Environmental Initiatives

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A Biotope to Link People, Nature and the Local Community

-Aiming to Develop an Ecological Network-

A biotope is a microcosm space where various living organisms native to a region can live and thrive in a self-sustainable manner. In September 2012, Toyota Industries turned its idle land into a community-friendly biotope.

In cooperation with an initiative of Aichi prefectural government in Japan to promote the development of ecological networks, we have been working to create an environmental setting that can serve as a node to connect green zones in the surrounding areas with waterways and become a habitat for various living organisms.

We also wish to create a link with the local community by making the biotope accessible to the public. Toyota Industries will also provide environmental education and maintain this biotope jointly with local elementary schools and community members.

The new biotope embraces our vision of creating a new place of interaction among nature, living organisms and people.



Toyota Industries' Positioning of the Biotope Project

In February 2011, Toyota Industries revised the Global Environmental Commitment and explicitly stipulated in the updated environmental policy that we undertake efforts to protect biodiversity.

Under the Fifth Environmental Action Plan that defines our activities in the medium term, we have been promoting initiatives after carefully identifying the impact of our business activities on biodiversity and setting specific targets accordingly.

The creation of a biotope is one such initiative. We seek to contribute to the protection of biodiversity through collaboration with such organizations as the prefectural government, non-profit organizations (NPOs), local community and expert bodies.



Creating a Biotope That Facilitates Development of an Ecological Network

The Tenth Meeting of the Conference of the Parties to the Convention on Biological Diversity (COP10) in October 2010 took place in Aichi Prefecture. In order to uphold COP10's philosophy of "Living in Harmony with Nature," the prefectural government has since been promoting the development of ecological networks throughout the prefecture as a means of conserving biodiversity. In the Chita Peninsula, where our production sites are located, the Chita Peninsula Ecological Network Council was established in January 2011 with the aim of developing an ecological network through collaboration among organizations and individuals, including the prefectural government, companies, NPOs, expert bodies and students. Taking part in this council, Toyota Industries has been cooperating with other members and carrying out activities to contribute to the formation of an ecological network.

What Is an Ecological Network?

Land development and other activities often divide a natural environment into smaller segments. Developing an ecological network means to connect these isolated segments of green zones and waterways. The resulting network means a larger living space for various living organisms and encourages the protection of biodiversity. (See the illustration on the right.)



limited habitat

Ecological Network Surrounding Target Area Chita Peninsula

Our biotope, which we named "Biotope at the East of Obu Station," is located in the northern area of the Chita Peninsula in Aichi Prefecture. Unlike the southern region, which remains rich in nature with an abundant variety of living organisms, industrialization and housing development have adversely affected the quantity and quality of greenery in the northern region. Surrounding Area

There are two large green zones, or natural habitats, in the vicinity. Toyota Industries' biotope can serve as a stepping-stone to link these two green zones.

Our biotope is regarded as being very unique in Japan, as it is located adjacent to the residential area, not within our own corporate factory site, thus providing free access to the premises to everyone.



Message from Stakeholders



Takahito Niwa

Environment Division,

Department of the

Director Natural

Toyota Industries' biotope is not just an ordinary biotope. It is a biotope to connect to the natural environment in the surrounding area, forming an ecological network and regenerating the indigenous ecosystem in front of a railway station located in the proximity of large factories. The biotope will attract dragonflies, birds and children as well as provide a space for people to interact and enjoy nature. It will be a valuable asset shared by all local community members.

Development of an ecological network by a

Environment, Aichi Prefecture company is an extremely unique, visionary initiative, and we are truly grateful for Toyota Industries' efforts. We will publicize this initiative widely as one of the most outstanding corporate initiatives both in Japan and in the world.





Takaya lida College of Business Administration and Information Science. Chubu University

As part of activities under the Life Relay Project*, we planted the region's native trees in the biotope established by Tovota Industries. Some insects and wild birds are already visiting, and we hope this biotope will become a biotically diverse, self-sustainable habitat.

* A project jointly carried out by Aichi Prefecture, NPOs, companies and students with the aim of forming ecological networks by leveraging corporate green zones of the Chita Peninsula as well as developing young environmental leaders

Environmentally Designed Biotope

Our biotope is environmentally designed to the extent possible, from the choice of materials to maintenance and management. The following are a few of such examples.

"Eco-Stones"



We recycled waste generated at our plants, such as dust and scrap, and created eco-stones by applying a smelting reduction process. These stones are used for landscaping and marking the pond and streams.

Rendering of Our Biotope

"Agleaf" (Soil Amelioration)



We collected fallen leaves and branches pruned from trees on our factory premises and recycled them as a tree mulching material*

* Used to prevent surface soil from being blown away inhibit growth of weeds and retain soil temperature and humidity to promote growth of plants

Solar Power Generation



Pumps that circulate water within the biotope use electricity naturally generated by solar panels installed on the premises.

Together with the Local Community

In designing our biotope, we sought advice from local government officials, experts and members of environmental organizations from the planning phase. We also solicited opinions from local residents via briefing sessions on such matters as ways to utilize this biotope.

During the construction phase, we collaborated with various entities. including a local welfare organization, special needs school and Boy Scout troop, and made wooden benches and released fish into the stream.

We will continue to work together with local community members to maintain and manage this biotope so that it remains an accessible, comfortable place to interact with nature.





Local community briefing session

Local Boy Scout members releasing fish

Future Direction

The creation of a biotope was the first initiative of its kind ever undertaken by Toyota Industries. Our aim is to nurture a biotope to bring nature and living organisms back to the way they should be and contribute to the conservation of regional biodiversity.

For further expanding an ecological network within the region, we will continue to undertake activities to develop another biotope and ones that follow, with the ultimate goal of forming our own unique ecological network.

External Awards



Appreciation from the Governor

We received a letter of appreciation from Governor Omura of Aichi Prefecture for our significant contribution to the development of ecological networks within the prefecture through our biotope initiative.





Toyota Industries' biotope is used for activities of the Life Relay Project and has been developed in close collaboration with other organizations participating in the project. Our efforts were highly recognized as an exemplary, forward-thinking project effective in developing ecological networks. The 17 participants, including Toyota Industries and the student executive committee of the project, received an Excellence Prize in the 2013 Aichi Environmental Awards.

We will realize our vision of creating "a biotope to link people, nature and the local community, with the cooperation of community members, the prefectural government and experts.





Hideo Yoshimura Director, Obu District, Obu City, Aichi Prefecture

When I heard about this project, my first impression was a corporate park open to the local community. As I listened closer. I realized it was not just a simple park, but a natural habitat based on a clear concept of connecting to the surrounding natural

environment and providing a larger space for living organisms. I was drawn to the idea.

This biotope is a place for nature and living things, but we hope to turn the place into a small oasis for people as well, where children play with dragonflies and butterflies and adults come to relax. In doing so, our community will provide necessary support for this project.





http://www.toyota-shokki.co.jp/biotope/ (Japanese)

Granted Excellence Prize in 2013 Aichi Environmental



Won Biotope Award in the Fifth Biotope Commendation

At the Fifth Biotope Commendation* sponsored by the NPO Japan Biotope Association, Toyota Industries' biotope received the Biotope Award, the program's highest award. The association highly appraised the concept of our biotope, its environment-conscious design and sustainable maintenance and management jointly carried out with the local community.

* A program to award excellent biotopes throughout Japan for the purpose of further encouraging the creation of biotopes and raise public awareness



Vision for Environmental Activities

Toyota Industries works with consolidated subsidiaries in and outside Japan to promote environmental activities on a global scale. With regard to our "CO₂ Cancel" initiative, we aim to accomplish its targets in fiscal 2016.

Global Environmental Commitment

As one tenet under our Basic Philosophy, Toyota Industries works to contribute to regional living conditions and social prosperity and also strives to offer products and services that are clean, safe and of high quality. Accordingly, in February 2011, we established the Global Environmental Commitment, a specific environmental action guideline, to be shared and implemented throughout the Toyota Industries Group.

The entire Toyota Industries Group comprising 154 companies in and outside Japan will dedicate concerted efforts to realizing a prosperous life in harmony with the natural environment by carrying out activities aimed at "establishing a low-carbon emission society," "establishing a recycling-based society" and "reducing environmental risk and establishing a society in harmony with nature" as our way of "promoting environmental management."



Notional Diagram of Global Environmental Commitment

Working toward "CO₂ Cancel"

What Is "CO2 Cancel"?

We have been promoting initiatives under our original concept called "CO2 Cancel." This refers to our aim to offset CO₂ emissions from production activities by



reducing CO₂ emissions via improved product efficiency and other means. We have adopted this approach as a new environmental target under the Fifth Environmental Action Plan and been promoting activities accordingly.

Defining a Target (Timeline)

In fiscal 2013, we used our original parameters to estimate CO₂ reduction volume attained in each of the products we develop (lift trucks, engines, car air-conditioning compressors, car electronics components, textile machinery and others) through such means as improved energy savings and weight reduction.

As for CO₂ emissions from production activities, we estimated annual emission volume by taking into account both the CO₂ emissions that naturally increased in line with an expansion of production volume and the CO2 emissions that declined as a result of CO₂ reduction activities

We simulated the overall CO₂ emissions volume based on these estimates and specified fiscal 2016 as the target vear to accomplish "CO₂ Cancel."

In the years ahead, we will facilitate activities toward achieving this goal.



CO₂ emissions from production activities = Total CO₂ emissions from Toyota Industries' plants

Reduction of CO₂ emissions via improved product efficiency = Total reduction in CO2 emissions attained by major products which are manufactured at Toyota Industries' plants

Structure to Implement Environmental Management

Positioning environmental response as one of its most crucial management issues, Toyota Industries is enhancing its environmentally oriented corporate management on a global basis through the promotion of consolidated environmental management.

Improving Environmental Management System Efficiency

Toyota Industries has positioned environmental response as one of its most crucial management issues. To guickly reflect top management's decisions on business operations. Tovota Industries has established and been operating a Company-wide integrated environmental management system (EMS), with the president at the top.

In fiscal 2011, we initiated the process of consolidating environment-related regulations that had been established separately by each business division. In fiscal 2013, we formulated and started operating an integrated version of regulations related to evaluation of the impact of overall business activities on the environment (evaluation of environmental aspects).

Environmental Management Structure



■ Scope of Group-Wide Environmental Management (As of March 31, 2013)

Non-production companies Japan: 24 Outside Japan: 93 Europe Producti on companies: 6 BT Products AB (Sweden) Toyota Industrial Equipment, S.A. (France) CESAB Carrelli Elevatori S.p.A. (Italy) L.T.E. Lift Truck Equipment S.p.A. (Italy) North America Uster Technologies AG (Switzerland) Production companies: 10 Toyota Industrial Equipment Mfg., Inc. (U.S.A.) The Baymond Corporation (U.S.A.) Raymond-Muscatine Inc. (U.S.A.) North Vernon Industry Corp. (U.S.A.) Indiana Hydraulic Equipment, Corp. (U.S.A.) Michigan Automotive Compressor, Inc. (U.S.A.) TD Automotive Compressor Georgia, LLC (U.S.A.) Cullman Casting Corporation (U.S.A.) Cascade Corporation (U.S.A.) Toyota Industries Compressor Parts America, Co. (U.S.A.

Asia

Environmental Audits

Toyota Industries implements annual internal environmental audits as well as external audits carried out by an independent third-party institute.

The external audit conducted in fiscal 2013 revealed five non-conformances. We have already completed measures to correct them and passed on the relevant information to other plants to prevent recurrences.

As for internal audits, we introduced a system of conducting mutual audits among business divisions in fiscal 2013. Previously, internal audits of individual business divisions had been led by the Environment Department of the Head Office. Under the new system, the Environment Department of one business division plays a central role in an internal audit of another business division. By adopting this method, we aim to upgrade the overall capabilities of the Environment Department of each business division.

System of Mutual Audits



TD Deutsche Klimakompressor GmbH (Germany

Production companies: 7

TD Automotive Compressor Kunshan Co., Ltd. (China) Toyota Industry (Kunshan) Co., Ltd. (China) Zhejiang Aichi Industrial Machinery Co., Ltd. (China) Kirloskar Toyota Textile Machinery Pyt. Ltd. (India) Toyota Industrial Equipment Vietnam Co., Ltd. (Vietnam) Nishina Industries Vietnam Co., Ltd. (Vietnam) P.T. TD Automotive Compressor Indonesia (Indonesia

Japan

Non-consolidated: 10 plants Production companies: 13 Aichi Corporation (Saitama) Nishina Industrial Co., Ltd. (Nagano Tokaiseiki Co., Ltd. (Shizuoka Altex Co., Ltd. (Shizuoka) Hara Corporation (Gifu) Mino Tokyu Co., Ltd. (Gifu) HANDA Casting Company (Aichi) Unica Co., Ltd. (Aichi IZUMI MACHINE MFG. CO., LTD. (Aichi) Nagao Kogyo Co., Ltd. (Aichi) Miduho Industry Co., Ltd. (Aichi) Iwama Loom Works, Ltd. (Aichi) Tokyu Co., Ltd. (Aichi

Fifth Environmental Action Plan

As a result of our strong commitment to the Fifth Environmental Action Plan (fiscal 2012 – fiscal 2016), we successfully achieved the targets set for fiscal 2013. In fiscal 2014, we will continue to facilitate activities to achieve a greater reduction in environmental impact.

Progress in the Fifth Environmental Action Plan

With an eye to realizing a prosperous life in harmony with the natural environment through the establishment of a sustainable society, we have formulated the Fifth Environmental Action Plan for the period from fiscal 2012 to fiscal 2016, promoting activities according to the plan. In fiscal 2013, we succeeded in achieving all targets defined for the fiscal year under the plan. To reduce environmental impact further, we have also determined targets to be attained by fiscal 2016.

The results up to fiscal 2013 that are listed on pages 64–72 were surveyed by Toyota Industries Corporation.

Establishing a Low-Carbon Emission Society

Commonte	Action Delicios/Constitic Actions	Cubicat	Control		FY2013 Targets		FY2013 Achievements		FY2016 Targets	
Segments	Action Policies/Specific Actions	Subject	Scope	Control Items	Base Year (FY)	Targets	Achievements	Evaluation	Base Year (FY)	Targets
	Reduce CO ₂ emissions in the market by 10% ^{*1} from major products to be developed during the period covered by the Fifth Plan							0		
Products	In the Automobile-Related Business, promote electrification and develop technologies and products that will contribute to reduction of CO2 emissions •Improve energy efficiency of car air conditioners •Develop technologies to respond to electrification of vehicles •Develop technologies to enable weight reduction •Reduce energy loss •Develop new engines In the Materials Handling Equipment Business, develop technologies and products that will contribute to reduction of CO2 emissions •Improve fuel efficiency of internal-combustion lift trucks •Reduce energy loss in electric-powered lift trucks and improve energy efficiency of functional units In the Textile Machinery Business, develop technologies and products that will contribute to reduction of CO2 emissions •Reduce energy use through lower air consumption •Reduce energy loss •Reduce energy loss •Reduce energy loss •Reduce energy loss •Reduce energy loss			*2			 <automobile-related Business></automobile-related Developed highly efficient electric compressor Developed plastic glazing back window <materials handling<br="">Equipment Business></materials> Developed highly efficient electric lift truck by adopting a regeneration system and other features <textile machinery<br="">Business></textile> Incorporated IPM*3 motor in ring spinning frames and achieved better energy savings of pneumatic suction cleaning device 	0		2
	Promote energy reduction and energy conservation through innovative production technologies		Non- consolidated	Total emissions	1991	-10% (FY09-13 average)	-17% (FY09-13 average)	0	2006	-18%
	Reduce greenhouse gas emissions during production processes through energy JIT*4 <energy-derived emissions=""></energy-derived>	CO2 .	Global			1.15	1.28	0		1.27
Production	Promote energy conservation of production facilities Promote airless/steamless operations Optimize supply energy Encourage every employee's participation	•Energy- derived CO ₂ •5 gases* ⁶	Non- consolidated	Eco-	0000	1.32	1.49	0	2006	1.47
	through visualization of energy loss energy-related strategy	 CO2 from logistics 	Consolidated subsidiaries in Japan	efficiency*7	2006	1.02	1.29	0	-	_
	Promoting measures to curb global warming •Promote horizontal deployment of technologies to curb global warming •Strengthen and expand ESCO*5 activities		Consolidated subsidiaries outside Japan			1.05	1.16	0	_	-
Logistics	Reduce CO ₂ emissions through green logistics •Promote modal shift Produce the number of transportation which is	CO ₂ from	Non-	Total emissions	1991	-15%	-38%	0	1991	-20%
Logistics	 Reduce the number of transportation vehicles by promoting mixed transport among business divisions 	logistics	consolidated	Eco- efficiency	2007	1.06	1.28	0	2007	1.09

Establishing a Recycling-Based Society

Commente	Anting Delining/Constitio Anting	Cubicat	Come	FY2013 Targets		FY2013 Achievements		FY2016 Targets		
Segments	Action Policies/Specific Actions	Subject	Scope	Control items	Base Year (FY)	Targets	Achievements	Evaluation	Base Year (FY)	Targets
Products	Implement initiatives to promote 3R (reduce, reuse and recycle) design for effective resource utilization •Reduce use of resources through longer product life •Reduce use of resources through standardization, modularization and reduction of components •Reduce use of resources through weight and size reductions •Promote reuse of components and resources			*2			Realized more compact inverter for electric compressors	0	2	2
		Packaging material volume	Non- consolidated	Eco-efficiency	2007	1.06	4.25	0	2007	1.09
Production	Enhance resource productivity <packaging materials=""> •Reduce use of timber-derived packaging materials <resources> •Reduce the volume of discarded materials by taking action at the source, such as improving yields and other measures •Promote internal reuse</resources></packaging>	Waste generation volume	In Japan	Aon- sonsolidated Consolidated ubsidiaries n Japan		1.13	1.28	0	0010	1.01
			Non- consolidated		2006	1.12	1.23	0	2013	1.01
			Consolidated subsidiaries in Japan			1.16	1.45	0	_	_

Reducing Environmental Risk and Establishing a Society in Harmony with Nature

0		Outlinet	Control Itoma		Our test literat			FY2013	Targets	FY2013 Achievements		FY2016 Targets	
Segments	Action Policies/Specific Actions	Subject	Scope	Control Items	Base Year (FY)	Targets	Achievements	Evaluation	Base Year (FY)	Targets			
Products	Reduce emissions to improve air quality in urban areas in all countries and regions •Develop engines that meet future regulations Manage chemical substances contained in products •Investigate chemical substances contained in products and manage switching over of SVHC ⁺⁸ and other substances of concern to other substances			*2			 Developed lift truck engines compliant with emissions regulations ahead of schedule Expanded the scope of substances of concern (started investigating substances of concern contained in supplies) 	0		2			
Production	Further reduce emissions of substances of concern •Reduce emissions of substances of concern mainly from painting processes Minimize environmental risks •Expand the use of a preliminary review system •Reduce risks related to wastewater •Appropriately manage chemical substances based on social conditions Enhance risk communication with relevant organizations and local residents	VOC*9 emissions	Non- consolidated (automobile body)	Emission volume per unit of production	_	24 (g/m²)	24 (g/m²)	0	_	24 (g/m²)			

Environmental Initiatives

Promoting Environmental Management

0		Outland	FY2013 Targets FY2013 Achieveme		FY2013 Targets		FY2013 Achievements	FY2016	Targets
Segments	Action Policies/Specific Actions	Subject	Scope	Control items	Base Year (FY)	Targets	Achievements	Base Year (FY)	Targets
	Reinforce CO ₂ reduction activities for "CO ₂ Cancel" •Further reduce CO ₂ emitted from production activities in plants •Aim to cancel out CO ₂ emissions of Toyota Industries by reducing CO ₂ emissions through improved efficiency in newly developed products						•Set the timeline for achievement of "CO2 Cancel" (Target: FY2016)		
	Augment and promote consolidated environmental management •Build a global environmental management system and promote related activities to: 1) Comply with environment-related laws and reduce environmental risks in each country 2) Achieve the highest-level performance in each country •Aim for efficient and systematic corporate management by integrating and operating environmental management system and quality/safety management systems						Checked the precision of environmental data at consolidated subsidiaries in Japan and provided support for improvement Disseminated information regarding plant-related laws and regulations Confirmed compliance through check sheets		
Goneral	Enhance and promote environmental education and enlightenment activities •Develop environmental specialists to lead internal environment-related activities •Strengthen internal environment-related activities and broaden family-friendly initiatives by planning and promoting enlightemment activities that can be carried out at home			*10			Conducted environmental awareness survey among employees, which scored 3.7 out of 5 points		0
General	Improve eco-conscious brand image •Reinforce environmental activities according to the contents and results of Survey of Environmental Oriented Management Index to pursue higher brand image			10			 Won Environment Minister's Award for Global Warming Prevention Activity in recognition of reduction of CO₂ emissions through the introduction of alternative coke products Won Silver Prize of the Aichi Environmental Awards for serializing electric compressors 		0
	Augment activities related to protection of biodiversity •Identify the impact of business activities on biodiversity and reinforce initiatives by defining specific goals •Contribute to biodiversity through conservation of forests and protection of rare species						Revised Environmentally Preferable Purchasing Guidelines that included considerations to biodiversity Established Biotope at the East of Obu Station		
	Promote sustainable plant activities •Build a plant environment in harmony with nature by promoting energy reduction and energy conservation through innovative production engineering; by reducing energy loss; and by using renewable energy and other means						 Reviewed energy strategy for the medium to long term 		

*1: Target products Toyota Industries develops and produces. The CO₂ reduction volume is calculated based on the method Toyota Industries determined using FY2011 levels as the baseline.

*2: Details undisclosed due to confidential information and other reasons

*3: Short for interior permanent magnet, this is a motor with a magnet embedded inside its rotor, offering improved energy savings, high efficiency and high torque. *4: Just In Time

*5: Short for Energy Service COmpany, ESCO provides comprehensive services related to energy savings and supports energy-efficient activities.

*6: Greenhouse gases other than CO2, including methane (CH4), dinitrogen monoxide (N2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulfur hexafluoride (SFe)

*7: Eco-efficiency = Production efficiency in subject year / Production efficiency in base year

Production efficiency = Production indicator (Net sales or production volume, etc.) / Environmental impact of production activities *8: Substances of Very High Concern

*9: Volatile Organic Compounds

*10: Specific targets are set separately and progress is disclosed via the Company Website or *Toyota Industries Report* and other media.

Establishing a Low-Carbon Emission Society

We position the establishment of a low-carbon emission society as one of our most crucial environmental tasks. We will work to reduce CO₂ emissions in our global business activities and at the same time accelerate our efforts to develop more environment-friendly products.



Under the Fifth Plan, we set out to achieve a target of reducing total non-consolidated CO₂ emissions from production activities by 10% in fiscal 2013 compared with the fiscal 1991 level. We successfully reached this target as a result of our steady, ongoing efforts, including activities to save power during summer and reduce peak power load, which started in fiscal 2012, as well as activities to visualize energy loss in fiscal 2013. Globally, our target was to achieve eco-efficiency of 1.15 (using fiscal 2006 as the base year), and we attained a significantly better result than the defined target. We will make steady progress toward a new target set for fiscal 2016.

Our product development activities are based on the keywords of 3Es (energy, environmental protection and ecological thinking), and we focus on developing products that meet the need for increased energy savings, electrification and weight reduction. In this area, we are currently working toward a target of attaining a 10% reduction in CO₂ emissions from primary products by fiscal 2016 compared with the fiscal 2011 level.

Initiatives for Establishment of a Low-Carbon Emission Society

CO2 Emissions (Non-consolidated/Consolidated subsidiaries in and outside Japan)



New High-Precision Combined Machine to Reduce CO₂

The Compressor Division has been working to develop more compact production lines for electric compressors since fiscal 2010 to improve the efficiency of manufacturing processes and reduce CO₂ emissions.

In fiscal 2013, we promoted improvement activities to reduce CO₂ emitted during the parts machining process by 30%, or approximately 110 tons. With the leadership of the Production Engineering Department, the division collaborated with relevant departments and an external equipment manufacturer and developed a high-precision combined machine that can reduce the overall size of production lines. The machine eliminates unnecessary processes and attains significantly higher energy-saving performance, thereby reducing CO₂ emissions by approximately 140 tons. The machine is also capable of unprecedented higher precision processing, which contributes to quieter operation of electric compressors.

In addition to electric compressors, the new highprecision combined machine can be used in the machining line of conventional car air-conditioning compressors for internal-combustion vehicles. We installed this machine at Michigan Automotive Compressor, Inc. (MACI) in the United States and TD Deutsche Klimakompressor GmbH (TDDK) in Germany by the end of fiscal 2013. Consequently, we reduced annual CO₂ emissions of the entire Toyota Industries Group by roughly 600 tons.

Based on these outstanding achievements, this project won the Most Outstanding Practice Award in fiscal 2013 under our internal award program to recognize excellent environmental improvement activities.



Haruyuki Ito Group Manager, Machining Production Engineering Office, Production Engineering Department, Compressor Division

Position and department as of March 31, 2013

In developing this highprecision combined machine, we first needed to clarify the structure of our conventional general-purpose equipment. Then, to establish an original production method, we added various improvements to this machine, which is one type of manufacturing equipment, and applied the world's first engineering technology.

As our future activity, we aim for improved durability and higher precision of this machine and will work to enhance efficiency of the machining process for other components.

Establishing a Recycling-Based Society

Certification of Environmentally Friendly Product

Toyota Industries has been proactively promoting development and design of eco-conscious products. To certify products with exceptionally outstanding environmental performance, we launched the

ESA34 (Electric Compressor)

Energy efficiency



*1: Compared with the previous model by using in-house testing patterns

High Pick Lift (Electric Lift Truck)

Uptime



*2: 1.0-ton model (operating in S mode) compared with the previous model

E-shed (Electronic Shedding Device for Air-Jet Looms)

Power consumption



(operating at 800 rpm)

Environmentally Friendly Product Certification System in fiscal 2007. Up to fiscal 2012, nine products have obtained certification under this system. In fiscal 2013, we certified another three as environmentally friendly products, as described below.

Points contributing to less environmental impact

•The ESA34 achieves higher efficiency through the adoption of a new mechanism. Energy efficiency has been improved by approximately 10% compared with the previous model.

•The use of a smaller inverter, a modification of structural layout, a change in parts composition and a fewer number of fastening locations made the ESA34 approximately 10% lighter than the previous model.



Points contributing to less environmental impact

- In place of a DC motor used in the previous model, we adopted our newly developed, high-powered, highly efficient AC motor for both cargo handling and driving.
- •Various regeneration systems run when the operator lowers the fork, releases the accelerator, applies brake control or performs a switchback maneuver, thus recovering energy very efficiently.

Points contributing to less environmental impact

•The new electronic shedding device, which allows the weaving of complex-patterned fabrics, recovers energy generated in the deceleration process. By upgrading the previous model, the E-shed device allows increased energy recovery and contributes to reduced power consumption.



Received the Environment Minister's Award for Global Warming Prevention Activity

In fiscal 2011, we rolled out an initiative to reduce CO₂ emitted from the cast iron melting process^{*4} by replacing coal coke with such substitutes as biocoke^{*5}. In recognition of this effort, we received the 2012 Environment Minister's Award for Global Warming Prevention Activity in the Countermeasure Technology Introduction and Dissemination Category. This award is given to individuals or organizations every year to commend their exceptional achievements in curbing global warming.

Our efforts will continue to focus on further reducing CO₂ emissions by increasing the ratio of biocoke used in the melting process and seeking other fuel substitutes.

*4: For more details, see page 66 of the Toyota Industries Report 2012.

*5: A solid, plant-derived biofuel produced by heating and compressing biomass such as wood chips from thinned trees or tea grounds thrown away by beverage manufacturers



With a view to contributing to the establishment of a recycling-based society, we have dedicated considerable efforts to reducing waste generation volume and achieved results that greatly exceeded the targets laid out in the Fifth Environmental Action Plan.



Our fiscal 2013 eco-efficiency targets in the area of waste generation volume under the Fifth Plan were 1.12 on a non-consolidated basis and 1.13 for Toyota Industries and its consolidated subsidiaries in Japan (fiscal 2006 as the base year). Since fiscal 2010, personnel in charge of waste-related matters in each plant and their counterparts in the Purchasing Department of the Head Office have been holding meetings to exchange information on waste, share the information on waste reduction efforts at each plant and consider joint reduction efforts among plants. We also support waste reduction activities of our consolidated subsidiaries in and outside Japan by actively sharing best practices throughout the Group.

In fiscal 2013, liquidation of one consolidated subsidiary in Japan resulted in a lower eco-efficiency than in the previous fiscal year. Regardless, we successfully achieved fiscal 2013 targets set under the Fifth Plan, both for Toyota Industries on a nonconsolidated basis and for Toyota Industries and its consolidated subsidiaries in Japan.

Initiatives for Establishing a Recycling-Based Society

Waste Generation Volume

(FY) 06

- (Non-consolidated/Consolidated subsidiaries in Japan)
- Non-consolidated subsidiaries in Japan Eco-efficiency (non-consolidated) Eco-efficiency (Japan consolidated) Eco-efficiency (Japan consolidated) 1.79 1.50 1.61 1.6

Awards ceremony

Effective Recycling of Metal Resources within Toyota Industries Group

In July 2012, we started an initiative to reuse waste metal scrap generated internally, which we previously sold to the market, to the maximum extent possible as a raw material to produce parts for our products.

Among waste generated by our plants, iron scrap has already been reused as a foundry raw material by HANDA Casting Company, a consolidated subsidiary in Japan producing foundry parts for lift trucks. Other types of metal waste, such as oil-containing debris, large-sized scrap from press processing and mixed metal scrap of non-iron metals, were not recyclable and were sold to the market.

For such metal resources, in fiscal 2013 one partner company of Toyota Industries began to undertake such processes as briquetting as well as shredding and sorting by hand, effectively increasing the amount of reusable metal scrap. We now recycle approximately 1,400 more tons of waste annually within the Toyota Industries Group.



Environmental Initiatives

Reducing Environmental Risk and Establishing a Society in Harmony with Nature

We have been striving to reduce emissions of substances of concern by implementing thorough management of chemical substances in product development and production activities.

Environmental Management

Toyota Industries promotes the development of human resources capable of taking voluntary initiatives toward the achievement of targets specified under the Fifth Environmental Action Plan.



Under the Fifth Plan, we set a target to attain emission volume per unit of production below 24 g/m² for volatile organic compounds (VOCs) from the vehicle body painting process and undertook activities accordingly. Solvents contained in paint are a major source of VOC emissions. Thus, our efforts have been focusing on increasing the recovery rate of thinner, a solvent, and improving coating efficiency through optimization of spray nozzles' discharge pressure and amount. These ongoing efforts helped us achieve the fiscal 2013 target.

Eliminating Adverse Environmental Impact due to Outsourced Work

In order to prevent adverse environmental impact caused by work activities of subcontractors ("outsourced work"), we conduct a check on whether their particular activities cause any impact on the environment by requiring them to submit an application form for construction operation in advance.

In fiscal 2013, we started conducting environmental patrols for outsourced work undertaken during a long holiday period when our environmental personnel are not available. We are reinforcing our efforts to prevent adverse environmental impact by conducting an environmental inspection on each venue of outsourced work.

Main Check Items

- Are effluents from outsourced work released directly into gutters?
- Do subcontractors check vehicle oil leakage before moving their vehicles?
- Is there leakage or spillage of oil, chemical agents, detergents or organic solvents on the floor or road surface (including green zones and soil)?

Soil and Groundwater Pollution Countermeasures

Toyota Industries carries out surveys and purification of soil and groundwater contaminated from the past use of

trichloroethylene. We regularly report the survey results to local government authorities and provide information at local community meetings. As measures to prevent pollution from substances covered by the Soil Contamination Countermeasures Law as well as from grease and oils, we have drilled observation wells at all plants to conduct regular checks.

Trichloroethylene Readings

Plant	FY2009	FY2010	FY2011	FY2012	FY2013
Kariya Plant	0.67	0.67	0.41	0.38	0.26
Kyowa Plant	0.72	0.34	0.41	0.48	0.33

Weighted average concentration in groundwater (mg/l)

Status of Compliance with Environmental Laws

In January 2013, there was one incident at the Kariya Plant (Aichi Prefecture), in which the biochemical oxygen demand (BOD) level of effluents exceeded standard values stipulated under the prefectural ordinance.

According to the survey results, the incident was caused by an excessive amount of methanol mixed into a wastewater treatment tank to reduce the amount of nitrogen. We have reported this incident to the relevant authorities and already completed corrective measures along with subsequent confirmations to verify there are no recurrences.

Following the incident, Toyota Industries held a Company-wide countermeasure meeting to ensure the prevention of similar incidents within the Company. Measures implemented at the Kariya Plant were presented at the meeting, and participants shared information concerning the incident and discussed measures that should be applied by other plants.

There was another instance in which effluents from the plant exceeded standard values at one consolidated subsidiary within the Toyota Industries Group. This incident has been reported to the relevant authorities, and corrective measures have already been completed by the subsidiary concerned. Subsequent confirmations have also been made to ensure that there are no recurrences. In the future, we will promote information sharing among Group companies and bolster measures to prevent environmental risks.

We will also continue to augment Group-wide efforts to minimize environmental impact by conducting contingency training for emergency situations and other proactive measures.

Summary

Among the targets specified under the Fifth Plan, the focus of our activities in fiscal 2013 was on the development of human resources capable of taking voluntary environmental initiatives as well as on conservation of biodiversity. As for human resources development, we solicited employee engagement through the use of our internal eco-point system, which was introduced in fiscal 2012 with the aim of raising environmental awareness among employees, while encouraging wall greening activities at each plant. For this project, employees participated in the planting of seedlings and can observe growth records on the

Topic

A New Eco-Conscious Office Building Constructed by TOYOTA L&F Hyogo Co., Ltd.

In January 2012, TOYOTA L&F Hyogo Co., Ltd., a consolidated subsidiary in Japan that engages in sales and servicing of materials handling equipment, constructed a new environment-conscious office building in Nishinomiya-shi, Hyogo Prefecture. The new building integrates leading-edge energy- and powersaving technologies and know-how into its design.

The company installed solar panels and wind power generation systems on the premises to provide a portion of electricity used within the building. All common spaces, such as corridors, are equipped with energy-efficient LED lighting. At the parking lot, there are charging stands for plug-in hybrid vehicles, to which electricity is fed from the solar panels mounted on the car park roof.

In the service workshop, various measures have been adopted to reduce the use of lighting during



New office building

Intranet. In the area of conservation of biodiversity, we created a biotope designed to facilitate the development of an ecological network. (See pages 58–61 for more details.)



Wall greening at the Kyowa Plant (Aichi Prefecture)

daytime. Transparent shutters and skylights let in natural light from outside.



Service workshop



Hideji Saito President, TOYOTA L&F Hyogo Co., Ltd. What customers demand most in materials handling equipment are environmental performance and safety. Lift trucks available on the market now range from internal-combustion, electric and hybrid types to even more environmentally conscious fuel cell lift trucks. As our company engages in

sales and servicing of such equipment, we have always felt that we should think about the environment in our everyday operations. This strong belief is reflected in the design of our new office building. The new building serves to convey the significance of taking environmental action both to employees and customers visiting our building to participate in experience-based safety *dojo* or lift truck training sessions. We will remain environmentally committed both internally and externally. Environmental Initiatives

Environmental Impact Flow and Environmental Accounting

In this section, we provide an overall picture of environmental impact resulting from our global business activities and report the results of environmental accounting (environmental conservation cost, environmental conservation benefits and economic benefits of environmental conservation initiatives).

Environmental Impact Flow



Environmental Accounting and On-Site Verification

Fiscal 2013 Environmental Accounting*3

Scope of data collection: Toyota Industries Corporation

(April 1, 2012 – March 31, 2013) TIBC Corporation^{*4} (April 1, 2012 – June 30, 2012)

*3: Environmental accounting data is collected in compliance with the Ministry of the

Environment's Environmental Accounting Guidelines 2005 Edition. *4: TIBC Corporation was excluded from the scope of consolidation in July 2012 and

subsequently dissolved in January 2013.

Enviro	(Millions of yen)				
	Cotogory	FY2	013	FY2012		
	Calegory	Investment	Expenses	Investment	Expenses	
	Pollution prevention costs	516	771	257	1,028	
Business area costs	Global environmental conservation costs	113	3,168	345	3,264	
	Resource recycling costs	10	570	32	721	
Upstream/	downstream costs	2	80	-	49	
Manageme	ent costs	14	1,219	263	1,231	
Research a	ind development costs	0	1,872	3	1,260	
Social cont	ribution activity costs	-	6	-	8	
Environme	ntal remediation costs	37	21	3	9	
Total		692	7,707	903	7,570	
Ισται		8,3	99	8,473		

Environmental Conservation Benefits

Environmental Impact	Comparison with Previous Fiscal Year
CO2	17,809 t decrease
Generation of waste products	14,648 t decrease
Water	320,808 m ³ decrease

Economic Benefits of Environmental Conservation Initiatives

		(IVIIIIOTIS OF YETI)
Item	Details	Amount
Revenue	Returns from sale of recycled waste products	3,347
Cost reduction	Energy cost reductions	626
	Cost reduction by resource savings (including reductions in amount of water use and wastewater treatment costs)	227
Total		4,200

On-Site Verification

Every year, Toyota Industries Head Office's Plant Engineering & Environment Department takes the initiative in conducting on-site verification of the accuracy and consistency of environmental data included in the *Toyota Industries Report*. The results for fiscal 2013 are as follows.

On-Site Verification Sites

Toyota Industries Corporation

- Kariya Plant (Textile machinery, compressors) Nagakusa Plant (Vehicles)
- Consolidated subsidiaries in Japan
- HANDA Casting Company, Altex Co., Ltd. Nagao Kogyo Co., Ltd.

Items to be Verified

- Adequacy of the scope of data collection; validity of data collection and calculation methods; validity of internal verification
- 2. Trustworthiness and accuracy of collected/calculated data as well as data reported to the Head Office; accuracy of methods reported to the Head Office

Results

- 1. The verified sites retained original data (evidence) for all statistics, which were confirmed valid as were the scope and method of data collection.
- 2. All discrepancies found during verification have been corrected after respective causes have been identified.
- 3. Considerations of improvements will be made for data collected using complex collection methods that may result in calculation errors.