



## Establishing a Low-carbon Society

While the worldwide movement of decarbonization has accelerated amid growing concern about global warming, the Tokai Rika Group has been enhancing activities we consider to be the responsibility of a global company, and has been promoting CO<sub>2</sub> reduction activities within the whole group. These activities include downsizing and reducing the weight of products, which contribute to the improvement of fuel efficiency of vehicles, and improving the efficiency of the use of energy in production and transportation.

### Promotion of more compact and lightweight designs for products

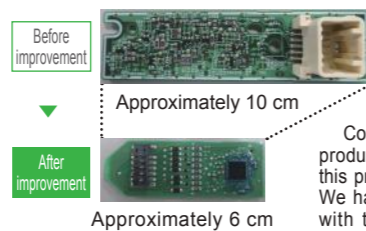
We are promoting more compact and lightweight designs for products, which will lead to the improvement of the fuel efficiency of vehicles, in anticipation of the need to respond to next-generation eco-friendly cars.

### More compact shift indicator substrate

By converting part of the circuit board mounted on the shift indicator into an IC (integrated circuit) and changing the connection method from a normal connector to a pin header terminal, we achieved more compact and lightweight boards and products.



Shift indicator



Product weight reduced by **50%**



Personnel at 1st Electronics Engineering Division from the left:  
**Yoshihisa Seino, Daiki Yasunaga, Makoto Itatsu, Masahiro Inoue**

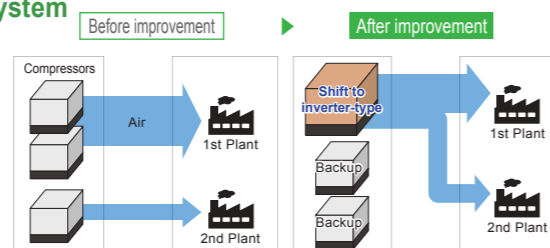
Collaboration with other divisions was essential for this product development. We were able to commercialize this product in cooperation with many related divisions: We have proceeded with IC conversion in cooperation with the Electronics Device Division, carried out a design review with the Production Engineering Division for pin header mounting, and discussed the structural requirements with the product business-related divisions.

### Reduction of CO<sub>2</sub> emissions

By performing activities such as thorough elimination of wasteful energy consumption in production processes, horizontal deployment of energy-saving improvements on a global scale, and the introduction and expansion of renewable energy, we have achieved both Tokai Rika's and the Tokai Rika Group's basic-unit targets for CO<sub>2</sub> emissions for FY 2019.

### Energy saving by reviewing the air supply system

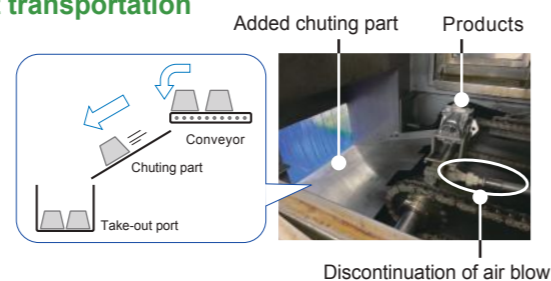
At the Semiconductor 1st and 2nd Plants, air used to be supplied by the compressors at each plant, but by integrating the air supply system and shifting the main compressors into inverter-types we could achieve efficient operation according to the load, resulting in significant reduction of power consumption.



Reduction in amount of CO<sub>2</sub>  
**95.9**  
t-CO<sub>2</sub> / year

### Discontinuation of the use of air for product transportation

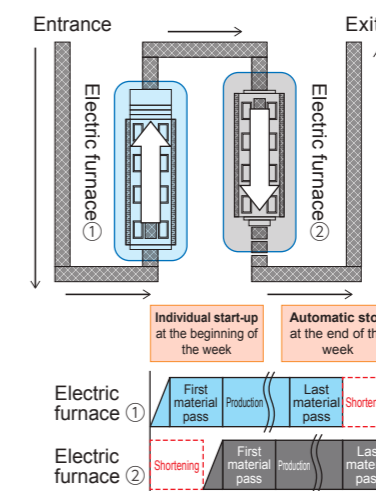
In the casting process of TRT (Thailand), the product was taken out by air blow, but by creating a chute that discharges the product using its own weight and installing it at the take-out port, the use of air blow was discontinued and the energy required for taking out the product was reduced.



Reduction in amount of CO<sub>2</sub>  
**12.3**  
t-CO<sub>2</sub>/year

### Obtaining JIT for start-up/down of the heat-treatment furnace

The heat-treatment furnace for seatbelt parts consists of two electric furnaces with different temperatures. As the power sources of the heat-treatment furnaces are managed collectively, one of the furnaces burned empty at both the start of the week and the shutdown at the end of the week, wasting power. Therefore, we changed the control circuit and improved the power management so that each electric furnace can be controlled independently, resulting in obtaining energy JIT (Just In Time).



Reduction in amount of CO<sub>2</sub>  
**31.5**  
t-CO<sub>2</sub>/year



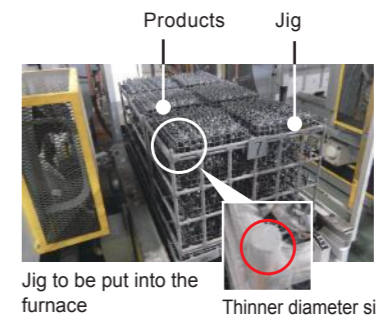
Security Production Engineering Division  
**Yosuke Kawahira**



In addition to optimizing the operation time, we have improved the control method to prevent parts from entering the unheated furnace to prevent defects due to process skips. I am glad that we have shared our wisdom with the people around us, and have been effective in terms of both CO<sub>2</sub> and cost.

### Higher cycle due to lightweight jig

In the quenching/tempering furnace of the heat treatment process, the product is set in the jig and put in, but there is a limit to the weight that can be put in at one time. Therefore, we made it possible to increase the number of products that can be input by 1.5 times and reduce the number of furnace operations by making the jig enclosure thinner and lighter.



Safety Production Engineering Division  
**Tomoaki Nakamura**



We had a hard time applying the jig to each heat-treated part with a different shape, while maintaining product quality and jig's durability. In cooperation with related divisions, we were able to improve the cycle by devising jigs instead of modifying the equipment.

Reduction in amount of CO<sub>2</sub>  
**11.7**  
t-CO<sub>2</sub> / year

### Outstanding Example Award for CO<sub>2</sub> Reduction

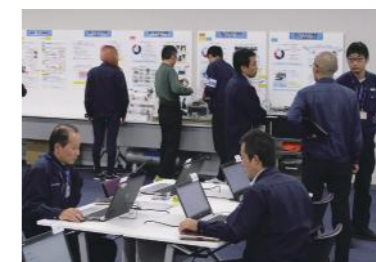
Tokai Rika has established a system for commending examples of energy-saving improvements showing excellent application and focus carried out by each division. In order to help improve energy saving at each division, we exhibit the outstanding examples selected at each plant at the Energy Saving Exhibition, and decide the best examples through voting by the employees who visit.

#### FY 2019 Outstanding Examples

Award	Example	Division
Gold Award	Higher cycle due to lightweight jig	Safety Production Engineering Division
Silver Award	Intermittent air blower for connector molding machine	Security Production Engineering Division
	Low-temperature metal plating resin process	Safety Production Engineering Division
Bronze Award	Energy saving by reviewing the air supply system	Oguchi Plant Administration Division
	Inverter for cooling water pump for compressor	Oguchi Plant Administration Division
	Obtaining JIT for start-up/down of the heat-treatment furnace	Security Production Engineering Division

### Energy Saving Exhibition

Tokai Rika organizes an Energy Saving Exhibition every year with the concept of increasing the number of employees who are interested in energy saving and wish to improve the situation, and expanding our horizons on energy efficiency. We provide an opportunity for employees to raise their energy-saving awareness by exhibiting panels that show the perspective of energy-saving improvement, exhibiting examples of CO<sub>2</sub> reduction within the company, and exhibiting demonstration machines that allow you to experience energy-saving performance.



Energy Saving Exhibition



Energy-saving experience corner

▶ Establishing a Low-carbon Society

■ Use of renewable energy

The Tokai Rika Group aims to achieve renewable energy to account for more than 20% of power consumption by 2040, and is introducing solar power generation systematically.

In FY 2019, we introduced 1.0 MW in total at Hagi Plant, TRP (Philippines), and Ena Tokai Rika Co., Ltd., a domestic subsidiary. As a result, we introduced 3.5 MW in the entire Group and the renewable energy rate was improved to 1.9%.



Hagi Plant, Tokai Rika: 0.3 MW



Ena Tokai Rika: 0.5 MW



TRP (Philippines): 0.2 MW

Renewable energy use rate  
Improvement of  
**0.6 %**

■ Green power certificate

Green power is being used at the office building of the Head Office by making use of the Green Power Certificate\* system with an annual biomass generation of 100,000 kWh.



Green power certificate

\*The Green Power Certificate is issued by a third-party agency and certifies the amount of environmental added-values of power generated by means of natural energy.

Topics

Initiatives for reducing CO<sub>2</sub> emissions at TSB (Thailand)

In TSB (Thailand), in order to significantly reduce the total amount of CO<sub>2</sub> emissions, members elected from each division launched a new CO<sub>2</sub> reduction project, prioritizing and taking countermeasures for the issues that were brought up among the members. In FY2019 they worked to lower the air supply pressure, investigated the required pressure of air equipment and the end pressure of the air piping, and reduced the excessive supply pressure of the compressor by 0.2 MPa. Also, on holidays they carry out energy-saving patrols at their plant and take thorough measures against air leaks.

Reduction in amount of CO<sub>2</sub>  
**13.0**  
t-CO<sub>2</sub> / year

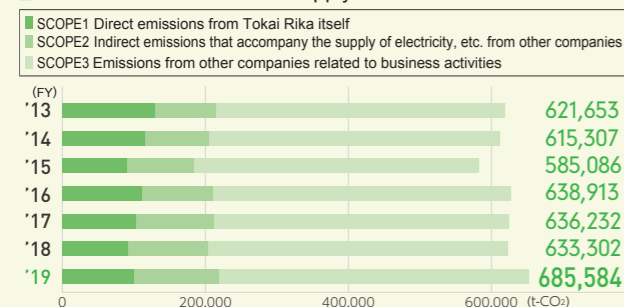


Progress follow-up meeting, CO<sub>2</sub> emissions reduction project

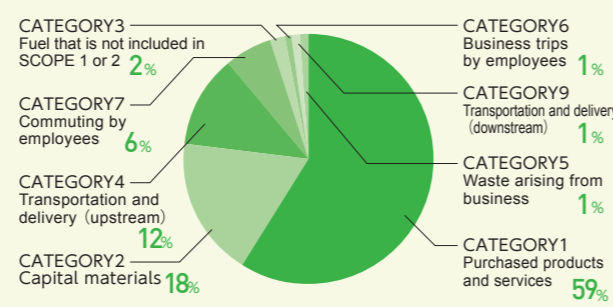
CO<sub>2</sub> emissions in the supply chain

The Tokai Rika Group recognizes that in order to control global warming, it is necessary to reduce not only CO<sub>2</sub> emitted through activities conducted by the company, but also emissions throughout the life cycle. We have been monitoring the amount of CO<sub>2</sub> emissions throughout the supply chain, including upstream and downstream, and are promoting activities for reduction.

■ Trends in emissions in the supply chain



■ Breakdown for SCOPE 3 in FY 2019



Reduction in greenhouse gases

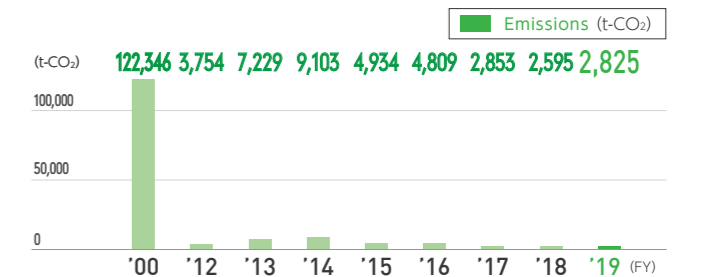
The Tokai Rika Group is working to reduce emissions of not only CO<sub>2</sub> that accompanies energy use but also greenhouse gases (five gases), by taking measures for emission control such as replacing and detoxifying the target gases.

■ SF<sub>6</sub> emission reduction activities

We had been using SF<sub>6</sub>\* for the shielding gas to prevent melted materials from burning when exposed to air in the magnesium casting process, but because the greenhouse effect is so high with SF<sub>6</sub> we promoted a changeover to FK (fluorinated ketone) gas, which has a smaller greenhouse gas effect, and changeover to FK in all casting processes in Japan was completed.

\*SF<sub>6</sub> has high global warming potential, 23,900 times greater than that of CO<sub>2</sub>, our standard (IPCC guideline No. 2), so it has been specified as one of the targets of emission control.

■ Greenhouse gas (five gases\*) emissions

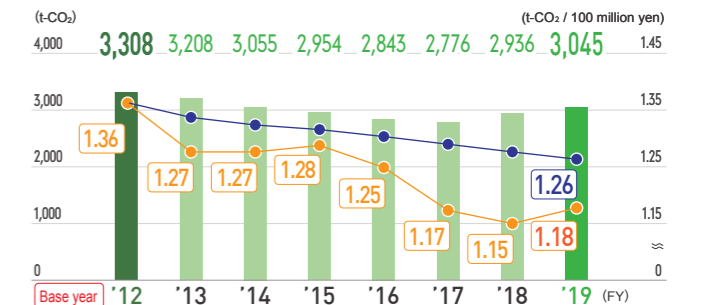
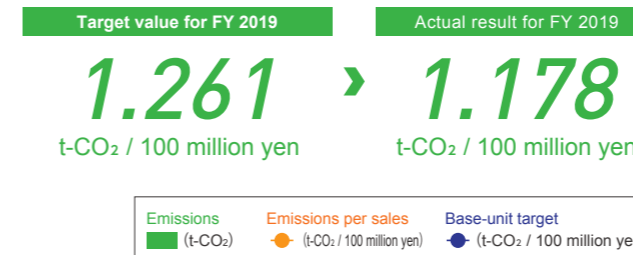


\*Five gases: Methane (CH<sub>4</sub>), dinitrogen monoxide (N<sub>2</sub>O), hydrofluorocarbon (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF<sub>6</sub>)

Pursuit of efficient transportation in logistics activities and reduction of CO<sub>2</sub> emissions

We are working to reduce CO<sub>2</sub> emissions in the transportation process by improving packaging that leads to higher storage efficiency and loading ratio, and reviewing efficient transportation routes.

■ Trends in CO<sub>2</sub> emissions for logistics activities per sales



Reduction of transportation load by reducing container size

We have devised an efficient storage method and partition while taking into account the quality assurance and workability of storage / removal, and have reduced the container size by 25% without changing the amount of storage. As a result, we were able to reduce the load equivalent to 41 large trucks annually.



Reduction in amount of CO<sub>2</sub>  
**6.0**  
t-CO<sub>2</sub> / year