

# Tire Group

## THE YEAR AT A GLANCE

Although sales volumes expanded in Asian countries (excluding Japan) and the Middle East, demand was stagnant in Japan and other areas. As a result, sales of the Tire Group fell 2.4% from the previous year, to ¥273,088 million.

## RESULTS IN JAPAN

### Stagnant OE Tire Sales

Sales of tires on an original equipment (OE) basis fell in Japan from a year earlier. Yokohama strove to expand these sales by reducing tire weight and unifying specifications under its value analysis and value engineering promotion program. However, the number of new cars manufactured in Japan declined 0.4% year-on-year, to 9.3 million units. In addition, consumer spending remained weak and prices fell.

In the replacement tires market, we actively released new products adopting our distinctive technologies. For example, we introduced a new-generation sports tire—the DNA GRANDPRIX—which features superior driving performance and fuel efficiency, as well as the GUARDEX K2 F720 studless tire with enhanced braking capabilities on icy-surface roads. These and other new products emphasize Yokohama Rubber's unique features, and have been highly evaluated in the marketplace. We also enhanced management rationalization at our sales companies by integrating directly controlled tire sales companies, in order to reduce the number of such companies from 29 to 26. As a result, sales of replacement tires expanded despite stagnant consumer spending, and we were able to increase our market share.



*We pursued environmental performance in the DNA GRANDPRIX, a low-noise sports tire that also helps improve fuel consumption.*



*At trials for the A539 at D-PARC, a tire test course in Japan, 29 motor journalists attended from nine European countries.*

## Enhancing the Tire Business

As part of the Action 21 management plan, Yokohama implemented a variety of measures to reinforce its tire business during the fiscal year. In the autumn of 1999, we started operation of our integrated logistics system. Our plan is to create on-line links between three tire plants in Japan, seven distribution centers, and some 370 dealerships to improve distribution efficiency and shorten delivery times, and thereby improve customer satisfaction levels while reducing inventories. Currently, this system is in use at the Mishima and Shinshiro plants, and we plan to implement the system at the Mie Plant by the autumn of 2000. When fully implemented, we intend to utilize the system to reduce inventories at sales companies to 60% of previous levels by the end of fiscal 2001.

In addition, we will suspend production of bias tires for trucks and buses at our Hiratsuka Factory in March 2001, as these products have proven unprofitable. To improve production efficiency, we decided instead to concentrate production of radial tires for trucks and buses at the Mie Plant by May 2002.

We are currently developing the NMS (New Manufacturing System), a new tire production method designed to accelerate our multiple-product, small-lot production.



*In the period under review, YTC greatly expanded its sales volume to independent dealers in the United States and achieved profitability. Pictured is the head office of YTC.*

## RESULTS IN NORTH AMERICA

### YTC Returns to Profitability

In fiscal 2000, Yokohama Tire Corporation (YTC) concentrated on expanding sales to independent dealers. We also expanded production of tires for sports-utility vehicles (SUVs) and other full-size vehicles that are popular in the United States to promote a high-value-added product mix. In addition, we were successful in reducing production costs and improving distribution efficiency. As a result, YTC exceeded expectations by recording a net profit of U.S.\$1.4 million despite a slight fall in sales volume. In the coming year, we will release a number of new products, including tires for passenger cars and light trucks, and further enhance sales to independent dealers.



the Philippines. The company also began full-scale production of 5,200 units per day. These achievements helped the company turn a profit only one year after it began production in January 1998.

Yokohama Tyre Vietnam started production of motorcycle tires in 1998, and the company enhanced its product line by expanding the number of sizes it handles, and by introducing new tread patterns. The company has established a firm position as a high-value-added brand in the Vietnamese market. In September 1999, Yokohama Tyre Vietnam began delivering tires to Japanese motorcycle makers. In addition, in December 1999 it initiated the production and sales of bias tires for light trucks.

## RESULTS IN ASIA



*Yokohama Tire Philippines recorded favorable business results during the year.*

### **Production Activities in the Philippines and Vietnam**

Both unit- and value-based sales expanded substantially in Asia (excluding Japan), thanks to a recovery in demand.

Yokohama Tire Philippines, which serves as an export base for passenger car tires, expanded shipments to Europe, the Middle East and Asia while enhancing sales in the Philippines. The number of OE customers rose, mainly owing to an increase in orders from Japanese automakers in



*Yokohama has been the official tire supplier for the Macau F3 Grand Prix for 17 consecutive years. In fiscal 2000, our tires were selected for the first F3 Korea Grand Prix.*

## Operations Expand in East Asia

In Taiwan, we established a sales company in 1996 to begin expanding our presence in the marketplace. In the year under review, we also worked to expand sales in the Republic of Korea (ROK), following that country's liberalization of passenger car tire imports in July 1999. We supplied one-make tires at the Korea Grand Prix in November 1999 and began selling passenger car tires in April 2000.

## RESULTS IN EUROPE AND OTHER REGIONS

Our operations in Europe center on exports, mainly of high-performance and other passenger car tires from Japan and the Philippines. Sales to this region were down in fiscal 2000. We released two new high-performance tires—the AVS SPORTS and A539—to actively promote the superior driving performance of Yokohama tires in the European market, where performance requirements are stringent. We aim to sell a total of 900,000 units per year of our two new products and obtain a 5% market share in the high-performance tire market. In the future, we plan to implement our integrated logistics system to link

sales subsidiaries in Europe, global distribution bases and operations in Japan in order to manage these sales companies more efficiently. We are also building a system to provide products in a timely manner and in accordance with customer needs.

Our sales in the Middle East are also covered by exports from Japan, and our primary products for this market are passenger car tires and tires for trucks and buses. During fiscal 2000, unit-based sales expanded significantly, but decreased in value terms owing to intense price competition.



*Our A038 LTS was chosen by Lotus of the United Kingdom as the standard tire for the Lotus Elise 340R, a high-performance sports car.*



*The A539, developed in consideration of stringent customer demands, is a high-performance tire with enhanced wet grip and reduced running noise.*

## REVIEW OF OPERATIONS

# MB Group

### THE YEAR AT A GLANCE

In Japan, although stagnant private-sector capital investment and slow consumer spending adversely affected Yokohama's multiple business (MB) operations, the Company managed to increase sales of hydraulic hoses, antiseismic rubber bearings and golf products. However, our sales of sealants, conveyor belts, marine hoses and fenders declined from the previous year. As a result, sales fell 1.7%, to ¥119,105 million.

### HAMATITE® PRODUCTS

Our HAMATITE® sealants for buildings maintained their top share of the Japanese market in fiscal 2000. In addition, we maintained about half of the domestic market for windshield sealants, which we deliver on an OE basis to automakers. In fiscal 2000, we released a variety of new products, including MILEX-Z, a highly durable sealant for construction use. Nevertheless, sales slipped from the previous year.

### HOSES

Yokohama holds the top domestic market share for hydraulic hoses. Low-displacement cars sold well in Japan during the year, allowing us to expand sales of car steering and air conditioning hoses. In addition, we continued to integrate our operations with Yokohama Hydrex, which assembles hoses with couplings before their sale. These efforts contributed to improved profitability.



*Yokohama hydraulic hoses keep construction machinery running.*

*Many of Japan's best-known buildings incorporate Yokohama's sealants for construction use. Some examples are the Yokohama Grand Intercontinental Hotel (right), Queen's Square Yokohama (center) and the Landmark Tower Plaza (left).*

## MARINE HOSES AND FENDERS

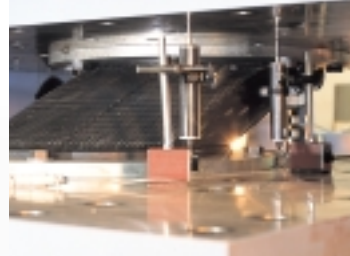
Marine hoses and fenders, which Yokohama primarily exports, make use of the Company's distinctive technologies and enjoy a high market share worldwide. During the year under review, we strove to expand our market share by releasing new products. However, due to weakened purchasing power in the oil industry, the result of lower crude oil prices in the first half of the year, as well as the appreciation of the yen, sales of these two products fell year on year.

## ANTISEISMIC RUBBER BEARINGS

In fiscal 2000, to enhance our lineup of antiseismic products we developed a viscoelastic damper for high-rise buildings utilizing high-attenuation rubber for antiseismic rubber materials. Thanks in

part to an increase in public expenditure, sales of antiseismic rubber bearings for bridges rose.

However, sales of antiseismic rubber bearings for buildings fell year-on-year, owing to lower prices and a decrease in the number of construction projects utilizing this product.



*Our antiseismic rubber bearings provide excellent antiseismic performance to rapidly counter the effects of earthquakes.*



## GOLF PRODUCTS

Although the golf market continued to contract during the year, the Titan Wood H/S Series and Iron 800 Series, released under the PRGR brand name, sold well, and Yokohama's overall sales of golf products rose.



*Our ZOOM.c, a utility club categorized between a wood and an iron, makes it easier for golfers at any skill level to achieve good shots in the 200-yard range.*

## AIRCRAFT COMPONENTS

Sales of metal components, and lavatory modules and drinking water tanks delivered to The Boeing Company of the United States were steady. As a result, sales in this category were the same level as in fiscal 1999.



*Yokohama's lavatory modules for Boeing are made with our Advanced Composite Material to achieve high strength at a low weight.*



*Following its winning of hose orders from Ford, SAS Rubber of the United States has begun accepting orders from DaimlerChrysler.*

## OVERSEAS PRODUCTION

In fiscal 2000, U.S.-based SAS Rubber Company began delivering automobile hoses to DaimlerChrysler via an assembly company, following the same practice we use to supply hoses to Ford Motor Company. In addition to assembling automobile hose and couplings, YH America started handling windshield sealants last year. These operations got off on the right track, as the company expanded production, mainly for Japanese automakers.

Yokohama Rubber (Thailand) Co., Ltd. produces windshield sealants, and also assembles automobile hose and couplings. Sales rose steadily in line with the recovery in automobile production volumes in Thailand. In addition, this company began to deliver hydraulic hoses to Japanese construction equipment makers. In order to prepare for future expansion of its windshield sealants production capabilities, Yokohama Rubber (Thailand) is constructing a new building scheduled for completion by autumn 2000.

# INNOVATIVE RESEARCH AND DEVELOPMENT



In its continuing development of new technologies, Yokohama's goals are enhancing product performance, ensuring low costs, conserving energy and preserving the environment. In particular, we have striven to develop new and composite materials. Following is an outline of our recent activities in these fields.

## **SILICA SURFACE-TREATED CARBON BLACK IMPROVES FUEL CONSUMPTION**

In conventional tires, it is difficult to provide both efficient fuel consumption and a strong grip. However, tires containing silica provide a solution to this trade-off. Combining silica with rubber is difficult, as processing is complex and costly. In 1998, Yokohama announced its successful development of silica surface-treated carbon black, a production method that makes it possible to chemically combine silica on carbon surfaces before compounding with rubber. This technology substantially improves the compounding process, requiring less silica than conventional methods while delivering high performance, which in turn helps keep down production costs. Furthermore, tires made with this compounded rubber help lower vehicle fuel consumption while improving grip. Because the relative strength of the compound is higher than that of conventional rubber, anti-abrasion features are also improved. In fiscal 2000, Yokohama employed this technology in its new DNA GRANDPRIX high-performance sports tires, which offer enhanced fuel consumption efficiency.

## **MICRO BALLOON-CONTAINED RUBBER TO ENHANCE DRIVING PERFORMANCE ON ICY-SURFACE ROADS**

In 1998, Yokohama developed micro-balloon-contained rubber, a new compound that substantially improves studless tire grip on icy-surface roads. This new compound contains bubbles covered by resin shells of about 100 $\mu$ m in diameter. When the material comes into contact with icy-surface roads, the bubbles break, forming cavities that absorb the film of water that often causes slippage. This water is expelled via the rotation of the tire. We applied this material in our new GUARDEX K2 F720 studless tire to achieve an improvement in braking performance of approximately 15% from conventional products.



#### **YOKOHAMA ADVANCED LINER REDUCES TIRE WEIGHT**

A rubber sheet of about 1mm in thickness is attached to the inside of passenger car tires to prevent air leakage. This inner liner accounts for about 10% of the weight of standard tires. The Yokohama Advanced Liner (YAL), which is currently under development, features approximately 10 times the air impermeability of conventional liners and is superior in terms of strength, flexibility and heat proofing. Because the same effects are available at one-tenth the standard thickness, the YAL will make it possible to reduce tire weight by approximately 9%. Reducing tire weight helps improve driving performance and lower fuel consumption.

#### **RUN-FLAT TIRES ENHANCE DRIVING SAFETY**

The run-flat tire has proven popular as a next-generation tire that can continue to roll for a certain distance even when flat. Yokohama is developing a run-flat tire that remains attached to the wheel when the tire goes flat by reinforcing the sidewalls of the tire. Because thick rubber supports the sides of the tire, finding a way to reduce the weight of this portion is crucial. Yokohama Rubber uses a special rubber that reinforces the sidewalls but has only about half the thickness of conventional rubber. Utilizing compounding technologies developed over many years, we developed a new technology that enables us to adhere this special rubber to tire rubber. In addition, we are developing a new device that can sense air leakage and warn the driver about losses of tire air pressure.

## ENVIRONMENTAL PROTECTION

#### **ISO 14001 CERTIFICATION AT DOMESTIC PLANTS**

During fiscal 2000, Yokohama's Shinshiro, Ibaraki and Onomichi plants, and its Hiratsuka Factory obtained certification under the ISO 14001 international environmental management standard. Following in the footsteps of the Mishima Plant, which obtained this certification in July 1998, all five domestic plants and the Hiratsuka Factory have obtained certification in approximately one year.

#### **IMPLEMENTATION OF COGENERATION**

In June 1999, a cogeneration power system commenced operation at the Hiratsuka Factory as part of Yokohama's environmental action plan. This highly efficient power generation system reuses waste heat from the facility, making it possible to double energy efficiency. We plan to reduce our annual CO<sub>2</sub> emissions by 3% using this system.

#### **ONE-MAKE TIRES SUPPLIED FOR U.S. ELECTRIC VEHICLE RACE**

The Americas Electric Challenge is a series of races sponsored by Electric Vehicle Technology Competitions, Ltd., of the United States. To show its support of the spirit of these events in terms of promoting the joy of driving and enhancing environmental preservation, Yokohama once again became the exclusive provider of tires for the ABB University Spec Series, which is held as part of the Americas Electric Challenge series.