Business Activities

Materials Handling Equipment	— P30–34
Automobile (Vehicle / Engine / Car Air-Conditioning Compressor / Car Electronics) —— Textile Machinery —	— P35–40 — P41

Materials Handling Equipment

As a market leader with an extensive knowledge of global logistics needs, Toyota Industries provides a range of materials handling equipment, mainly lift trucks, and logistics solutions to customers.



Strengths

- An extensive logistics-related product lineup both in the fields of materials handling equipment (internal-combustion lift trucks, electric lift trucks, fuel cell (FC) lift trucks, etc.) and materials handling systems (automated storage and retrieval systems, automatic guided vehicle (AGV) systems, automated lift trucks, etc.)
- High technological capabilities, including those linked to environmental and safety performance
- In-house development and production of key components, including engines and motors
- Production know-how that ensures high levels of guality and production efficiency
- Global, well-developed production, sales and service networks
- Total support services encompassing IT-based maintenance and inspection as well as operational management
- No. 1* in lift truck unit sales in the world
- · A wealth of experience and know-how accumulated in the globally operated Logistics Solutions Business * Survey by Toyota Industries Corporation

Opportunities

- . Growing need for electric lift trucks following enforcement of more stringent environmental regulations around the world
- · Growing need for products with high energy savings and low environmental impact, driven by a rise in eco-consciousness
- An expansion of global logistics volume in line with an increase in the world population and economic growth
- Rising need for higher logistics efficiencies prompted mainly by an expansion of e-commerce transactions, soaring labor costs and labor shortages

Risks

- · Restrained capital investment due to a slowing economy
- Weaker sales caused by intensifying competition
- . Change in business environment triggered by an expanding market of low- to mid-priced lift trucks



Materials Handling Equipment Sales (Thousand units)



Business Overview in Fiscal 2018

In the Materials Handling Equipment Business, the lift truck market in 2017 as a whole continued to expand globally, driven by strong sales in emerging countries, including China, as well as the United States and Europe. Amid this operating climate, Toyota Industries strengthened production and sales activities matched to respective markets and rolled out new products. Consequently, unit sales of our mainstay lift trucks for fiscal 2018 increased by 10,000 units, or 4%, to a total of 263,000 units over the previous fiscal year. Toyota Industries continued to make proactive efforts for further business reinforcement, such as carrying out model changes of an electric lift truck in Japan, enhancing the product lineup in the United States and Europe and promoting close collaboration with logistics solution subsidiaries also in the United States and Europe. As a result of these activities, net sales in fiscal 2018 totaled ¥1,283.0 billion, increasing ¥294.9 billion, or 30% year-on-year.

Toyota Material Handling Group (TMHG)

As a market leader in the materials handling equipment and logistics fields, Toyota Industries assists customers worldwide in attaining greater logistics efficiencies by delivering logistics solutions optimally tailored to their specific needs.

Under the TMHG management structure, we engage in the Lift Truck Business under the TOYOTA. BT. RAYMOND and CESAB brands. Mutually utilizing the development and sales strengths of each brand, TMHG is promoting business on a global scale.

We basically carry out product development in three regions, namely Japan, North America and Europe. Based on this structure, we develop and manufacture products in each region, which are matched to the specific local needs and characteristics, and ensure quick product delivery to customers.

At the same time, we seek greater product appeal by conducting in-house development and production of key components of lift trucks, including engines and motors.

In addition to supplying such high-guality products, we have concentrated on sales and services through our extensive networks and strengthened our sales financing operations. Through these efforts, we are close to completing the establishment of a stronger value chain structure. Going forward, we will satisfy customer needs throughout the entire value chain and work to maximize its effectiveness. On the sales front, we are seeking to obtain large orders by responding to demands of customers who conduct business globally while undertaking sales activities matched to the specific conditions of each market. In terms of services. we assign a total of more than 10.000 experienced and knowledgeable service personnel to Japan, North America and Europe, our mainstay markets, to provide finely tailored services to customers. Our service personnel visit customers on a periodic basis and provide maintenance services to contribute to preventing troubles from occurring. When a

Toyota Material Handling Group



TMHE (Europe), TMHI (Asia, Australia, etc.) and TMHCN (China).

problem does occur, they swiftly make a visit to the customer and promptly take appropriate action.

In the field of logistics solutions, in which advanced solutions to complex logistics issues in logistics sites are needed, sustainable market growth is expected globally due mainly to the recent, rapid expansion of the e-commerce market. Amid this environment, we go a step beyond just providing lift trucks and other materials handling equipment and are reinforcing our Logistics Solutions Business to offer solutions to customers' logistics issues by leveraging our production and logistics know-how accumulated in manufacturing operations. At the same time, we aim to precisely respond to customer needs both in terms of hardware and software through collaboration with U.S.-based Bastian Solutions LLC and Netherlands-based Vanderlande Industries Holding B.V., two of our subsidiaries having unique strengths in this field.

Business Activities in Fiscal 2018

With the continued growth of the world's lift truck market in 2017, we worked to enhance the product appeal of our mainstay lift trucks and reinforce our sales networks. We also strove to offer reliable after-sales services, enhance responsiveness to large-order customers and provide solutions to achieve greater logistics efficiencies through the introduction of distribution systems.

With regard to increasing product appeal, our quick responses to growing environmental consciousness among customers and more strict emissions regulations included fully revamping a reach-type electric lift truck in Japan and increasing the number of models equipped with lithium-ion batteries in Europe and the United States. These electric lift trucks have less environmental impact and offer even greater maneuverability.

In Southeast Asia and other emerging country markets, where sustained growth is expected, we established a

Promotion of ESG Initiatives

regional sales headquarters in Thailand to enhance our network and improve our customer responsiveness.

In the logistics solutions field, Toyota Industries is collaborating with Bastian and Vanderlande, our subsidiaries since 2017, and jointly examining specific action items in the areas of sales, procurement and development through function- and region-based subcommittees. The three companies will work closely together while leveraging their own unique, individual strengths to respond to growing needs for logistics solutions driven mainly by an expansion of e-commerce transactions.

(See Special Feature 1 on pages 22-25 for details.)

Meanwhile, Aichi Corporation, which possesses the top brand*1 in the field of aerial work platforms in Japan, posted higher sales to the telecommunication and railway industries, driven by strong demand for equipment renewal, including replacement of aging aerial work platforms. On the other hand, in the electric power and leasing industries weaker equipment renewal demand and restrained capital investment for mechanization pushed down sales. As a result, Aichi's overall sales were on par with the previous fiscal year. *1: Survey by Aichi Corporation



Aichi Corporation's aerial work platform

Business Activities by Regional Market

Japanese Market

With the Japanese lift truck market continuing steady growth in 2017. Toyota Industries undertook activities to enhance our product lineup and expand sales. As a result, we posted record-high unit sales in fiscal 2018 at 43,000 units, attaining a 2% increase year-on-year. Unit sales of Toyota Industries' lift trucks maintained the top position*² in calendar 2017 for the 52nd consecutive year.

An expansion of the e-commerce market in recent years has given rise to an increase in new construction of larger warehouses. Coupled with changes in the business environment caused by labor shortages, these developments have further increased the needs for greater logistics efficiencies and a higher degree of automation. To respond to these needs, Toyota Industries revamped a reach-type model of its electric lift trucks mainly used in warehouses and newly released it as the Rinova series. The series consists of four models^{*3}, including standard types run by operators and the automatic guided Rinova AGF, to satisfy the different needs of customers.

In the logistics solutions field, we released KEY SO-CO,



Rinova series

a simple inventory management system that helps customers improve the efficiency and quality of their inventory management in warehouses. The system is easy to set up and operate to make it simple for customers who use such a system for the first time and offers required functionality at a reasonable price. Using a hand-held device to check incoming goods and their quantities, confirm acceptance and delivery of goods into and from warehouses and automatically record details of operations in the system, KEY SO-CO serves to reduce the work load and possible errors of visual inspections and manual procedures and contributes to the improved accuracy of overall operations.

Additionally, Toyota Industries held the Toyota L&F Logistics Solutions Fair in five cities around Japan from January to March 2018. The aim of the fair was to help customers reduce logistics



costs, increase productivity and realize excellent safety of their operations. During the fair, we presented our logistics solutions by demonstrating the Rinova series, showcasing fuel cell lift trucks and various storage and retrieval systems and holding seminars on logistics improvement.

*2: Calculated by Toyota Industries Corporation, using data published by the Japan Industrial Vehicles Associatio

*3: Rinova AGF, Rinova Rack Stocker, Rinova All Way and Rinova Explosion-Proof Type

North American Market

In the expanding North American lift truck market, Toyota Industries remained the market share leader*4 in 2017 with combined unit sales of TOYOTA and RAYMOND brands of approximately 88,000 units, up 6% from the previous fiscal year.

*4: Survey by Crist Information & Research, LLC, 2017

Toyota celebrated 50 years of North American lift truck sales in 2017 and held a special event in Columbus. Indiana. Its product offerings were further expanded with the launch of high-capacity lift trucks and AICHI-brand aerial work

platforms. Toyota also proactively engaged in online digital marketing initiatives. National promotions helped attract hundreds of new customers to Toyota dealers and generate more orders. Raymond newly developed a



Celebrating 50 years of TOYOTA-brand lift truck sales in North America

virtual reality (VR) simulator that utilizes an existing lift truck plugged directly into the machine and allows a user to

enter a simulated warehousing environment for effective operator training. Raymond also expanded its product lineup by launching a counterbalanced electric lift truck, an electric low lift truck powered by lithium ion and other products in addition to a new electric low lift truck manufactured by Tailiff Co., Ltd. as an entrylevel walkie for cost-

Both Toyota and

leverage automation

For example, sales

and telematics.



Aerial work platform



TOYOTA brand's new high-capacity lift truck

of Toyota's T-Matics fleet management system have been consistently increasing, and we intend to raise customer



VR simulator

convenience through such measures as enhancing the functionality of the system. Likewise, Raymond continued its automation efforts by introducing the new Courier automated stacker showcased at the MODEX 2018 trade show. By connecting Raymond's automated lift trucks to the iWAREHOUSE fleet



RAYMOND brand's electric low lift truck ered by lithium ior

management system, customers gain even greater visibility into their automated and manual mixed fleets.

Toyota and Raymond will continue to engage in product development, sales and after-sales activities by leveraging the strengths of both brands. We will also focus on building an online sales channel by expanding the products for sale online to include electric lift trucks and parts in addition to the currently available hand pallet trucks, thereby improving customer convenience and increasing business opportunities.

European Market

The European lift truck market, supported by strong growth in the overall European economy, continued its positive development during 2017. Although market development was flat in the U.K., which was still somewhat affected by Brexit, market growth was strongest in countries like France, Spain, Sweden and Poland. In this business environment, Toyota Industries posted sales of 92,000 units, up 1% from the previous fiscal year, mainly as a result of strong sales of electric lift trucks.

As for lift truck management, we have been focusing our efforts on the introduction of I_Site solution, which is directed toward all our customers who aim to reduce costs, improve productivity and increase safety management. The product not only enables more efficient fleet management regardless of how many lift trucks are in operation but also raises the awareness of operators and allows energy-efficient operation by visualizing the operational status and accidental contact of

each lift truck. These and other features in turn contribute to building a safe and secure logistics environment. As a result. in 2017 we reached over 50,000 lift trucks connected with I Site.



I_Site fleet management system

In response to rising customer needs for more efficient logistics environments, we have updated and expanded the range of automated guided vehicles (AGVs) with new models that are effective at automating repetitive pallet handling while also introducing automated lift trucks that can be equipped with lithium-ion batteries. In addition, we expanded the

Promotion of ESG Initiatives

range of shuttle systems that travel within racking structures and transport goods by updating the existing Toyota Radio shuttle, launching the new Autoshuttle and making other

improvements. These automated storage and retrieval systems and other high-density storage systems allow customers to utilize up to 80% of warehouse volume, increasing storage space and improving throughput.

Toyota Industries

had a successful rollout

of its e-commerce



platform in the 16 European markets to raise customer convenience and began selling new and used lift trucks, parts and other products. We also strive to provide multifaceted support to customers' logistics through such initiatives as Lean Advice services to our existing customers by leveraging improvement know-how cultivated by our manufacturing activities.

TOPIC

The BT Reflex R-series reach truck won the German Design Award 2018 in the Excellent Product Design category for its clean and functional design.



ALOMA*5 and Chinese Markets

consisting of TOYOTA, BT and RAYMOND brands.

Toyota Industries covers the ALOMA markets of Asia, Latin America, Oceania, the Middle East and Africa as well as the

Chinese market. We are serving these markets with a lineup

In 2017, both the ALOMA market and Chinese market

expanded. Amid such conditions, Toyota Industries released

new electric lift trucks, for which market needs have been growing, and enhanced its sales and after-sales service structures. Unit sales consequently increased 8% over the previous fiscal year to 40,000 units in fiscal 2018.

In Asia, we established a regional sales headquarters in Bangkok, Thailand, to augment sales in the Mekong area where future growth is expected. In Thailand, we sell three brands of TMHG, namely TOYOTA, BT and RAYMOND, through two dealers. The new headquarters will play the role of increasing the collaboration between dealers and provide logistics solutions and related maintenance services to support logistics automation. We intend to offer warehouse and plant logistics solutions to customers and quickly respond to their diversifying and evolving logistics needs.

In Latin America, we set up our third regional office in Buenos Aires, Argentina, following ones in Singapore and Dubai in the United Arab Emirates. The new regional office will reinforce sales and after-sales service structures in Latin American countries through such measures as collecting information in the region, hosting regional conferences and providing education to dealers. In this way, we seek to provide products and services that can satisfy customers.

As an initiative common to the ALOMA and Chinese markets, we are promoting the Toyota Lean Logistics Program (TLLP), a scheme to train dealers in each country as solution providers. Leveraging our strengths demonstrated in manufacturing and logistics sites, the program focuses on the ability to visualize the current status, plans and progress; activities to sort, organize, clean and polish; and excellent process management. Through these measures, our hope is that the dealers will become proficient at offering solutions for customers to realize better operational sites and more efficient operations, backed up by Toyota Industries' wealth of logistics know-how and extensive product lineup, to assist customers in achieving greater logistics efficiencies.

With a view to responding to expanding and diversifying customer needs in the ALOMA and Chinese markets, Toyota Industries will continue to establish and enhance sales and after-sales service structures in these regions. At the same time, we will conduct marketing from our regional offices and other bases, remaining close to each regional market, and undertake TLLP and similar initiatives that leverage our unique strengths. Through these efforts, we intend to provide products and services to customers jointly with our dealers in each country and attain further business expansion.

*5: ALOMA is a Toyota Industries term for Asia, Latin America, Oceania, Middle East and Africa

Automobile

Toyota Industries continues to meet the expectations and trust of its customers.



Strengths

Survey by Toyota Industries Corporation

Opportunities

- consciousnes

Risks







In the fields ranging from vehicle assembly to engines, car air-conditioning compressors and car electronics,

 Highest-level production efficiency and quality among all Toyota-affiliated automobile body manufacturers (Vehicle assembly) Know-how on the development and production of diesel engines and turbochargers (Engine)

 Ability to develop excellent products with greater fuel efficiency, guieter operation, compactness, weight reduction and easiness to mount on vehicles (Car air-conditioning compressor)

 Global top-share* products for use in a full range of vehicles. from internal-combustion vehicles to hybrid vehicles (HV). plug-in hybrid vehicles (PHV), electric vehicles (EV) and fuel cell vehicles (FCV) (Car air-conditioning compressor)

 Global production structure based on the concept of local production and local consumption (Car air-conditioning compressor) Higher technological capabilities cultivated through the development and production of products for Toyota Motor Corporation (TMC) for external sales and for internal use (Car electronics)

· Development, production and top-level quality of electronic parts and devices for electric-powered vehicles (Car electronics)

• Increasing needs for energy-saving products due to stricter environmental regulations and growing environmental

· Sales expansion of energy-saving products in line with growth of the automobile market

Shrinking of the automobile market caused by economic slowdown

· Customers becoming reluctant to buy energy-saving products following less stringent environmental regulations • A drop in product competitiveness due to the yen's appreciation or a rise in raw material costs







Compressor Sales (Million units)



Promotion of ESG Initiatives

Vehicle

Business Overview in Fiscal 2018

The automobile market expanded on a global basis, with strong sales mainly in Europe and China. In fiscal 2018, unit sales of the Vitz (Yaris outside Japan) and the RAV4 decreased by 9,000 units, or 3%, from the previous fiscal year to 298,000 units. As a result, net sales declined ¥1.0 billion, or 1% year-on-year, to ¥72.1 billion.

Highest-Level SEQCD to Contribute to Production of Toyota Cars

Toyota Industries' comprehensive strengths lie in the highest level of safety, quality, cost and delivery among all Toyotaaffiliated automobile body manufacturers. In fiscal 2018, we received the Toyota Quality Control Award from TMC for six consecutive years. We will remain committed to further strengthening our already superior level of safety, the environment, quality, cost and delivery (SEQCD). We also are working to leverage our ability to quickly start up production and a flexible structure in terms of vehicle models and production volume to contribute to production in Japan of Toyota vehicles.

Development and Production of Plastic Glazing

Toyota Industries' plastic glazing has been used in the panoramic roof of TMC's hybrid vehicle Prius α (Prius + in Europe and Prius v in North America).

The panoramic roof retains the beautiful surface quality typical of a glass roof yet is approximately 40%* lighter than its glass counterpart, improving vehicle fuel efficiency, which has become increasingly important, and thus contributing to the reduction of CO₂ emissions.

Toyota Industries will continue to develop attractive new products that leverage the distinctive characteristics of plastic glazing.

* Survey by Toyota Industries Corporation

"Our Vitz and RAV4" Initiative for Enhancing Appeal of the Two Car Models

As the sole producer of the Vitz in Japan and with the aim of turning the vehicle into a long-selling series, Toyota Industries collaborates with TMC and its dealers to make various suggestions under the banner "Taking the Lead in Making Our Cars More Attractive." In 2017, we co-produced the Vitz Ray, a regionally limited model specifically targeting adult women, with dealers. Similarly, to boost the appeal of the RAV4, we plan and develop special-edition vehicles that directly reflect the voice of our customers. Through these endeavors, we seek ways to create more appealing and satisfying vehicles for customers worldwide.

At the same time, we also undertake activities to expand our customer base by enhancing the appeal of the Vitz through our support to motorsports events.



President of NETZ TOYOTA YAMAGATA Co., Ltd. and female staff who participated in the development of the Vitz Ray at the press conference to announce the release of the vehicle



Vitz at the Japanese Rally Competition

торіс

In October 2017, we created an outdoor car design viewing yard at the Nagakusa Plant in Aichi Prefecture. The yard is used to review a car design outside under customers' actual usage conditions. By utilizing this yard, we will create designs that precisely capture the needs of customers and make them smile.



Opening ceremony of the outdoor car design viewing yard

Engine

Business Overview in Fiscal 2018

Increases in sales of AR gasoline engines and GD diesel engines pushed up unit sales in fiscal 2018 by 73,000, or 15%, over the previous fiscal year to 574,000 units. Net sales increased by ¥8.7 billion, or 10% year-on-year, to ¥98.7 billion.

Highly Acclaimed by Customers Worldwide

Toyota Industries' diesel engines are mounted in a variety of Toyota vehicles, including the Toyota Land Cruiser series, the world's renowned full-fledged four-wheel drive (4WD) model, and TMC's Innovative International Multipurpose Vehicle (IMV) series targeting emerging countries. Their high performance and reliability have gained strong market recognition. Currently, our mainstay products are V-type 8-cylinder VD diesel engines and in-line 4-cylinder GD diesel engines. GD diesel engines are a model we started manufacturing in June 2015 and are equipped with a turbocharger specifically and optimally designed and manufactured in-house, thereby offering a much greater performance than KD diesel engines, their predecessor model.



(mounted on GD diesel engines)

GD diesel engines are also manufactured by Toyota Industries Engine India Pvt. Ltd. (TIEI), a consolidated subsidiary in India, and are fitted in IMVs sold locally. Going ahead, we will continue to improve productivity at TIEI and increase the ratio of locally procured parts.



TIEI's plant

Developing Competitive Engines in Industrial Fields

Toyota Industries' engines are highly renowned for their reliability and excellent environmental performance in industrial fields as well. These engines are used for a wide variety of applications, including our lift trucks, and adopted by many customers such as GHP*¹ manufacturers in Japan and CHP*² manufacturers worldwide.

We developed and are manufacturing the Toyota 1KD diesel engine (4-cylinder, 3.0 L displacement), the Toyota 1ZS diesel engine (3-cylinder, 1.8 L displacement) and the Toyota 1FS gas/gasoline engine (4-cylinder, 3.7 L displacement), all of which are equipped with an optimally designed turbocharger also developed and manufactured in-house. These engines offer downsized displacement compared with conventional models with equivalent output, resulting in higher fuel efficiency, cleaner emissions and a reduction in size. In 2017, the Toyota 1KD engine was adopted for the first time in the construction machinery field. We will continue to expand sales into this and other fields.

*1: Short for gas heat pump; air conditioner driven by a gas engine *2: Short for combined heat and power; co-generation system



Toyota 1ZS diesel engine



Turbocharger (mounted on Toyota 1ZS diesel engine)

Seeking Engines with Greater Product Appeal

Following the adoption of the Paris Agreement at the 21st session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (COP21) held in November 2015, and with some countries announcing their shift from internal-combustion vehicles to electric-powered vehicles, there has been a growing need for engines with even greater fuel efficiency and cleaner emissions for HVs, PHVs and other electric-powered vehicles as well.

Diesel engines, on the other hand, enjoy an enduring popularity particularly as a power unit suited for sports utility vehicles (SUV) and such commercial vehicles as pickup trucks, as they offer excellent basic performance of high fuel efficiency and high torque at low speed.

Aiming for further evolution of internal-combustion engines, we will continue to seek the world's highest-level combustion efficiency and develop more fuel-efficient and cleaner engines. Company Introduction

Strategies and Businesses

Promotion of ESG Initiatives

Car Air-Conditioning Compressor

Business Overview in Fiscal 2018

In fiscal 2018, unit sales of car air-conditioning compressors rose 870,000 units, or 3%, over the previous fiscal year to 33.42 million units as we posted an increase in sales in Japan, North America, China and other countries. Net sales increased ¥16.7 billion, or 5%, from the previous fiscal year to ¥351.4 billion.

Development Efforts Centered around Energy Savings and Vehicle Electrification

More stringent fuel efficiency standards have been enforced mainly in the United States, Europe, Japan and China.

Against this backdrop, in the field of car air-conditioning compressors to be mounted in internal-combustion vehicles, needs for greater fuel efficiency have been growing in both fixed-displacement and variable-displacement type products. Particularly in the United States, in recent years there has been an accelerated shift from fixed-displacement type products to fuel efficient variable-displacement type products.

Our variable-displacement type compressors, which are renowned for high fuel efficiency and reduced weight, have been adopted by the world's leading automakers, including TMC, Daimler AG, General Motors Company (GM), Volkswagen AG and Hyundai Motor Company.

In the United States, our SES series became the first compressor to be approved under the country's off-cycle credits program. The program gives off-cycle credits to technologies that can effectively improve fuel efficiency under its emissions regulations. We have since been working to increase the number of models equipped with the SES series compressors.

In addition to the development of variable-displacement type compressors, we are also focusing on the development of fixed-displacement type products targeting emerging countries that achieve an optimum balance between performance and prices.

In the field of fixed-displacement type compressors, we newly developed the SVE series vane type compressor for compact vehicles. We successfully improved cooling performance by 20% without increasing its size and made



6SES14 compressor

SVE08 compressor (fixed-displacement, vane type

it the lightest among other compressors in the same class. It has been initially fitted in Suzuki Motor Corporation's new Swift followed by its XBEE. We aim to promote unit sales by increasing the number of models fitted with the compressor.

For electric compressors for HVs. EVs and other electricpowered vehicles, we expect accelerated growth in demand over the medium to long term as the electrification of vehicles proceeds.

Our electric compressors' high levels of performance and guality stem from utilizing precision processing and assembly technologies, which are also used for compressors for internal-combustion vehicles as well as in-house production of key components, including motors and inverters. In addition, based on our accumulated know-how in doing business with automakers around the world, we internally conduct stringent evaluation tests on the effectiveness of measures against radio disturbance and other problems unique to electric compressors and thus ensure high reliability.

Since initially being installed in the second-generation Prius, our electric compressors have been mounted in all of TMC's HVs from the fourth-generation Prius to the LS600h.

We have also developed the ESB series to offer attractive products to automakers now actively engaged in the development of PHVs and EVs in addition to HVs. The ESBG27 compressor mounted in the new Prius Plugin Hybrid uses a Gas Injection Cycle to improve its heating capability in cold regions by roughly 30% and help resolve

the major challenge of extending the vehicle's electric motor driving range when the heater is turned on. The ESBG27 is also the world's first compressor with the Gas Injection Cycle to be adopted in a massproduced car. Besides TMC, Ford

Motor Company, Renault

S.A.S., Honda Motor Co.,



ESBG27 compressor (electric type)

Ltd., Nissan Motor Co., Ltd. and other automakers, which are already using our electric compressors in their respective HVs, PHVs and EVs, we will continue to ramp up our efforts to expand sales to other automakers. With a view to ensuring the steady growth of this business, we will channel resources into both types of compressors, namely compressors for internal-combustion vehicles, which are still mainstay vehicles for the time being; and compressors for electric-powered vehicles, for which we anticipate stronger demand in the future.

Augmenting Technical Support Capabilities

We station our sales engineers in the United States. Germany, Italy and China and provide technical support locally,

promoting sales expansion and activities to prevent quality issues from occurring.

Since fiscal 2014, two of our consolidated subsidiaries, namely, Michigan Automotive Compressor, Inc. (MACI) in the United States and TD Deutsche Klimakompressor GmbH (TDDK) in Germany, have been conducting design operations locally. A reduction in development lead time resulting from our local design operations has been received favorably by automakers. We plan to continue this initiative in the future.

Enhancing Development Capability by Creating Evaluation Facilities In-House

We are creating more evaluation facilities in-house for achieving even higher superiority in terms of technology development.

Our mother plants in Japan have been reinforcing their evaluation functions by designing and creating evaluation facilities in-house that simulate more realistic vehicle environments. With the goal of executing swift and detailed evaluations jointly with local automakers, we are globalizing our evaluation functions in a phased manner.

Through these and similar initiatives, we aim to improve the quality of our compressors through faster evaluation processes and better evaluation techniques while preventing external leaks of our development and evaluation know-how.

Establishing Optimum Global Production and Supply Structures

To respond to growing demand for variable-displacement type compressors triggered by the enforcement of more stringent fuel efficiency standards, we are proceeding with augmentation of corresponding production capacities and commenced local production of key functional parts at our production bases in North America.

In Europe, ASEAN countries and China as well, we are

Worldwide Bases of Car Air-Conditioning Compressors (As of March 31, 2018)



* Survey by Toyota Industries Corporation

expanding production capacities and increasing the ratio of locally procured parts to accommodate growing demand for car air-conditioning compressors.

We are working to attain higher quality and production efficiency on a global scale by harnessing Internet of Things (IoT) technology to monitor in real time the production status and operation of facilities at these production bases outside Japan.

TOPIC

Toyota Industries held a ceremony to commemorate reaching global cumulative production of 500 million car air-conditioning compressors in June 2017 after 57 years since commencing production in January 1960. Our compressors were first adopted in TMC's Crown in 1960, and we started exporting them to Bayerische Motoren Werke AG (BMW) in Europe in 1971. Since then, with the expanding automobile market and growth in demand following an increase in the percentage of vehicles fitted with an air conditioner, our products have received high acclaim from many customers for their performance, quality and reliability, and we have successfully expanded our scale of production to date.



Group photo taken at commemoration ceremony

Car Electronics

Business Overview in Fiscal 2018

Net sales of car electronics products increased, primarily supported by sales of DC-AC inverters, on-board chargers and other devices mainly to TMC.

Steadily Expanding Roles of Our Devices for Electric-Powered Vehicles

Toyota Industries develops and produces electronic devices for electric-powered vehicles, including HVs, PHVs, EVs and FCVs. In addition to TMC, we are promoting new business to other automakers across the world.

Auxiliary Power Source Devices

An on-board charger converts AC voltage from the power grid into DC voltage of high-voltage batteries in vehicles and is necessary for charging EVs and PHVs, for which the market is expected to expand in the future. Toyota Industries supplies an on-board charger for the Prius PHV. This charger offers better battery charging output that is 1.7 times higher than that of conventional models and realizes a 50% reduction in size by integrating a charging system electronic control unit (ECU) and by increasing cooling performance.

A DC-DC converter

HV. PHV and EV batteries

supply power to standard

electrical devices such as

lights and wipers. For the

fourth-generation Prius, by

developing the world's first

thick copper substrate with

excellent heat dissipation

capability, we reduced the

volume and weight of the

start-stop systems, which utilizes our technologies

acquired in the field of DC-

Our DC-DC converter for

product.

into a lower voltage level to

converts the high voltage of



On-board charger mounted in the Prius PHV



DC-DC converter mounted in the Prius

DC converters for HVs, can compensate for a voltage drop at the time of engine restart and ensure stable power supply to audio equipment and car navigation systems. A DC-AC inverter is equipped to use home electric appliances in a vehicle and has drawn a great deal of public recognition for its use as an emergency power source after the Great East Japan Earthquake. These products have been highly recognized for their guality both in and outside Japan. In fiscal 2018, the ratio of sales outside

Japan of DC-AC inverters was over 60%, while that of DC-DC converters for start-stop systems exceeded 30%.

In addition, we develop and produce inverters for electric compressors and an inverter for hydrogen circulation pumps to be fitted in TMC's MIRAI FCV.

Core Components for Drive Systems

The fourth-generation Prius offers a 4WD model for the first time in the series and is fitted with our rear inverter for 4WD. This product converts the DC voltage of HV batteries to AC voltage and feeds power to the 4WD rear motor. The adoption of a forced aircooling system eliminates the



4WD rear inverter mounted in the Prius

need to install cooling water piping, thereby providing greater ease in mounting the inverter on vehicles. The inverter also features quieter operation as it is mounted near the rear seat.

Charging Infrastructure

Toyota Industries sells public-use charging stands and home-use charging units for PHVs and EVs, which have been jointly developed with Nitto Kogyo Corporation.

In October 2017, we initiated a feasibility test of our charging stands at IKEA Nagakute in Aichi Prefecture to control the amount of charging by using IoT technology. We are testing the link between charging-only sub-stands and a main control stand that offers charging functionality as well as communication, billing and other features. We are also conducting tests to remotely control optimum charging utilizing IoT.



Charging stand for PHVs and FVs

Contributing to a Low-Carbon Society

The electrification of vehicles and materials handling equipment is expected to become more widespread with the enforcement of more stringent fuel efficiency standards by many countries and higher environmental consciousness among customers. We will reinforce our planning, development and production structures in the fields of HVs, PHVs, EVs and FCVs with the aim of contributing to a lowcarbon society.

Textile Machinery

world-leading market share*1 in unit sales, to ring spinning frames and roving frames.





Business Overview in Fiscal 2018

The textile machinery market remained weak in the primary markets of China and other emerging countries in Asia. While sales of yarn quality measurement instruments increased, unit sales of air-jet looms decreased 600 units, or 9% year-on-year, to 6,300 units. As a result of this and other factors, net sales declined ¥0.7 billion, or 1%, from the previous fiscal year to ¥65.5 billion.

Market Environment and Toyota **Industries' Sales**

Despite a continued economic recovery trend in the primary markets of our mainstay air-jet looms, namely, China and India, unit sales were on par with the previous fiscal year, affected by the tight monetary policy in China and introduction of a new tax system in India. Meanwhile, unit sales of air-iet looms were down in such countries as Pakistan and Vietnam due to stagnant conditions in both their domestic and export markets for textile products.

As a result, unit sales of air-jet looms in fiscal 2018 decreased from the previous fiscal year. Our air-jet looms, however, still maintained the top position in calendar 2017 for the 20th consecutive year since 1997*1. *1: Survey by Toyota Industries Corporation

Strengthening Partnership with Truetzschler

In November 2017, Toyota Industries agreed to transfer the entire business of the TCO12 comber*2 and TSL12 lap former*3, from development to production, sales, after-sales services and provision of spare parts, to Truetzschler GmbH



TCO12 combe

TSL12 lap former

Carrying on the philosophy of founder Sakichi Toyoda, which reflects his strong commitment to manufacturing, Toyota Industries responds to a broad range of needs with its extensive product lineup, from air-jet looms, for which we enjoy the

vice network	 Broad product lineup both in the spinning and weaving machinery fields 	
s that excel in high-speed energy-saving performance	 World-leading market share*1 in unit sales of air-jet looms 	
line with an increase in the world population quality and highly functional yarn and textile products, following the economic growth of		
nent's policies concerning s textile industry	 A decline in capital investment due to a drop in raw cottor and yarn prices 	
	Weaker sales due to intensifying competition	
Operating Profit	FY2017 FY2018 $F_{6.8 \text{ billion}} \rightarrow F_{6.1 \text{ billion}}$	

& Co. KG, our partner manufacturer of spinning machinery in Germany. We believe that this agreement will serve to further strengthen our partnership and enable us to provide new value to the market. The two companies will continue to provide products and services that bring even greater satisfaction to customers.

*2: Machine that uses a comb-like tool to remove short fibers and undesired particles in the spinning process to improve the quality of the resulting yarn

*3: Machine used to produce laps, or rolls of thinly spread sheet of fibers

KTTM's QC Circle Winning a Par **Excellence Award**

In December 2017, the Quality Circle Forum of India, a quality control (QC) circle convention, was held in Mysore, India, with the participation of 1,770 QC circles from 527 companies in the country. At the forum, Kirloskar Toyota Textile Machinery Pvt. Ltd. (KTTM), a consolidated subsidiary producing textile machinery in India, won the Par Excellence Award and thus gualified to participate in an international convention to be held in Singapore in October 2018.

Through QC circle and similar activities, the Toyota Industries Group strives to improve the manufacturing

capabilities of employees. At the same time, we work to provide products that can win even greater trust and satisfaction from customers by engaging in guality improvement and cost reduction efforts on a dailv basis.



Par Excellence Award certificate, trophy and commemorative items

Promotion of ESG Initiatives