

# Leave a sound environment to future generations:

## Yokohama Forever Forest activities



The 1st Tree Planting Festival, held at the Hiratsuka Factory in November 2007



Tree planting at Yokohama Tire Manufacturing (Thailand) Co., Ltd. (YTMT)

### Yokohama Forever Forest – Moving on to the next step

#### ► What is the Yokohama Forever Forest project?

The Yokohama Forever Forest was initiated as a project to plant 500,000 saplings which selected by the theory of potential natural vegetation in our Yokohama Rubber Group factories and sales locations around the world by 2017, the year that marked the 100th anniversary of the founding of Yokohama Rubber. This project intended to achieve as follows: Developing participants' environmental awareness; Disaster prevention, and forming environmental conservation forests; Helping decelerate global warming; Conservation of biodiversity; and Communicating with regional communities. The project was about more than just planting trees; we undertook this project as "Regeneration of indigenous forest to help protect lives," for the global environment and for local communities.

A key aspect of the Yokohama Forever Forest project is that it involves the participation of all Yokohama Rubber Group employees. All of the work – such as collecting acorns, planting them in pots, applying fertilizer to and watering the saplings in the pots, building the mounds of earth in which the trees will be planted, to the actual tree-planting and the subsequent maintenance work, etc. – is undertaken through the sweat and toil of Group employees themselves, working together to bring the project to fruition.

#### ► Goal achievement status

The Yokohama Forever Forest project was launched on November 11, 2007 with the first tree-planting at the Hiratsuka Factory. Since then, tree-planting has been carried out at 14 Yokohama Rubber Group business locations in Japan and at 20 Group business locations in 8 countries overseas. The goal of planting 500,000 trees was reached in September 2017. After achieving this target, we have continued to carry out tree-planting, and as of December 31, 2017 the total number of trees planted had reached 525,662.

Besides planting trees in the grounds of factories and other Yokohama Rubber group facilities, we have also donated saplings to local municipalities, schools, other business enterprises, etc. free of charge, and provided guidance on tree-planting. As of December 31, 2017, the total number of trees donated in this way, in Japan and overseas, came to 326,673.

#### ► Future goals

The Yokohama Forever Forest project is also helping to safeguard the genetic diversity of local tree species and to maintain and restore local ecosystems. By providing trees for a particular locality, once the trees have grown they will provide a habitat for insects, birds, etc. If these habitats can then be linked together, so that creatures can move easily between them, then this can help to enrich the ecosystem of the entire region.

In addition, building on the experience gained in the creation of the "Heisei Forest" at Otsuchi-cho in Iwate Prefecture, the Yokohama Forever Forest project has also contributed towards the creation of forested embankments (Green Tide Embankment) that can help to protect human life in the event of a natural disaster, and towards disaster prevention and disaster response awareness-raising.

By making effective use of the knowledge that has been accumulated through the implementation of the Yokohama Forever Forest project, we intend to continue with the implementation of related measures, focusing on the donation of tree saplings and the provision of tree-planting know-how, with the aim of contributing towards the conservation of biodiversity in local communities. Through this continued implementation, we intend to realize the goal of having a grand total of 1.3 million trees planted by 2030 (including both the trees that have been planted and donated so far and future tree plantings and saplings donations).



Ceremony held to mark the donation of saplings to the Shinwa Gakuen Institute

**We provide opportunities  
to come into contact with nature  
and to learn from nature**

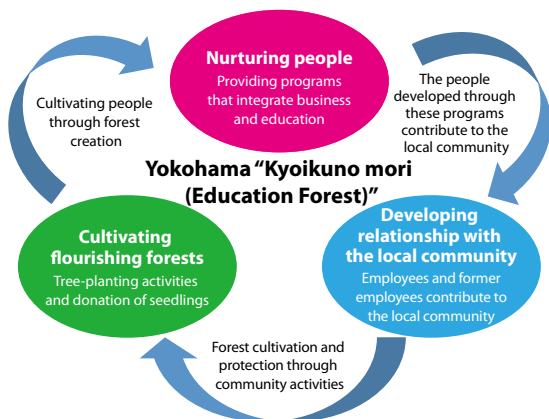


**[Results of initiatives]  
The results of the Yokohama  
Forever Forest project:**

**No. of trees planted + No. of saplings donated**

**852,335** saplings planted and donated

(As of December 31, 2017, consolidated)



## The "Education Forest" concept

### ► The aims of the "Kyoikuno mori (Education Forest)" project

To further develop the "Developing participants' environmental awareness" and "Communicating with regional communities" aspects of the Yokohama Forever Forest project, Yokohama Rubber has decided to implement a new "Kyoikuno mori (Education Forest)" project. This project will involve utilizing various different forms of educational content provision, including visiting lectures, to provide children at local schools with the techniques and knowhow that we have accumulated; our goal is to provide the children with a "way in" to adventures in new worlds of knowledge, and with an opportunity to acquire wisdom that will help them to live fulfilling lives.

### ► Goals, and anticipated implementation items

We provide content aimed at kindergarten and nursery school children, elementary school and junior high school students, senior high school students, and teachers.

#### The programs that we are currently providing:

- Road safety etiquette classes
- Rubber's functions
- Acorn handicrafts and tree seedling cultivation
- "Let's plant trees!" activity

### ► Future objectives

The "Education Forest" project provides easy-to-understand educational programs that use Yokohama Rubber's products and services, and the tasks that Yokohama Rubber has to implement in order to provide these products and services, as the basis for the teaching materials. The aim is to get children looking at things from a scientific perspective, to make them more observant and to awaken their interests. We also hope that the project will help to enrich students' lives, and that the communication between Yokohama Rubber employees and local communities can plant the seeds for the development of new technologies and new knowledge in the future.

## TOPIC

### Cultivating local communities' next generation through the "Education Forest" project

#### Implementing the "Acorn Handicrafts and Tree Seedling Cultivation" visiting class

In April 2018, Yokohama Rubber's Shinshiro Plant organized an "Acorn Handicrafts and Tree Seedling Cultivation" visiting class for 1st grade and 2nd grade students at the Shinshiro Municipal Yana Elementary School. Shinshiro Plant employees acted as instructors for the class. In the acorn handicrafts part of the class, the instructors showed the children how to make floral wreaths for Children's Day, while in the tree seedling cultivation part of the class they showed them how to plant tree cuttings in pots.

The School Principal commented that "Children in the younger grades are full of curiosity and eager to learn. I feel that having people from outside the school come in to teach them is a very good thing, as it is very stimulating for the children. I hope that we will be able to host more visiting classes like this in the future."

This was the fifth time that the "Acorn Handicrafts and Tree Seedling Cultivation" visiting class had been held at Yana Elementary School. In the future, Yokohama Rubber will continue to actively implement activities that can help to build a friendly relationship of trust with local communities, focusing on the goals of "Cultivating flourishing forests," "Cultivating people," and "Cultivating links with the local community."



Acorn  
handicrafts  
class in  
progress



The tree  
seedlings that  
the children  
planted



The Earth

# Leave a sound environment to future generations:

## Building a sustainable supply chain

### Measures implemented by the Yokohama Rubber Co., Ltd.

#### SNR-i's 5 objectives:

- Supporting the improvement of natural rubber plantations' productivity
- Enhancing natural rubber quality
- Supporting forest sustainability
- Demonstrating appropriate water management
- Demonstrating the highest respect for human and labour rights

#### Yokohama Rubber supports the Sustainable Natural Rubber Initiative (SNR-i)

Yokohama Rubber supports the goals of, and participates in the activities of, the Sustainable Natural Rubber Initiative (SNR-i) launched by the International Rubber Study Group (IRSG), an inter-governmental organization composed of rubber producing and consuming stakeholders.

The World Business Council for Sustainable Development (WBCSD) has also begun discussion and examination of the issue of sustainable natural rubber through its Tire Industry Project (TIP). Yokohama Rubber will be fulfilling its responsibilities as a member of the WBCSD's TIP.

With both the global population and the number of motor vehicles per head of population continuing to increase, demand for tires is expected to grow continuously into the future. Since it can therefore be assumed that demand for natural rubber will also increase, with recognition for its responsibility to society as a manufacturer of tires and other rubber products, Yokohama Rubber is working actively to promote these projects.

The goal of promoting CSR activities throughout the value chain forms an important part of the Yokohama Rubber Group's CSR Materiality. Starting from 2014, we have been surveying conservation of biodiversity and human rights protection status etc. in natural rubber farm in Thailand and Indonesia. In addition, the Group's natural rubber processing subsidiary in Thailand has been encouraging farmers to adopt the agroforestry practices, which cultivate 10 or more different species – including bamboo, fruit trees, etc. – together with natural rubber trees. In the following sections, we present some examples of the CSR activities that Yokohama Rubber has been implementing through the value chain.



Suppliers Day

#### Implementation of supplier meetings for natural rubber suppliers

In April 2018, the Yokohama Rubber Group held its 2nd Suppliers Day meeting for natural rubber suppliers. A total of 42 representatives of 25 companies in 5 countries attended the meeting, at which Yokohama Rubber requested the suppliers' assistance in regard to the implementation of measures aimed at making natural rubber a sustainable resource, in line with our CSR policy; the Suppliers Day event helped to lead to strong mutual understanding with suppliers.

Natural rubber is produced mainly in Southeast Asian countries, including Thailand, Indonesia, Vietnam, etc. Most natural rubber is not produced on large-scale plantations, but rather on large numbers of small-scale farms (smallholders).

With the aim of conservation of biodiversity and minimizing the impact of climate change, Yokohama Rubber has been working together with suppliers to ensure traceability and to maintain transparency in the supply chain.

During the Suppliers Day meeting, Yokohama Rubber gave a presentation on the agroforestry project that we are implementing in the Surat Thani district of Thailand. Using a video message, Professor Sara Bumrungsri of the Prince of Songkla University, who has been providing Yokohama Rubber with guidance to support the diffusion of agroforestry, explained the agroforestry measures that we have been implementing, and discussed recent findings from his research.

With the aim of ensuring sustainable production of natural rubber that is in harmony with the natural environment, we will continue to implement measures that build a win-win relationship with farmers that helps farmers to maintain their financial autonomy.

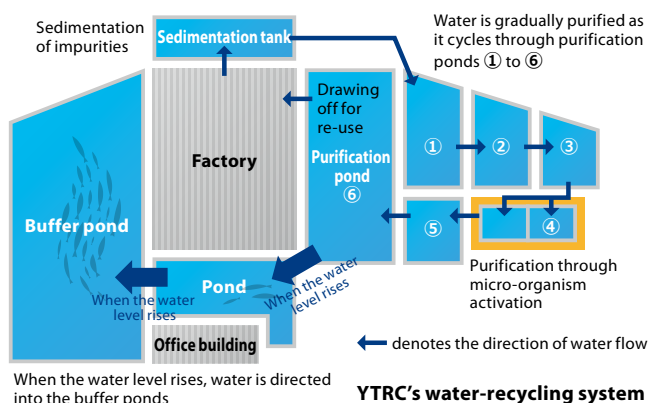


**We are working,  
through our business operations,  
to make natural rubber  
a sustainable resource**



**[Results of initiatives]  
Number of suppliers  
participating in Suppliers Day  
42 participants from 25 companies  
(in 2018)**

## Measures implemented at our natural rubber processing plant (YTRC)



## YTRC's water cycle measures

Y. T. Rubber Co., Ltd. (YTRC) is Yokohama Rubber's Thai rubber manufacturing subsidiary. When the YTRC plant first began operation, we signed an agreement with the local community undertaking not to allow any of the water used in the plant to be discharged outside the plant; we have been using a water cycle system that enables water to be repeatedly reused. YTRC uses two types of rubber raw material to manufacture Standard Thai Rubber (STR); water is used mainly in the process of washing these raw materials.

YTRC has a sedimentation tank and six purification ponds inside the factory premises; water cycles through these and is reused. Water that has been used in the manufacturing process is first transported to the sedimentation tank, where non-soluble substances are deposited. The water then cycles through the six purification ponds, where microorganisms are used to purify the water. One of these ponds is fitted with equipment for stirring the water for a set period of time so as to mix air in with the water, which accelerates the process of purification by microorganisms. The purified water is then used again in the manufacturing process.

The water in the purification ponds is sampled on a regular basis to analyze the water quality, which facilitates proper management. When the water level in the purification ponds rises because of heavy rains, the ponds located adjacent to the office building and the buffer pond function as overflow reservoirs, preventing the washing water from overflowing outside.

In order to allow this water cycle purification system using sedimentation and microorganisms to operate at full effectiveness, with regard to the washing water used in the plant, valves can be turned off whenever any of the production process equipment is shut down, and the amount of water drawn off from the ponds is automatically reduced, so that the overall amount of water being used can be properly controlled. This method enables the amount of water needed in the water cycle to be reduced by around 30%; furthermore, by increasing the amount of time that the water spends

in the sedimentation tank and being purified by microorganisms, it also improves the water quality and reduces energy consumption.

For domestic water other than drinking water, the plant uses river water that has undergone chemical treatment, filtering, and sterilization treatment. The roof of the water storage tank used to store the processed water has been modified to collect rainwater; by using rainwater, the amount of river water that is needed can be reduced. Domestic wastewater passes through the septic tanks and purification ponds before being reused as washing water in the plant.

The buffer pond has the same species of fish living in it as the nearby Tapi River. It would be fair to say that the retarding basin provides an alternative habitat for the Tapi River organisms, and thus contributes to safeguarding the biodiversity of the Tapi River. YTRC employees catch fish from the buffer pond on a regular basis to research fish species and their numbers, thereby verifying that the buffer pond is maintaining its own biodiversity.

YTRC allows local residents free access to the buffer pond, giving them the opportunity to catch fish there. In this way, in 2016 around 12 tons of fish were provided for local residents. This measure has also enabled YTRC to make local people aware of the fact that the buffer pond is contributing to biodiversity by maintaining water quality and a water environment that allows the same species of fish that live in the Tapi River to thrive there. For YTRC to be able to continue its production activities in this region, it is vitally important to have the understanding and acceptance of local residents. In addition to the activities outlined above, the staff members of YTRC's environmental safety department also hold regular meetings with local residents. By listening to local people's views, YTRC is able to ensure that these views are reflected in YTRC's CSR measures; the meetings also provide an opportunity to inform local residents about YTRC's activities, and thereby strengthen the relationship of trust that exists between YTRC and the local community.

# Leave a sound environment to future generations: Building a sustainable supply chain

## Measures implemented at natural rubber farms



A farm that practices agroforestry



Dr. Sara Bumrungsri giving a seminar

### Support for natural rubber farms (YTRC)

In order to ensure sustainable procurement of natural rubber, which is an important raw material for the manufacturing of tires and other rubber products, Y. T. Rubber Co., Ltd. (YTRC) is providing support to encourage the widespread adoption of the agroforestry method. Agroforestry involves the inter-cropping of a variety of different crops and tree species on the same farm. The agroforestry approach offers many benefits; for example, the farmer can enjoy a stable income from the harvesting of multiple different crops, including natural rubber, fruit, lumber, etc., and this approach also helps to improve biodiversity within the farm.

From the time when a rubber tree sapling is planted, it takes around 5–8 years of growth before latex can be harvested from the tree. With agroforestry, the farmer will have other sources of income from other crops during this period. A further point is that the price of rubber tends to fluctuate dramatically depending on market conditions; even after the rubber trees on a farm have matured enough for the farmer to be able to extract rubber from them, having a wide variety of other crops growing on the farm can help to stabilize the rubber farmer's income.

Rubber trees experience a period called "wintering" every year, when the leaves fall off all of the rubber trees at the same time before new leaves start to grow. Outside this period, the leaves tend not to fall off, so once the leaves that fell off during the wintering period have been decomposed by insects and microorganisms, etc., there is nothing left to cover the soil, which as a result tends to become very dry. If a variety of different plants are inter-planted together, the soil will always have fallen leaves covering it, which will protect the soil from becoming too dry. The decomposition of the fallen leaves also provides free fertilizer for the rubber trees, contributing to a reduction in costs for the farmer.

Rubber trees are affected by a disease called white root disease (WRD), the risk from which is particularly high in Southeast Asia. Once a rubber tree becomes infected with WRD, the disease can

spread to other nearby trees very rapidly, and when WRD has been in the soil, that area of land cannot be used to cultivate rubber trees for at least five years. On agroforestry farms, because a wider variety of different plant species are being grown, the range of microorganisms in the soil is much more complex, and it is believed that this makes it more difficult for WRD to gain a foothold.

With assistance from Dr. Sara of the Prince of Songkla University, a noted expert in the field of agroforestry, YTRC has organized agroforestry seminars for natural rubber farmers in and around the Surat Thani district, acting as liaison between Dr. Sara and the farmers, and providing venues for the seminars. Dr. Sara's research has shown that farms that practice agroforestry have higher yield and higher income than conventional natural rubber farms. However, because the number of case studies is still relatively small, YTRC has been striving to get more farmers to adopt the agroforestry practices. When YTRC first launched this project in 2016, there were 10 participating farms, with a total area of approximately 12 hectares; by 2017, this had increased to 27 farms, with a combined total of around 40 hectares. It is anticipated that, by 2020, farms with a combined land area of around 180 hectares will be practicing agroforestry.

In 2017, the direct support provided to farmers by YTRC included the provision of approximately 4,000 saplings and around 10 tons of compost. The saplings were cultivated in nursery located within the YTRC factory grounds using seeds collected by YTRC employees. The compost was made using sediments that are a by-product of the natural rubber manufacturing process, together with grass cuttings from the factory grounds and food waste from the factory cafeteria, etc.

**We provide support to farmers to make natural rubber a sustainable resource**



**[Results of initiatives]  
Agroforestry initiative**

**27** farms (covering a total area of **approximately 40** hectares)  
(As of December 31, 2017)

## VOICE

### An agroforestry farmer



**Mr. Prajub Nuphet**

It is now eight years since I first started using the agroforestry approach in a corner of my natural rubber farm. When I first heard about agroforestry, my immediate reaction was "That sounds like a really great agricultural technique!"

After implementing agroforestry for a few years, I stopped using chemical fertilizers altogether. The crops that I have planted on the farm include fruit trees, plants that are used to make spices, and trees the wood from which can be used to make furniture, etc. Not only has adopting agroforestry helped to give me a more stable income, the fact that I am doing something which is beneficial for everyone makes me feel very proud.

Over the past few years, rapid development in the Surat Thani district has led to a decline in the number of wild animals. However, since I started implementing agroforestry, there has been a pronounced increase in the number of butterflies and other insects, wild birds, etc. on the farm. In addition, although it hardly rains at all in Surat Thani during the dry season, the fallen leaves from the additional tree species help to retain moisture, so the soil doesn't dry out.

I am very grateful to YTRC for providing the seedlings. There is a lot that I don't know about agricultural techniques and market conditions in relation to crops other than natural rubber, so it would be great if I could access this kind of information. In the future I plan to start growing an even wider variety of crops, including coffee, vegetables, etc., and I hope to become an agroforestry expert so that I can transform my farm into a learning center.

## TOPIC

### Working towards sustainable natural rubber procurement

#### Supply chain survey in Indonesia

In March 2018, we engaged in communication with small-scale natural rubber farmers (smallholders) on the island of Sumatra in Indonesia, in collaboration with Indonesian company PT. Kirana Magatara, a leading supplier of natural rubber. The latex from natural rubber trees is collected and the rubber component is extracted and processed in block form, which is used in the production of tires and other rubber products. Around 80% of natural rubber production derives from smallholders with a cultivable land area of less than 2 hectares. As an agricultural crop, the natural rubber harvest varies depending on the season and on weather conditions. The price of natural rubber also tends to fluctuate dramatically depending on international market conditions. The natural rubber supply chain is very complex, with 2–6 (or even more) intermediaries between the producer and the firms responsible for rubber processing and shipment in Indonesia. PT. Kirana Magatara is working to strengthen rubber farmers' economic autonomy by providing them with knowhow that they can use to boost rubber yields and improve rubber quality. These efforts are also helping to conserve biodiversity and minimize the negative impact of climate change. By strengthening ties with stakeholders, these measures support sustainable value creation. As a user of natural rubber, Yokohama Rubber has been learning about PT. Kirana Magatara's initiatives, and has been listening directly to the views of small-scale rubber farmers, with the aim of contributing to activities that can make natural rubber a sustainable resource.



Natural rubber being harvested



## The Earth

# Leave a sound environment to future generations:

## Initiatives aimed at saving energy and promoting the use of natural energy sources



Green Curtain initiative at the Onomichi Plant

### Energy-saving measures are being implemented at all Yokohama Rubber tire production plants

In recent years, with the adoption of the Sustainable Development Goals (SDGs) by the United Nations and the adoption of the Paris Agreement at the 2015 United Nations Climate Change Conference (COP21), there has been growing demand from society for measures aimed at realizing sustainability. At the same time, investors and other stakeholders increasingly expect companies' business strategies to be linked to their CSR strategies. In line with these trends, the Yokohama Rubber Group has also been implementing measures to foster energy saving and the use of renewable energy. In regard to energy conservation, it is important to make the necessary preparations for implementing practical measures in line with the company's medium-term and long-term objectives, while striving to strike the right balance between greenhouse gas (GHG) reduction and maintaining profitability. The tire manufacturing process consumes large amounts of energy. The Facilities Administration Department provides support for energy-saving activities in a variety of areas, including the adoption of energy-efficient machinery (and upgrading existing machinery to make it more energy-efficient), reducing energy losses, etc. Tire manufacturing equipment and arrangements are constantly changing; in order to be able to monitor actual energy consumption during production more accurately, the Department is developing management systems that allow detailed, wide-ranging measurement, and will be reflecting the results of this measurement in its operations. Other important responsibilities of the Facilities Administration Department include formulating plans for realizing efficient operation of the electric power and power distribution equipment, boilers, water supply and waste water discharge equipment etc. in our factories, and drawing up measures for reducing GHG emissions deriving from air-conditioning coolant, etc. Over the last few years, we have gradually been expanding the scope of implementation of measures such as the installation of large-scale cogeneration (Combined Heat & Power) systems and switching over to different fuels for boiler operation to include not only plants in Japan but also our overseas factories. Implementing energy-saving initiatives overseas can be very challenging, but the benefits in terms of GHG emission reduction can be substantial, and we will continue to actively implement these measures. There is still considerable room for implementing further renewable energy measures, and we will continue to monitor new technology developments carefully with this aim in mind.



Kenji Ishii, Manager, Electricity & Measurement Section,  
Facilities Administration Dept.



Cogeneration system at YTMT

### Promoting the adoption of cogeneration systems

Yokohama Tire Manufacturing (Thailand) Co., Ltd. (YTMT), our manufacturing facility in Thailand, began operation of a cogeneration system that uses gas turbines and a waste heat boiler to realize efficient electricity generation in May 2017; YTMT has become the first overseas production location in the Yokohama Rubber Group to install a cogeneration system.

By providing low-cost electricity and steam, cogeneration systems help factories to both save energy and reduce costs. The cogeneration system at YTMT is expected to reduce annual CO<sub>2</sub> emissions by 9,300 tons (14%) compared to fiscal 2016, while also reducing YTMT's utilities expenses by 3–6%.

In Thailand, where the electric power supply is somewhat unreliable, the cogeneration system can also function as an emergency power supply in the event of a power cut.

As of 2017, cogeneration systems were in operation at three of the Yokohama Rubber Group's domestic production facilities in Japan. By maintaining 24-hour operation, these cogeneration systems provide 73% of the electric power consumed by the plants, and they also provide almost all the steam needed by the plants; they also contribute towards reducing CO<sub>2</sub> emissions, and towards reducing the amount of electric power needed from the power companies, including a reduction in peak power demand.



Cogeneration system at the Mie Plant

## We implement activities to reduce our environmental footprint on an ongoing, Group-wide basis



### [Results of initiatives] Greenhouse gas emissions

Scope 1	363,000 t-CO <sub>2</sub>
Scope 2	354,000 t-CO <sub>2</sub>
Scope 3	23,237,000 t-CO <sub>2</sub>
(FY2017, consolidated)	



Solar panels installed on the roof of a building

### Adoption of photovoltaic electric power generation in India

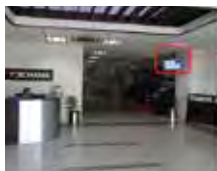
In India, where atmospheric pollution is becoming an increasingly serious problem, in order to realize an improvement in the environmental situation while still maintaining economic growth, there is a clear need to shift away from the use of fossil fuels such as coal and petroleum towards natural energy sources that will help to reduce CO<sub>2</sub> emissions. The policies adopted by the Indian government seek to promote the rapid adoption of photovoltaic (PV) electric power generation as part of this shift.

In 2014, Haryana State, where Yokohama India Pvt. Ltd. (YIN) is located, launched a PV development plan that aims to boost PV electricity generation capacity in the State to 4,030 MW by 2022; as part of this plan, YIN was asked to install PV capacity equivalent to at least 8% of its contracted electric power usage (as of 2017).

YIN installed 625 PV panels, with a combined generating capacity equivalent to 9% of the company's contracted electric power usage. As a result, over the period August 2017 – March 2018 YIN succeeded in reducing CO<sub>2</sub> emissions by around 112 tons (this calculation assumes that reducing electric power consumption by 1 kWh is equivalent to a reduction in CO<sub>2</sub> emissions of 0.8 kg). On sunny days, the PV panels have a combined generating capacity of 125 kW per day, although the average value is around 80 kW per day. The electric power generated using the PV panels is used for lighting, electrical sockets etc. within the factory, and thus contributes towards reducing YIN's electricity charges.

There are plans to expand the scale of the YIN factory, which in turn will lead to an increase in the amount of PV generating capacity that YIN is required to install. YIN is planning to increase the capacity of its PV system by March 2022 in order to meet this requirement.

There is a display monitor at the YIN factory's reception building that shows how much electric power is being generated by the PV system, thereby helping to stimulate environmental awareness. Through this project, YIN is contributing towards environmental improvement in India.



The display monitor at the factory's reception building showing the amount of power generated by the PV system



### TOPIC

#### Switching over to gas boilers

Recognizing the seriousness of the problem of atmospheric pollution, in 2017 the Chinese government introduced new measures to regulate emissions of coarse particulate matter from factories. Shandong Province has followed suit, and although Shandong Yokohama Rubber Industrial Products Co., Ltd. (YRSC) had already fitted coarse particulate matter removal devices to its coal boilers in fiscal 2016, in March 2017 the municipal government of Weifang City, where YRSC is situated, issued a notification requiring that all coal boilers of 10-ton capacity or smaller located within the City be dismantled; in response, YRSC decided to replace its coal boilers with gas boilers and also switch over from steam to oil as the heat transfer medium.

Using oil – which has superior charging efficiency – as the heat transfer medium means that, by having the oil circulate once it has been heated up, temperature loss can be controlled, and less gas is needed than when coal is used as the heat transfer medium. The new gas boilers began operation in October 2017, with the target noted below.

In the future, YRSC will continue to collect information regarding environmental policies and guidelines, and will work proactively to address environmental issues.



The new gas boilers

#### [YRSC's targets]

Reduce CO<sub>2</sub> emissions per unit of output by at least 45% in FY2018 compared to the base year (FY2017)

#### Heat loss with steam and heat-transfer oil compared

