

**Kawasaki  
Heavy  
Industries, Ltd.**

**ANNUAL REPORT 1998**

# Profile

Founded in 1878, Kawasaki Heavy Industries, Ltd. (KHI) is a leading comprehensive manufacturer of transportation equipment and industrial goods in the world. With a broad technological base that encompasses land, sea and air, KHI manufactures ships, rolling stock, aircraft and jet engines, refuse incinerators, industrial plants, steel structures and various manufacturing equipment and systems. KHI also produces such world-famous consumer products as Kawasaki brand motorcycles and Jet Ski® personal watercraft.

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**Cover:**

XOH-1 No.2, a prototype of OH-1 light observation helicopter. A total of four XOH-1s were delivered to the Japan Defense Agency between May and August 1997.

Received the Howard Hughes Award.

# Financial Highlights

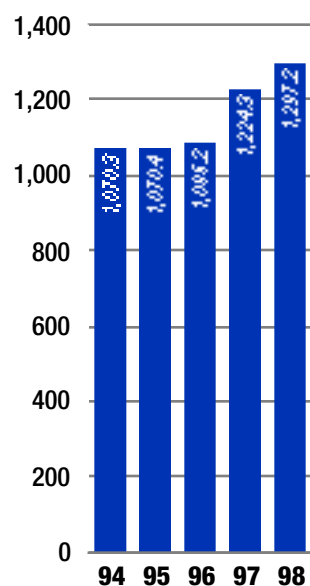
Kawasaki Heavy Industries, Ltd. and consolidated subsidiaries  
Years ended March 31, 1998, 1997 and 1996

	Millions of yen			Thousands of U.S. dollars
	1998	1997	1996	1998
<b>For the year:</b>				
Net sales	<b>¥1,297,212</b>	¥1,224,259	¥1,086,244	<b>\$9,819,924</b>
Net income	<b>18,556</b>	22,572	16,462	<b>140,469</b>
Capital expenditure	<b>42,928</b>	35,130	39,319	<b>324,966</b>
Depreciation and amortization	<b>32,416</b>	31,245	30,823	<b>245,390</b>
<b>At year-end:</b>				
Total assets	<b>1,222,906</b>	1,303,168	1,252,371	<b>9,257,426</b>
Total shareholders' equity	<b>209,040</b>	197,161	162,984	<b>1,582,437</b>
Interest-bearing debt	<b>437,387</b>	447,210	441,437	<b>3,311,029</b>
<b>Per share amounts (yen and U.S. dollars):</b>				
Net income	<b>¥13.3</b>	¥16.4	¥12.2	<b>\$0.10</b>
Cash dividends	<b>6.0</b>	7.0	5.5	<b>0.05</b>

Note: The U.S. dollar amounts represent arithmetical results of translating Japanese yen to dollars on the basis of ¥132.10=\$1, the rate prevailing as of March 31, 1998. These translations are solely for the convenience of the readers.

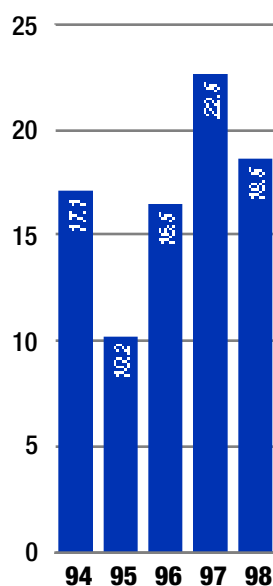
## NET SALES

(Billions of yen)



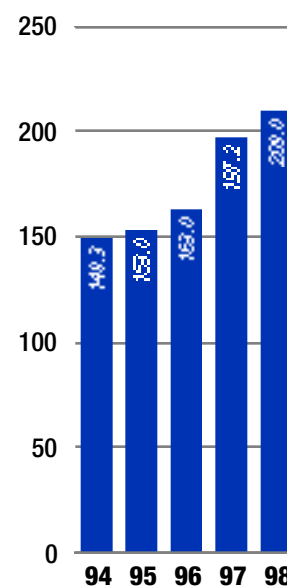
## NET INCOME

(Billions of yen)



## TOTAL SHAREHOLDERS' EQUITY

(Billions of yen)



# To Our Shareholders

We are pleased to report on the business results of Kawasaki Heavy Industries, Ltd. (the “Company”) and its consolidated subsidiaries (collectively, with the Company, “KHI”) for the fiscal year ended March 31, 1998 (“fiscal 1998”).

## **OPERATING RESULTS**

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During fiscal 1998, the stagnation of the Japanese economy became more pronounced. Public-sector investment declined, as did consumer spending, with worries continuing over the Japanese financial system and other aspects of the economy. Overseas, the picture was mixed. While the U.S. economy continued its expansion and the major European economies enjoyed modest growth, Asian countries such as Thailand, Indonesia and South Korea suffered severe downturns.

In spite of the adverse management environment, KHI was successful in developing overall operations. An increase in net sales was accounted for primarily by higher sales in the Transportation Equipment and Aerospace segments, which more than offset a decrease in sales of the Industrial Equipment segment that resulted from a decline in public-sector investment.

KHI's net sales for fiscal 1998 totaled ¥1,297.2 billion, an increase of 6% over fiscal 1997.

Despite vigorous company-wide measures to improve profitability, the profit for fiscal 1998 was less than that for fiscal 1997. A drop in operating income was caused substantially by the lower profitability of large-scale contracts for rolling stock with U.S. customers and the above-mentioned decrease in sales of Industrial Equipment. Operating income was ¥51.1 billion. Net income was ¥18.6 billion.

In keeping with the Company's policy of stable dividends, the total cash dividend for fiscal 1998 was ¥6.0 per share.

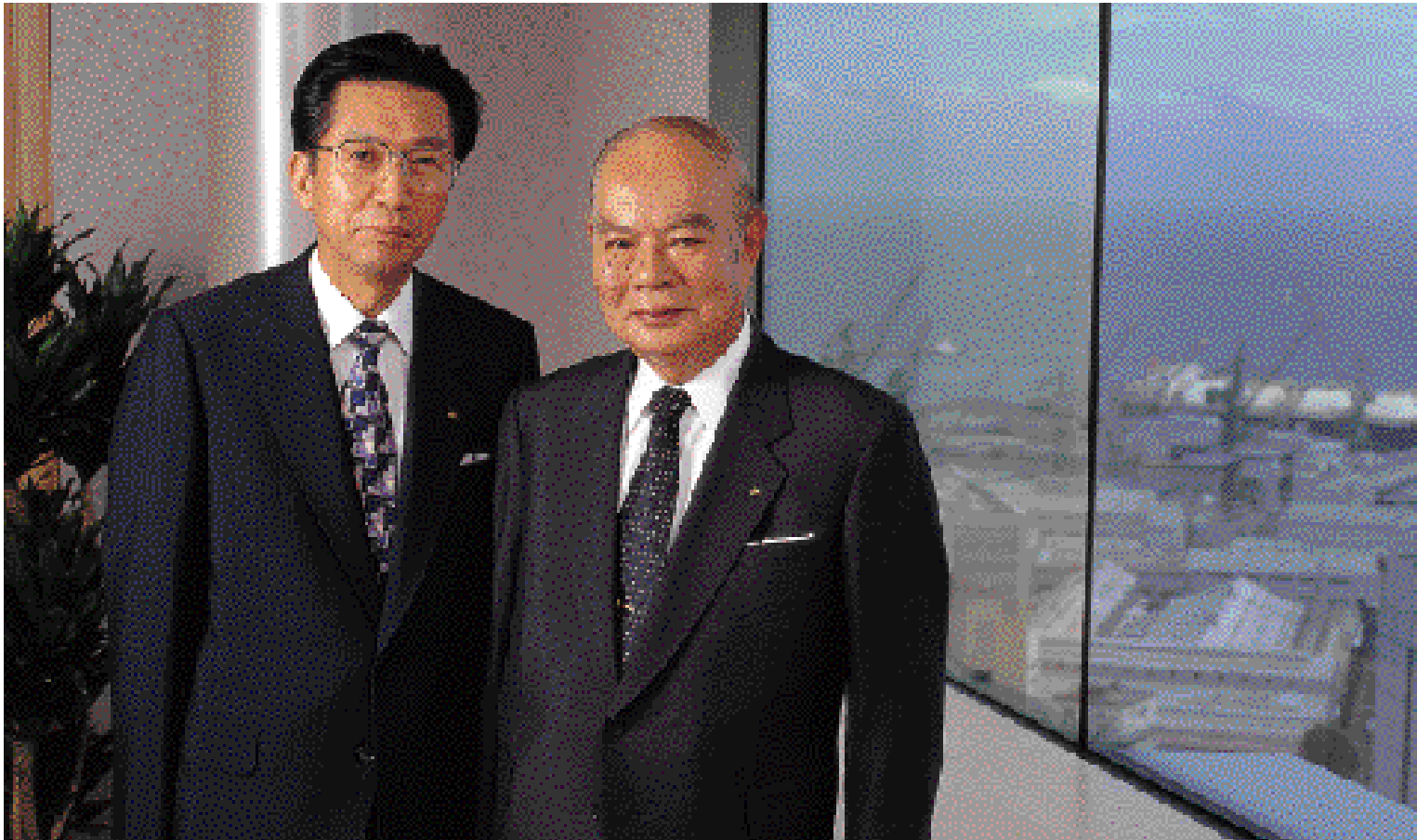
In line with the recent international movement toward the standardization of accounting policies, KHI made a major change in its accounting policy for recognition of revenue deriving from large-scale and long-term construction contracts by substituting the percentage-of-completion method for the completed-contract method. KHI believes that this change increases transparency and more accurately represents operational performance.

## **OUTLOOK**

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In Japan, we anticipate a long-term slump in personal consumption and declines in both public and private investment. These factors will put further downward pressure on wholesale prices and raise the unemployment level. Adding in the problem of non-performing loans held by Japanese financial institutions, we foresee a worsening of the present recession. We are hopeful that the government will take measures to improve the general economy, but it is difficult to make predictions in this area.

Overseas, there are some fears that the U.S. economy may be overheating, although it continues to perform well. The economies of Europe are in a recovery phase, and the imminent currency unification may act as a further spur. In Asia, the confusion that arose from currency instability and the consequent economic stagnation will continue for some time.



**Toshio Kamei**  
*President*

**Dr. Hiroshi Ohba**  
*Chairman and CEO*

### **ACTIVE RESPONSE**

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With increased trade liberalization, the world economy is rapidly becoming borderless, a development that means intensified price competition on a global scale. In the face of this extremely severe situation, KHI is energetically promoting its corporate policies with a view to ensuring its prosperity as a global enterprise in the next century.

### **Creating and Expanding New Business Fields**

We are now creating and nurturing the operations that will form the nucleus of our business in the coming century. Toward that end, we will proceed priority investment of corporate resources in fields where we anticipate significant growth. We will also plan development strategies that harmonize precisely with market needs, while achieving a fusion of planning, sales and technology. We are also promoting effective technological development. In the fields of electric

power generation, environmental recycling, and transportation, where our objective is to create new operations, we want to combine technology and know-how on a company-wide basis to achieve a quick and steady expansion of our business activities.

### **Comprehensive Systems Engineering Enterprise**

We are determined to promote our development as a comprehensive systems engineering enterprise. There is a growing trend on the part of our clients in Japan and overseas toward proposals for en-bloc system orders. In responding to these proposals, we must incorporate related products within a systems engineering structure so that the whole is greater than the sum of the parts.

In the environmental field, we are promoting total system operations comprising pulverization, incineration, power generation, exhaust-gas processing, ash melting, and recycling. In the transportation field, we are pursuing total traffic control systems which include track, signals, maintenance depots and total operational control systems as well as rolling stock.

### **Big Reduction in Costs**

We are making strong efforts to reduce costs at least in line with the decline in market prices. In addition to conventional cost-reduction measures, we must reassess our design philosophy from the ground up, and that involves a change in conceptual thinking. Based on a full analysis of what our customers truly need, we will design products that eliminate waste and increase efficiency at minimum cost. The result will be a

further reduction in overall production costs. Another goal is an increase in the efficiency of the back office and administrative functions.

### **Globalization of Operations**

Another priority is further globalization in operational development. In order to strengthen its international competitiveness, KHI will adopt a multi-faceted approach to overseas markets, including business expansion in new international markets, overseas production and procurement, and tie-ups with overseas companies.

In fiscal 1997, in China, we entered into joint ventures for the production of marine hydraulic machinery in Wunan and for the creation of a shipbuilding operation in Nantong. We followed up these moves with the startup of a joint venture on Hainan Island for the production of engines for motorcycles and a venture for steel structures in Shanghai. In Southeast Asia, KHI assumed control of the motorcycle manufacturing and sales operations of a company in Thailand, establishing a new company over which KHI has operational control.

In the United States, we received an order for 400 next-generation subway cars from the New York City Transit Authority. Production of the cars will be undertaken concurrently at the Hyogo Works in Japan and the Yonkers Plant in the United States. Delivery is scheduled for the year 2000.

# Outline of Kawasaki Global Operations

## Move to International Standards

KHI is shifting its management focus in the direction of a greater emphasis on consolidated results and efficient use of shareholder capital. Given the rapid globalization of the financial and capital markets, our operations must be based on global standards. KHI will endeavor to maximize consolidated return on capital through more efficient management of its assets and liabilities, while strengthening the competitiveness and profitability of the entire KHI Group, including subsidiaries and affiliates. The change in accounting policies described earlier represents a move in this direction, as it is aimed at increasing the transparency of financial disclosures.

Through the measures outlined above and the realization of a corporate culture marked by creativity and vitality, KHI is committed across the board to positively addressing and overcoming the challenges posed by the adverse operating environment.

Meanwhile, we request the continued understanding and support of our shareholders and associates.

June 1998



Dr. Hiroshi Ohba  
Chairman and CEO



Toshio Kamei  
President

## TRANSPORTATION EQUIPMENT

**Ships**

**Rolling Stock**

**Consumer Products**

## AEROSPACE

**Aerospace**

## INDUSTRIAL EQUIPMENT

**Machinery,  
Environment &  
Power Plants**

**Plant Engineering &  
Steel Structures**

## OTHER

# SHIPS

With shipbuilding experience dating back to its founding in 1878, KHI is one of the leading players in the global market for marine transportation equipment. The Company's long tradition of innovation for over a century continues full speed ahead at its shipbuilding facilities in Sakaide and Kobe, where engineers are hard at work developing the vessels of tomorrow.

Backed up by superb engineering know-how and advanced shipping technologies, KHI has been focusing on building sophisticated, high-value-added vessels. In particular, the Company's gas carriers such as LNG carriers and LPG carriers enjoy a distinguished reputation worldwide. In fact, Japan's first LNG carrier was built at the Sakaide Works, KHI's main shipbuilding facility, in 1981. Advances in design concepts are also being fully utilized for high-speed container ships and double-hull VLCCs (very large crude-oil carriers).

Smaller, special-purpose vessels are another important feature of KHI's shipbuilding accomplishments. The Company is proud of its specialized technologies, as applied to the ultrahigh-speed Kawasaki Jetfoil, a passenger craft impervious to rough weather, and the aluminum-alloy Kawasaki Jet Piercer, a high-speed car ferry—both of which are produced at the Kobe Works. High-tech submarines for the Japan Defense Agency are also produced at this site.

In regards to overseas activities, KHI has established a joint venture company in China to build new ships, which, in addition to the Sakaide Works and Kobe Works, will serve as a third facility for the further globalization of the Company's shipbuilding operations. As an internationally recognized leader in the field, KHI seeks to provide quality ships with leading-edge technologies in the 21st century.

## MAIN PRODUCTS

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- LNG carriers
- LPG carriers
- Container ships
- VLCCs and other types of tankers
- Bulk carriers
- High-speed vessels (Jetfoils, Jet Piercers)
- Submarines
- Maritime application equipment



### Submarine *OYASHIO*

Features state-of-the-art submarine technology, including advanced underwater search and stealth anti-detection capabilities. Delivered to the Japan Defense Agency.



# Transportation Equipment

## **IZU Large-scale Patrol Vessel**

Delivered to the Maritime Safety Agency for use as a command vessel in sea rescue operations.

Features include a helicopter platform, self-propelled underwater monitor TV system and a unique system for supply loading.



IZU Large-scale Patrol Vessel



## **LPG Carrier *Fountain River***

Delivered to Kawasaki Kisen Kaisha, Ltd., this 79,200m<sup>3</sup> LPG carrier is highly energy-efficient, due to its economic diesel engine and low-propulsion resistance design.

# ROLLING STOCK

Since beginning production of rolling stock for domestic railways in 1906, KHI has been the driving force behind Japan's mass transportation network.

KHI covers the full spectrum of rail-based transport—from electric locomotives and freight cars to the high-speed Shinkansen and rapid transit systems. This breadth of expertise has positioned us as the largest producer of rolling stock in Japan, with the top share of contracts for the Japan Railways (JR) Group. A manufacturing base in the United States insures the ability to respond to overseas business demand in North America, for example, as a main producer of subway cars for New York City along with commuter trains for the surrounding metropolitan areas.

The Shinkansen bullet train—legendary for its speed, safety and comfort—remains a mainstay of our domestic business. Research into aerodynamics accumulated by the Company's Aerospace operations has been successfully applied to Shinkansen development to attain ever-higher speeds. Supported by its technological superiority, KHI has been involved in all recent JR projects to develop new types of Shinkansen. Exemplifying its accomplishments are: Series 500, the latest *Nozomi* bullet train built for JR West in 1996, which runs at 300 kph, the fastest operating speed in Japan; Series E-2 the *Asama* bullet train produced for JR East, which made its debut in time for the 1998 Winter Olympic Games; and, Series 700 and E4 as illustrated here.

In response to increasing environmental challenges, railways are being reevaluated as an energy-saving mode of mass transit. Recognizing the need to meet the diversified needs of customers worldwide while contributing to environmental solutions, KHI is undertaking the systematic streamlining of operations to achieve greater speeds, safety, cost and energy efficiency in overland transportation.

## MAIN PRODUCTS

- Electric cars (including Shinkansen)
- Electric and diesel locomotives
- Passenger coaches
- Integrated transit systems
- Monorail cars
- Platform screen doors

### Series 700 Shinkansen Bullet Train

Delivered to JR Central, this train has advanced features that reduce the effect of changes in air pressure and minimize cabin noise, thereby enhancing passenger comfort.



# Transportation Equipment

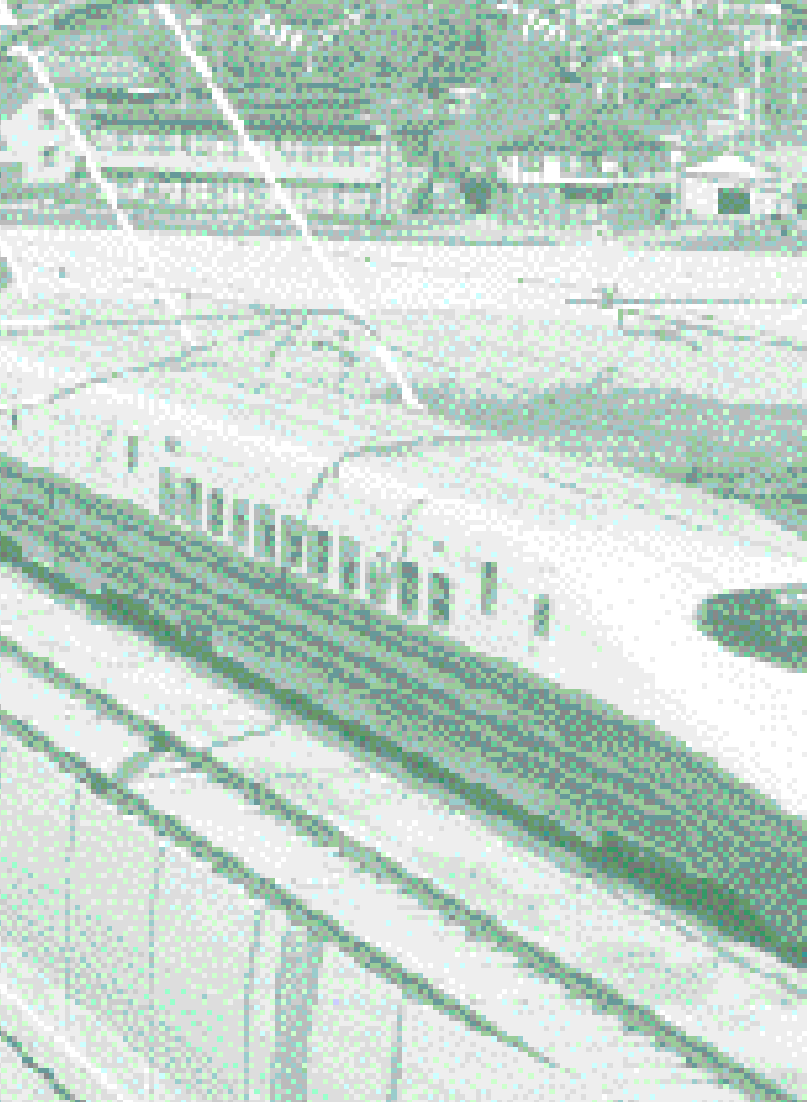


## **Series 5000 Sapporo Municipal Subway Train**

Developed specially for the Sapporo Municipal Subway Nanboku Line, this subway train has a range of features that enhance passenger comfort, including electronic display panels, extra doors and an attractive appearance.

## **Series E4 Shinkansen Bullet Train**

Delivered to JR East, this bi-level train operates with 16 cars, the world's largest transportation capacity. Streamlined front design significantly reduces wind noise.





# CONSUMER PRODUCTS

Since starting overseas production in the U.S. in 1974—the first Japanese manufacturer of motor vehicles to do so—KHI has distinguished itself by producing such world-famous consumer products as the Kawasaki brand motorcycle and Jet Ski® personal watercraft.

Today, the Company has grown to encompass over 6,000 dealerships and 16 manufacturing sites around the world. These include the Lincoln plant in Nebraska, KHI's first overseas plant, which manufactures motorcycles, Jet Ski® watercraft, and ATVs (all-terrain vehicles) destined for Europe and the Americas.

KHI offers an impressive lineup of motorcycles, from 50cc to 1,500cc, with medium- and large-size premium bikes such as the Ninja and Vulcan series. By remaining keenly attuned to the needs and wants of customers around the world, the name Kawasaki has become a trusted household word.

KHI was the first to commercialize the Jet Ski® some two decades ago and has been fostering the demand for personal watercraft ever since. Jet Ski® has found a significant market niche in the United States, where it created a whole new category of marine sports, and the machine is now gaining fans elsewhere in the world.

The Company's diverse range of consumer products also includes multipurpose ATVs, utility vehicles with fat tires, known as MULE, and a full line of portable generators ranging from 1,000 watts to 5,000 watts.

In the future, KHI will expand its consumer products business in Southeast Asia, adding this market to its "Big Three" comprising Japan, America and Europe.

## MAIN PRODUCTS

- Motorcycles
- All-terrain vehicles (ATVs)
- Jet Ski® personal watercraft
- General-purpose gasoline engines
- Brush cutters
- Transmissions



### Jet Ski® 1100STX

The superior control of the Jet Ski® 1100STX, which can accommodate up to three people, offers an exciting and comfortable ride while adding a whole new dimension to marine leisure craft.

## ***Transportation Equipment***



### **Kawasaki Motorcycle "NINJA ZX-9R"**

This 900cc road sports model is supreme in its class, and has enhanced maneuverability to provide driving comfort under a wide range of conditions.

### **Kawasaki Motorcycle "VULCAN NOMAD"**

Based on the renowned "VULCAN 1500," the "VULCAN NOMAD" has a host of accessories that make it the last word in luxury motorcycle tourers.



# AEROSPACE

As a manufacturer of such exacting machines as airplanes, jet engines and avionics systems, KHI has been the main thrust behind Japan's aerospace industry. Further growth of this industry is widely anticipated given the expanding global market for advanced aircraft and system technologies.

In the area of civil aviation, for more than two decades KHI has participated in international projects in conjunction with major industry players. In particular, the Company supplies component parts for the B777 and B767 passenger airplanes developed jointly with The Boeing Company of the United States. KHI also develops and manufactures helicopters, such as the twin-engine BK117, Japan's first domestically developed helicopter produced in cooperation with MBB (currently Eurocopter Deutschland GmbH) in Germany. In order to make this helicopter more responsive to customer needs, the Company is working on a range of advanced systems, including a global positioning system (GPS) and an active vibration reduction (AVR) system, among others.

In the defense sector, KHI has played a prominent role as the prime contractor in the development and manufacture of the T-4 intermediate jet trainer as well as the manufacture of the P-3C anti-submarine warfare patrol airplane and the CH-47J large transport helicopter. Also, as the prime contractor, the Company has recently developed the OH-1, a new light observation helicopter for the Japan Defense Agency. Last year, four prototype models were delivered and currently KHI is manufacturing the OH-1, with delivery expected to commence in 2000.

In the jet engine business, thanks to the recent increase in demand in the civil aircraft market, the number of international orders is steadily growing. The current product line includes the V2500 turbo-fan engine for mid-sized passenger aircraft and the RB211/TRENT and PW4000 turbo-fan engines for larger-sized passenger airplanes.

Looking forward, KHI will continue to strive to improve production cost efficiencies while building upon its technological expertise, with a view to competing in the growing international market for aerospace equipment.

## MAIN PRODUCTS

- P-3C anti-submarine warfare patrol airplanes
- T-4 intermediate jet trainers
- CH-47, OH-1 and BK117 helicopters
- Component parts for B777 and B767 passenger airplanes
- Missiles
- Electronic equipment
- Space equipment
- Jet engines
- Gas turbines



Photo provided by The Boeing Company

### B777-300 Passenger Airplane

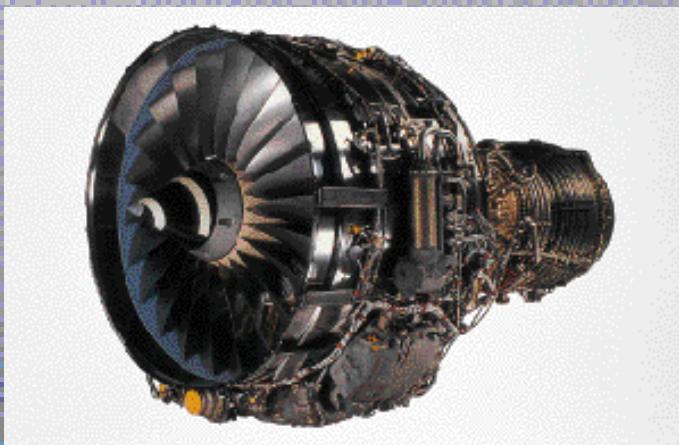
KHI participated in the development and manufacture of this model. The plane has a maximum seating capacity of 550. Boeing commenced delivery to customers in May 1998.

# Aerospace



## **UP-3D Electronic Warfare Training Support Aircraft**

The UP-3D, a derivative model of the P-3C, creates electronic warfare environments such as radar-jamming.



## **V2500 Turbo-fan Engine**

Manufactured under an international joint development project, these engines offer low emissions and excellent fuel economy as well as high reliability and ease of maintenance.



# MACHINERY, ENVIRONMENT & POWER PLANTS

Highly acclaimed for their performance and efficiency, KHI's gas turbines are employed in a wide range of power-generation systems, from industrial facilities to emergency generators for commercial customers.

Of particular note is a combined cycle power plant (CCPP), manufactured in cooperation with Asea Brown Boveri AG of Switzerland, which generates electricity by combining turbines powered by both natural gas or fuel oil and the steam produced by waste heat. Last year, KHI built an innovative CCPP in China with blast furnace gas firing turbine. Strong sales of this CCPP are foreseen, given the ever-increasing demand for environmental-friendly and energy-efficient power plants worldwide.

The environment is unquestionably a top priority at KHI, which has a variety of products for waste and sewage treatment. As a principle manufacturer of more than 140 city refuse incineration plants in Japan, in 1997, KHI delivered the largest domestic plant in disposal capacity for Nagoya City. At present, the Company is developing an incineration plant based on the next-generation technology of gasification. With the implementation of full-scale operations, this plant will greatly reduce the volume of burnt ash and its accompanying emissions, while yielding clean power. R&D activities in this field will continue to be upgraded, with engineering efforts concentrating on the design of new, ecologically sound methods for the treatment and recycling of city refuse and industrial waste.

Industrial hydraulic equipment and construction machinery are another focus for the Company. Already acknowledged as a top global producer of hydraulic equipment, KHI is boosting its overseas production in the United Kingdom. At the same time, the Company is stepping up efforts at its U.S. manufacturing base related to the production of wheel loaders.

## MAIN PRODUCTS

- Power plants
- Aero-derived gas-turbine engines for naval vessels
- Diesel engines
- Medium-sized gas turbines for standby and cogeneration systems
- Municipal refuse incineration plants
- Boilers
- Crushing machinery
- Various types of industrial hydraulic equipment
- Wheel loaders

### CCPP for Baoshan Iron & Steel Corporation, China

Delivered to the largest steel maker in China, this is the first of its kind to operate using only blast furnace gas with low calorific value. Achieved 150,000kW output, a record in power plants using blast furnace gas.

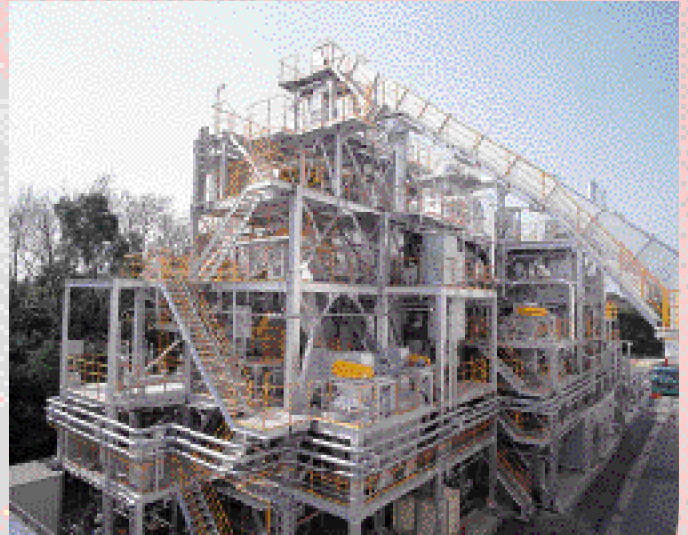




# Industrial Equipment

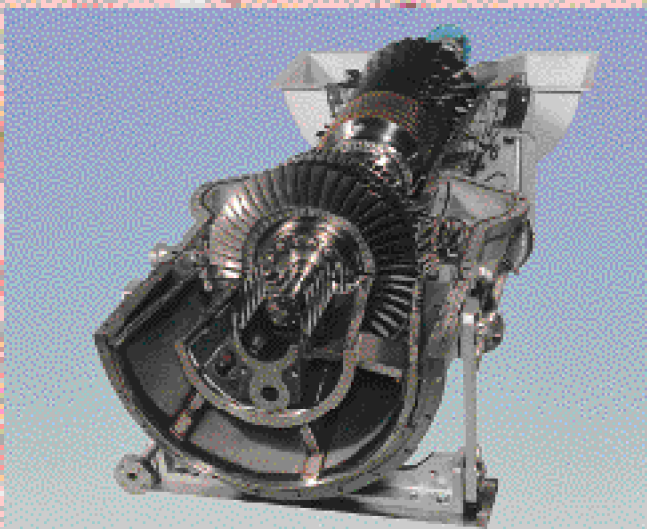
## Gasifying Melting Incineration System

KHI has reached the final stage in the development of a gasifying melting incineration system for next-generation refuse incinerators. In April 1998, operations were initiated at a pilot plant in Sodegaura, Chiba Prefecture.



## M7A-02 Gas Turbine

KHI has developed and launched a M7A-02 7,000kW-class gas turbine engine, completing a low-cost, compact, standardized cogeneration package. The turbine's advanced technology delivers best-in-class electric efficiency and dry low emissions of NO<sub>x</sub> and CO.



# PLANT ENGINEERING & STEEL STRUCTURES

KHI is one of the world's foremost engineering experts involving a diversity of plant projects, including the construction of steel, cement, chemical and other industrial plants. The Company is also engaged in the design and fabrication of steel superstructures essential in bridges, tunnels and other large-scale public-works projects.

In particular, its technical expertise in steel and cement plant engineering is one of the highest in the world, and has been adopted in plants everywhere. KHI's shield machines and tunnel boring machines (TBMs) stand out in quality and reliability. The legendary high-performance of the TBMs used during the building of the Eurotunnel under the Straits of Dover is renowned throughout the industry.

KHI has participated in numerous domestic megaprojects, including the *Akashi Kaikyo Bridge*, the world's longest suspension bridge; the Trans-Tokyo Bay Highway Bridge, built with superbox girders and world-class shield machines with diameters of 14.14 meters; and, Kansai International Airport, a state-of-the-art facility featuring baggage handling and cargo handling systems. The Company is proud to be a major contributor to the accomplishment of such technological feats.

In addition, KHI is working to provide products designed to further rationalize and automate every stage of production, processing and distribution systems, encompassing a broad array of industrial robots.

The Company will continue to develop new technologies and extend its know-how in the construction of various plants worldwide. At the same time, KHI will promote the globalization of its scope of operations while utilizing across-the-board technologies in order to develop new products and areas of business.

## MAIN PRODUCTS

- Steelmaking, cement, chemical and other industrial plants
- Shield machines and tunnel boring machines
- Bridges
- LNG and LPG tanks
- Penstocks
- Watergates
- Airport facilities
- Steel frames
- Factory automation systems
- Industrial robots



### **Akashi Kaikyo Bridge**

With an effective length of 3,911 meters, this is the longest suspension bridge in the world. KHI constructed the main tower on the Awajishima side and produced the stiffening girders. Opened in April 1998.

## **Industrial Equipment**



### **Flue Gas Desulfurization Unit for Shikoku Electric Power Co., Inc.**

This facility, constructed at the Anan Power Plant, reduces sulfur oxide emissions and recovers gypsum as a by-product. Economy and efficiency of operations have been achieved by means of an advanced operation control system.



### **PC Based Controller for Industrial Robots**

KHI has developed and launched a PC based controller for industrial robots. Using Windows® NT as a base operating system, this controller directs and monitors the operation of robots and gathers information on daily operations. System also allows for enhanced maneuverability.