identification, recovery, transportation, storage, and disposal

#### Steel Structures and Sabo

- Steel grid-type structures for erosion control (dams, woody debris trapping, etc.)

- Flared seawalls, sound insulation systems
- Sound absorbing panels for the underside of elevated roads
- Cable production and installation

#### Urban Transit Systems

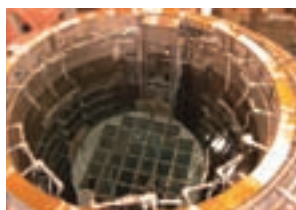
- Advanced urban transit systems (automated guideway transit, sky rail, guideway bus)
- Platform door systems
- Construction engineering

#### Upgrading of Low-Rank Coal

- Upgraded Brown Coal (UBC®) Process



Nuclear power-related facility



Decontamination



Flared seawall

### Business Review

#### Kobe Steel Group's Clean-Up Efforts at Fukushima

Kobe Steel has received orders that will assist with the clean-up of the Fukushima Daiichi Nuclear Power Station (hereafter, "FD") and surrounding areas. One of the orders received was for the construction of equipment for incinerating gear and other items used by workers at FD. Another order was for metal casks for the storage of spent fuel held in FD's spent fuel pool. Kobe Steel is collaborating with Kobelco Eco-Solutions Co., Ltd., a Kobe Steel Group Company, and Transnuclear, Ltd. (a joint-venture between Kobe Steel and TN International) on these orders.

The nuclear power technology of the Kobe Steel Group will help in the recovery from the FD accident. The Kobe Steel Group's technology can contribute to recovery in a variety of ways, and leveraging the Group's collective strength, it will continue to contribute.

Kobe Steel, in cooperation with Kobelco Eco-Solutions, will supply a solid waste incineration system that enables the incineration of workers' gear including Tyvek coveralls, underclothing, and rubber gloves, as well as construction waste material such as paper, cloth, and lumber. The incineration capacity will be approximately 14 tons per



Recently delivered metallic cask

## “Only 1” Products & Technologies



### ITmk3® Process

ITmk3® is drawing attention as a new iron-making process that produces high-quality iron nuggets from low-grade iron ore fines and non-coking coal in about ten minutes. The first commercial plant is in operation in Minnesota, USA.



### Steel Structures and Sabo Dams

To answer the increasingly diverse needs of erosion control work, Kobe Steel offers steel grid-type sabo dams for debris control, woody debris trapping, groundsill work, avalanche control work, and other solutions compatible with the natural environment.



### Urban Transit Systems

Kobe Steel provides automated guideway transit systems, short-distance transit systems and guideway bus systems that help ease traffic congestion in urban areas.

day (300kg/hour × 2 lines, with 24-hour continuous operation). After incinerating the waste to less than several one-tenths its original size, the remains will be stored in a drum.

In addition, Kobe Steel received an order from Tokyo Electric Power Co., Ltd. through Transnuclear, Ltd. for 11 metal casks for the storage of spent fuel at FD. Delivery began in March 2013. To further meet customer needs, we will continue to focus on supplying metal casks, which show promise as a method of storing spent fuel held in domestic nuclear power plants.

### Field Test of DOKODEMOSAKU® Installation of Free Access Platform Gate in Train Stations

DOKODEMOSAKU® was jointly developed by Kobe Steel and Institute of Industrial science, the University of Tokyo. From around summer of 2013, in cooperation with Seibu Railway Co., Ltd., an experimental version of the DOKODEMOSAKU® free-access platform gate is to be installed and test operated on a train station platform (at the end of Platform 1 of Shin-Tokorozawa Station of the Seibu-Shinjuku Line). Commercialization of DOKODEMOSAKU® is expected in fiscal year 2013.

More than just an APG (Automated Platform Gate), DOKODEMOSAKU® can accommodate the door positions for all trains by moving the doors and their pockets.

Therefore, customers do not have to replace or alter

existing train cars, as DOKODEMOSAKU® enables platform door use at all train stations. Moreover, by using DOKODEMOSAKU®, limitations of the train car stop-position are reduced, and since platform doors can be installed even without installing a train automatic position stopping device, investment costs are substantially reduced, which is a major advantage. A subsidy for research on railroad technology from the Ministry of Land, Infrastructure, Transport and Tourism has been used for the development of this technology.

### DOKODEMOSAKU®

DOKODEMOSAKU® is a movable platform door guard that can adjust to the door positions of trains with differing numbers of doors and stop positions. To prevent accidents on train station platforms, the installation of platform doors has been underway. However, at train stations where trains with differing numbers of doors or car lengths enter, the existing platform doors cannot be used.

After receiving grants-in-aid for research on railroad technology from the Ministry of Land, Infrastructure, Transport and Tourism, Kobe Steel, in collaboration with the University of Tokyo, is jointly developing DOKODEMOSAKU®



DOKODEMOSAKU®