



Machinery

Sales rose in the compressor business, primarily due to robust sales of non-standard compressors to our main customers, the electric power utility firms, and oil and gas companies. In addition, orders went up owing to large-scale projects in Taiwan. In standard compressors, solid growth was achieved for our leading products, including those in the energy-saving Kobelion series. The Company's industrial machinery business achieved a large increase in orders for tire and rubber production machinery in the United States and elsewhere, and large-scale orders were received for plastic mixing and pelletizing systems and isostatic presses. In our engineering businesses a large expansion of orders was achieved for direct reduction plants, an area in which the Company is strong, against the background of an upsurge in global demand for steel. Our Venezuelan companies operating direct reduction plants also posted increased sales. We also achieved dramatic growth in LNG equipment, reactors and other energy-related equipment on the back of rising demand for crude oil and natural gas.

In our environmental protection business, orders expanded for wastewater treatment equipment for the LCD industry and cooling tower equipment, with orders and sales rising year-on-year for glass lining equipment and mixers.

As a result of the above, Machinery Segment sales rose 15.6% to ¥226.8 billion, and operating income was ¥10.3 billion, a jump of 623.9% over the previous term.

■ Business Alliances

In April 2005 Kobe Steel and Kawasaki Heavy Industries, Ltd. transferred the production departments of their respective crushing equipment businesses to EarthTechnica Co., Ltd., a joint venture operated by the two companies that was already handling marketing and design. We integrated the production and marketing operations in order to achieve greater earning power.

■ Research and Development

The Company has succeeded in developing new tire testing equipment capable of accurately measuring tire conditions at speeds as high as 200 km/h, the fastest testing speeds in the world. Kobe Steel has developed a compact and sophisticated Horizontal Rutherford Backscattering Spectrometry device for use in nano-meter-level ultra-thin film analysis. In contracted research and development work, the Company is conducting verification tests on the utilization of rotary furnace technology to recover marketable metals.

In a joint research project with Kobe City in the

environment and energy field, we are refining sewage incineration gas to obtain methane that is nearly on a par with natural gas in terms of calorific value, and we have verified that methane gas has the potential to be used as automobile fuel. We are also jointly conducting verification tests with Nippon Steel on plasma melting methods in the field of PCB (polychlorinated biphenyl) treatment technology for the detoxification of contaminants. An evaluation of the technology by the Ministry of the Environment has been completed. An evaluation of the technology by the PCB disposal technology research and discussion committee of the Japan Industrial Waste Technology Center has been completed.

■ Overseas Business Development

In February 2004, the Company established Kobelco Compressors Manufacturing (Shanghai) Corporation to expand its standard compressor business in China. Production there began in April 2005. We intend to set up sales bases in China's major cities to energetically expand our business in that country's markets.

■ Non-standard compressor

We supply to global markets non-standard compressors with advanced features, such as high-pressure screw compressors with world-beating compression capacity, and natural gas collection/recycling screw compressors that do not exacerbate global warming.



In the field of isostatic presses, Kobe Steel was the first in Asia to receive the prestigious ASME U3 Certification for its ultra high-pressure vessels. With an unchallenged dominant share in the domestic market, the Company intends to expand sales further in American and other overseas markets.

In our iron unit business, we are promoting sales of the hot briquetted iron (HBI) produced at our Minorca and Comsigua direct reduction plants in Venezuela.

■ Outlook

In future compressor business activity, the Company intends to follow up on its success in non-standard compressors in the oil and gas field with efforts in the area of new sources of energy. The standard compressors business will strive to win more orders for its inverters such as the Kobelion series in Southeast Asia, China and other markets.

In industrial machinery, we will step up efforts to achieve expanded sales of our high-speed tire testing machines. In the polyethylene field, where demand has recovered, we will make an effort to secure orders for our plastic mixing and pelletizing systems. The Company will also aggressively pursue overseas expansion in isostatic presses and physical vapor deposition (PVD) systems. In the engineering business, we will focus on seeking orders for reduced iron production plants using the direct reduction method, which can use cheaper coal as a reductant. We

will also work to commercialize our next-generation ironmaking process, ITmk3®.

In addition, we will energetically seek new orders for energy-related equipment in the oil and natural gas industries, where demand is booming, and for air separation plants in steelmaking, where capital investment is increasing.

In the environmental protection field, relying on existing businesses with stable earnings as a pillar, we plan to move into new businesses such as the operation of a site for final disposal of waste materials (scheduled to begin in October 2005), and the recycling of polyvinyl chloride waste (scheduled to begin in April 2006).

With global demand growing for steel, the Iron Unit Division expects new sources of demand for its direct reduction plants, which can use cheaper coal as a reductant. Along with vigorous efforts to win orders, we are working to commercialize our next-generation ironmaking process, ITmk3®.*

*In the ITmk3® Process, pulverized iron ore and coal are formed into pellets and heated at a high temperature in a doughnut-shaped rotary hearth furnace. In as little as 10 minutes, the pellets are reduced into iron. When the pellets are melted, the slag separates leaving the iron. This compares with blast furnace ironmaking which takes about eight hours. The purity of the iron nuggets produced is on par with blast furnace pig iron (iron content of 96% to 98%). Kobe Steel's ITmk3 Process is used to produce high-purity iron nuggets. (For further details, please refer to page 9.)



(Photo) Iron nuggets made from the ITmk3 Process.

■ PVC recycling business

Kobelco Vinyloop® East Co., Ltd. and Shinko Environmental Solutions aim to commercialize polyvinyl chloride (PVC) recycling using the Vinyloop® Process developed by major Belgian chemical company Solvay S.A.



■ Tire uniformity machine

Kobe Steel has developed a high speed tire testing machine that accurately measures tire uniformity. With a maximum speed of 200km per hour, the machine is one of the world's fastest. The testing machine is anticipated to contribute to improved tire and automobile performance.

