

# A New Challenge to Minimize Factory CO<sub>2</sub> Emissions for a Low Carbon Society

## In-house “Energy Service Company” Set Up to Locate All Kinds of Energy Loss and Make Improvements

The Paris Agreement on climate change was established in November 2016 to urge each country to take measures to reduce carbon emissions. Toyota Gosei Co., Ltd. established its “TG 2050 Environmental Challenge” in February 2016, setting six long-term challenges with a view toward the year 2050. Here we look at one of those challenges, “Minimizing factory CO<sub>2</sub> emissions in 2050,” and our road map and new energy activities to achieve that goal.



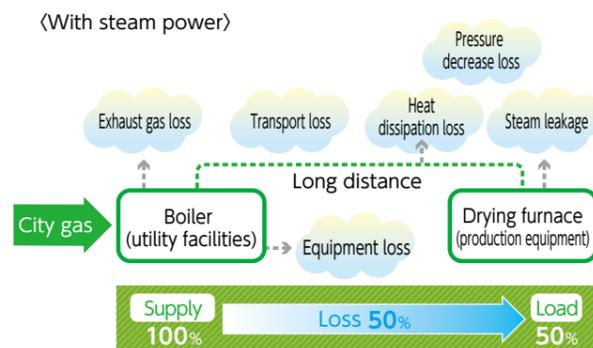
### Road map to “Minimizing CO<sub>2</sub> emissions”

Our plan for achieving the very lowest CO<sub>2</sub> emissions from our factories has two stages. In the first stage, we will review the use of energy sources including electricity, gas, heavy oil, air and steam in our existing facilities, and work toward zero energy loss. We will further move toward minimizing the amount of energy needed by upgrading to more efficient equipment and developing and introducing innovative production technologies. In the second stage, we will switch to

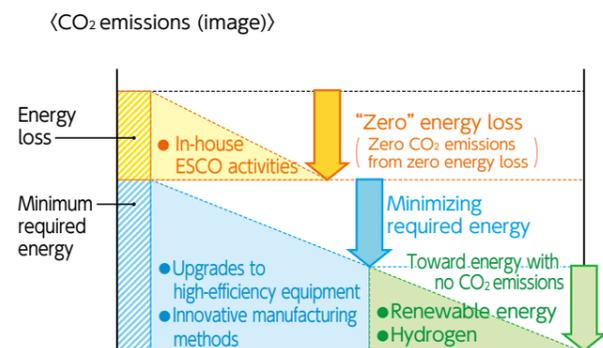
renewable energy or hydrogen sources that do not emit CO<sub>2</sub>.

To achieve this plan we have re-examined our utility and production equipment from an energy-saving perspective, and in 2016 formed an in-house energy service company (ESCO), an expert team to make improvements. We will enhance and expand this in-house ESCO over the coming years to play a greater role in minimizing our CO<sub>2</sub> emissions.

#### Energy loss (image)



#### Minimizing energy



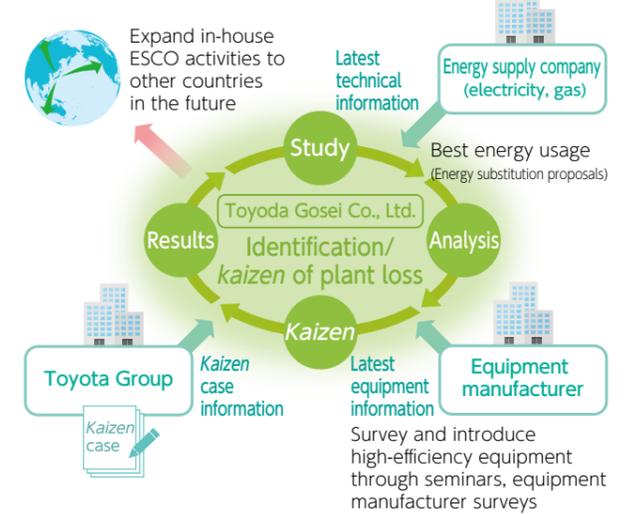
### Activities to thoroughly reduce energy usage

In addition to our efforts so far to save energy, which have mainly been daily *kaizen* and switching to high-efficiency equipment and machinery in manufacturing divisions, our new in-house ESCO intensifies energy-saving activities with coordinated action between the Environment and Manufacturing Divisions. We uncover targets for energy savings with *genchi-genbutsu* from the six perspectives of ceasing, turning off, repairing, avoiding, picking up and changing to reduce CO<sub>2</sub> emission volumes.

We are also making improvements by reviewing our entire chain of energy usage from supply to point of use, with information and proposals from sources including *kaizen* examples in the Toyota Group, energy supply companies, and equipment manufacturers.

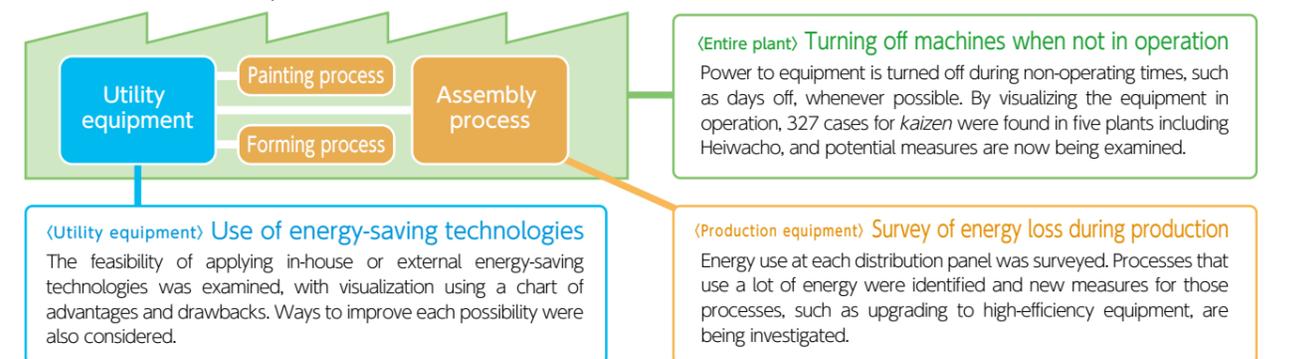
In the coming years we will spread these activities to our overseas operations to reduce CO<sub>2</sub> emissions across the entire Toyota Gosei Group.

#### In-house ESCO activities



#### 2016 Activities

In fiscal 2016 we began in-house ESCO activities at our Heiwacho Plant. We surveyed the current conditions for the entire plant, utilities equipment and production equipment. Then, based on the findings, we conducted analyses and studied measures for improvement.



### TG Voices



Yohei Samura  
Environment Division

Energy is essential for manufacturing, but loss occurs depending on the way that energy is supplied and used. Through these activities we are minimizing that loss to contribute to reducing the company's environmental impact and improving its profitability.



Katsuhide Miyake  
Environment Division

We searched every corner of the shop floor for any possible source of energy loss. Minimizing that loss and protecting the earth's environment is to the company's benefit, and from here on we intend to conduct in-house ESCO activities throughout the company.

#### Message from executive in charge



Yasushi Miyamoto  
Managing Officer in charge of Environment Division

#### In-house ESCO activities for sustainable growth

The Toyota Gosei Group aims to grow sustainably together with society while making our operations environmentally friendly. The only way to do that is to greatly reduce the CO<sub>2</sub> emissions, water usage, and waste volume in our business activities. The “in-house ESCO” started in fiscal 2016 is working for significant reductions in these volumes. For these efforts to succeed, however, we will need all employees to join together and do everything they can to resolve each issue. In-house ESCO is an energy-centric activity in which persistent efforts will build on each other and lead to significant results. In the future we intend to spread these activities to reduce water usage and waste volumes to the entire Toyota Gosei Group.