

# Panasonic Connect Co., Ltd. Circuit Formation Process Business Division Environmental Report

April 1, 2025



## Introduction

The purpose of this report is to introduce environmental initiatives of the Process Automation Business Division, Panasonic Connect Co., Ltd. to our stakeholders. Regarding our other social and governance initiatives and basic policies, please refer to the [Panasonic Connect Sustainability Report](#).

### Published

April 2025 (Previous report: April 2024)

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- Reducing CO2 emissions by 12.1% by shortening production time through productivity improvements
- Reducing waste solder by 30.9% using automatic functions of the screen printer
- 5.6% Reduction in CO2 Emissions by Improving Productivity with Line Management Software

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- A total of 350 people participating in 8 events organized by a business division



## Panasonic Connect Sustainability

By reforming frontline operational processes, we will reduce CO2 emissions and make effective use of resources.

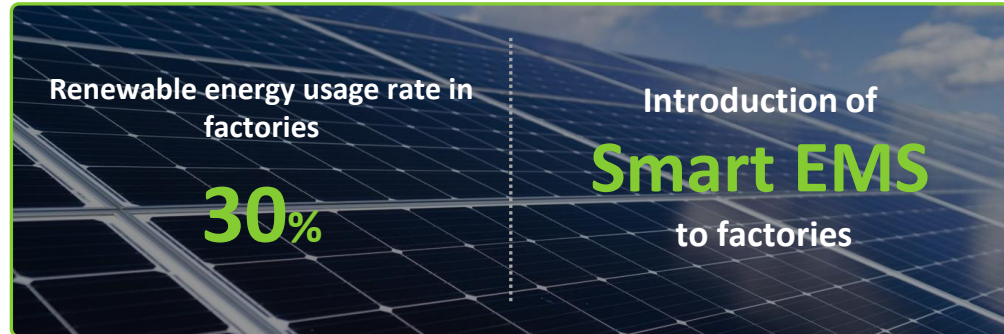
We propose optimal work styles for all workplaces and create a society where people can live with well-being.

By connecting with customers and providing innovation in their operations, we will realize sustainability for the global environment and well-being for each individual.

**Change Work,  
Advance Society,  
Connect to Tomorrow.**

# World-class JISSO with process technology change manufacturing and society

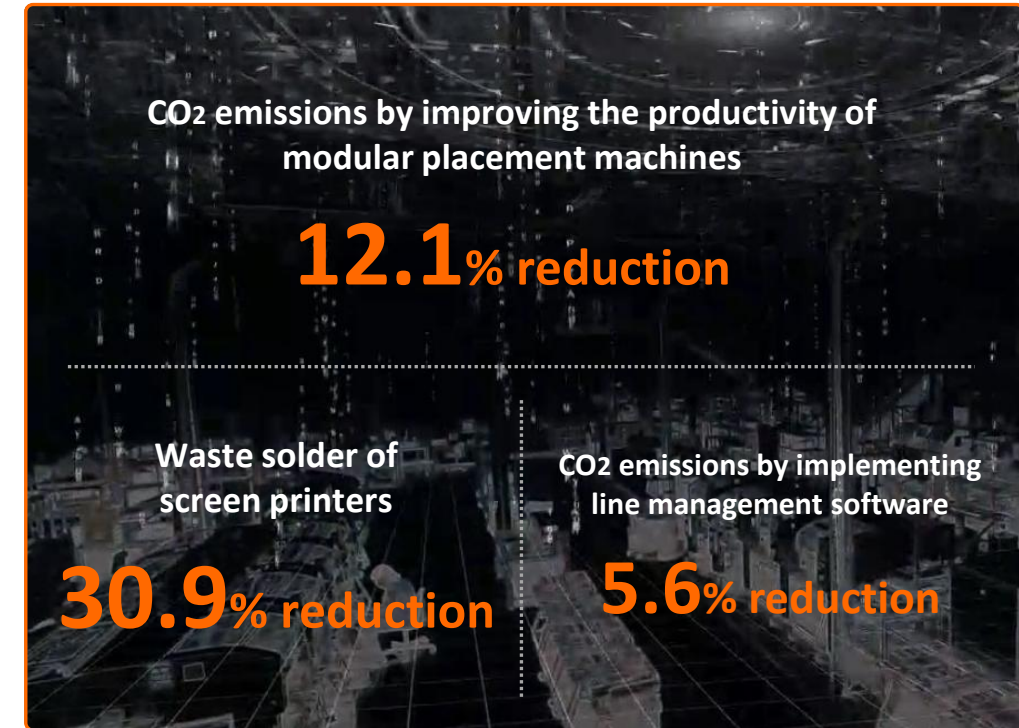
## Environmental initiatives at factories Environmental activities at our workplace



## Panasonic ECO RELAY JAPAN Well-being at our workplace



## Optimization of manufacturing sites Sustainability through the provision of services to customers





# Environmental initiatives at factories

To achieve a better life and a more sustainable global environment

The Panasonic Group is working to reduce the global environmental impact of manufacturing.

## Key themes

1. Energy conservation activities
2. Chemical substance management
3. Waste reduction
4. Environmental risk

## Purpose of initiatives

1. Minimize CO2 emissions from factories
2. Minimize chemical substance emissions
3. Minimize waste generation
4. Prevent environmental risks

Each factory is working to minimize all inputs and emissions in the production process, reduce waste, and increase the recycling of valuable materials and resources, thereby achieving higher recycling rates.

## Recycling rate of waste and valuable resources



Recycling rates for waste and valuables

: Domestic factories (Kofu), overseas factories (PFSS, PFSAP)

There is a wide variety of chemicals, each with its own toxicity. The Panasonic Group assesses the hazard level of chemical substances, classifies them by rank, and establishes its own criteria for hazardousness factors. The HEI count (Human and Environment Impact) at each factory is calculated, managed, and reduced.

## Chemical substance

	2018	2019	2020	2021	2022
Total global HEI count	723	746	733	769	523

HEIcount=Chemical Hazard Coefficient×Emissions and transfers

Chemical Substances Control Area: Kofu Factory,PFSS,PFSAP

# Kofu Factory Onsite PPA introduction

Solar panels were installed at the Kofu Factory, 2026/4 More onsite PPA Started operation

## Estimated effects of PPA introduction

CO2 emission reduction

**22,140**  
t/20 years

Renewable energy rate

**30%**

\* Estimates as of September 26, 2023

\* Panel installation area: 14,600 m<sup>2</sup> (including the replacement of existing panels)

## PPA [Power Purchase Agreement]

PPA is a contract concluded directly between electricity sellers and buyers.



PPA supplier

Contract (PPA)

Payment for  
the electricity  
generated



Company that has  
introduced a PPA

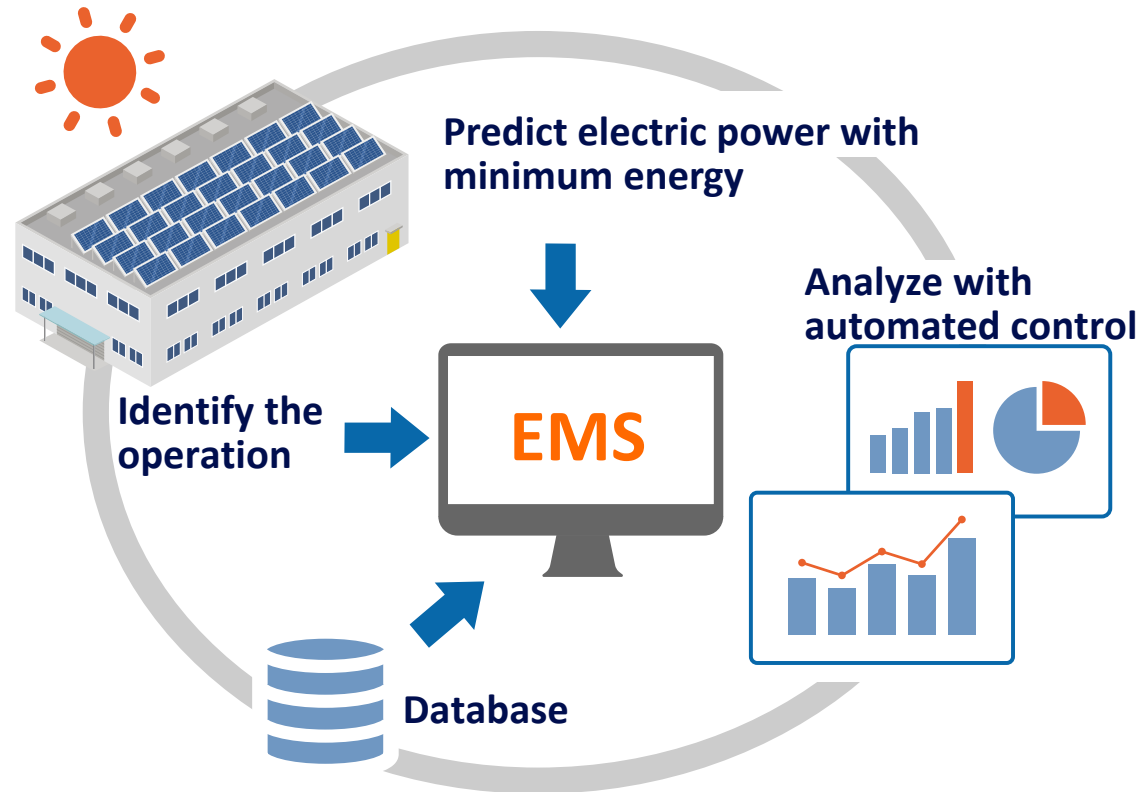




# Smart EMS installation at Toyonaka Factory

Through the installation of smart EMS\* in the cleanroom of the Toyonaka Factory, we have achieved energy-efficient manufacturing while maintaining quality.

\*EMS: Environmental Management System



Sustainability through the Provision of Services to Customers

# Optimization of manufacturing sites

Autonomous Factory×Environmentally conscious edge devices

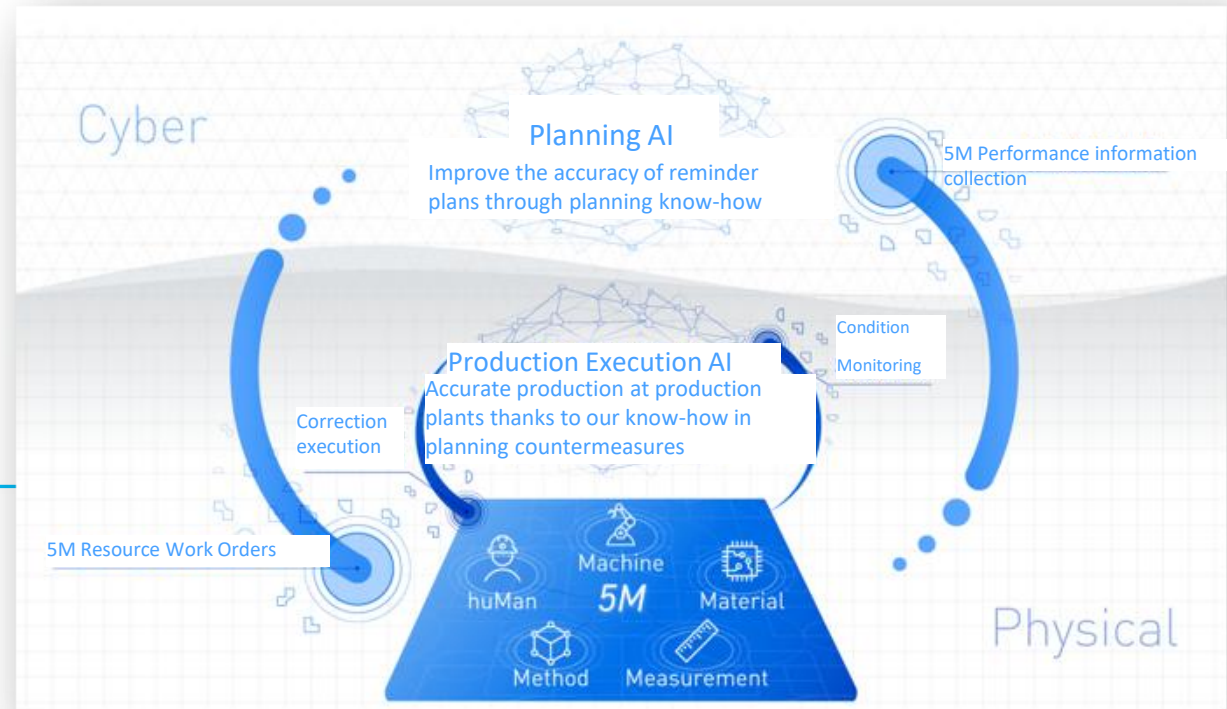
We propose the **Autonomous Factory** that autonomously controls the 5Ms\*, which are variable factors at production sites, by combining expertise and technology to optimize production sites, enabling immediate response to customer demands and supply changes. By leveraging the 5M data effectively, we aim to develop optimal production plans to eliminate waste and achieve planned manufacturing.

\*5M represents the elements that make up manufacturing: huMan, Machine, Material, Method, and Measurement

## Aiming to achieve Autonomous Factories and specialize in edge devices

By promoting specialization in edge devices as the starting point for achieving the Autonomous Factory, Circuit Formation Process Business Division(CPBD) supports quality production through industry-leading precise and accurate machining processes.

In addition, by reducing CO2 emissions through energy-saving measures during equipment operation and standby, including modular placement machines and screen printers, CPBD contributes to enhancing energy efficiency and reducing environmental impact at customers' sites.





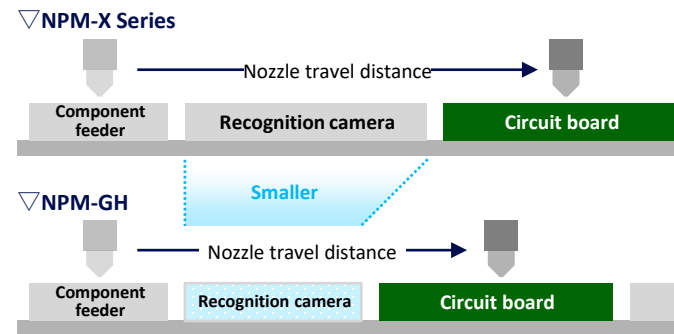
## Optimization of Manufacturing Sites

# Reducing CO<sub>2</sub> emissions by 12.1% by shortening production time through productivity improvement of modular placement machines

### Improve productivity by reducing the travel distance in the Y direction

Component travel distance

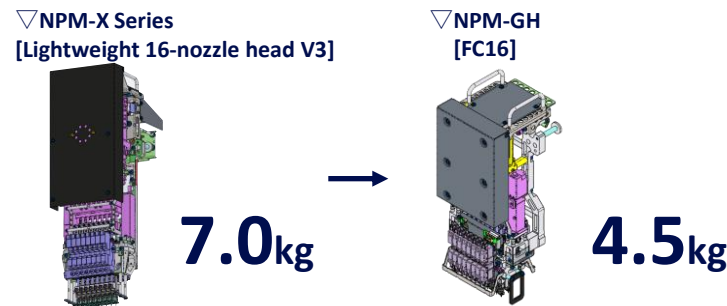
**16%**  
reduction



### Improve productivity by using a lighter mounting head

Mounting head weight

**36%**  
reduction



#### Compared models

Model before replacement: NPM-DX  
[Energy consumption: 2.31 kWh / Productivity: 70,000 cph] \*1

Model after replacement: NPM-GH  
[Energy consumption: 2.07 kWh / Productivity: 74,000 cph]

\* Since one unit of the NPM-DX model is equivalent to two units of the NPM-GH model, its energy consumption and productivity are shown at half of the actual figures

#### Scope of quantification

The reduction in production time achieved through productivity improvement is calculated as an effect



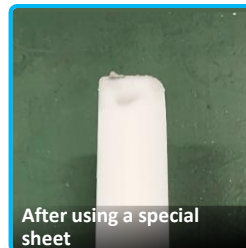
NPM-GH

# Reducing waste solder by 30.9% using automatic functions of the screen printer

## Reduce remaining solder through automatic functions

Solder remaining on the spatula when a special sheet is used

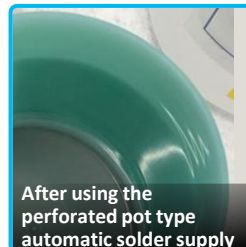
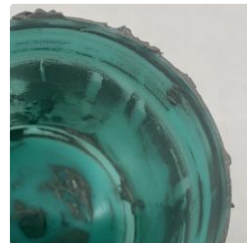
**82% reduction**



After using a special sheet

Solder remaining in the perforated pot when automatic solder supply is used

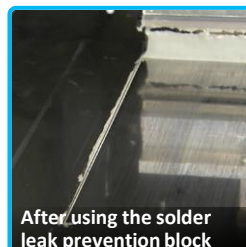
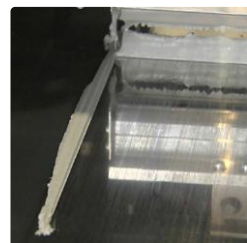
**53% reduction**



After using the perforated pot type automatic solder supply

Solder leakage when the solder leak prevention block is used

**50% reduction**



After using the solder leak prevention block

### Compared models

Before replacement: NPM-GP/L [standard spec]

After replacement: NPM-GP/L [equipped with optional functions]

a. Solder transfer function / b. Perforated pot type automatic solder supply / c.

Solder leak prevention block

### Scope of quantification

Reduced waste solder through automatic functions



NPM-GP/L

Optimization of manufacturing sites

# Reducing CO2 emissions by 5.6% through productivity improvements via line management software

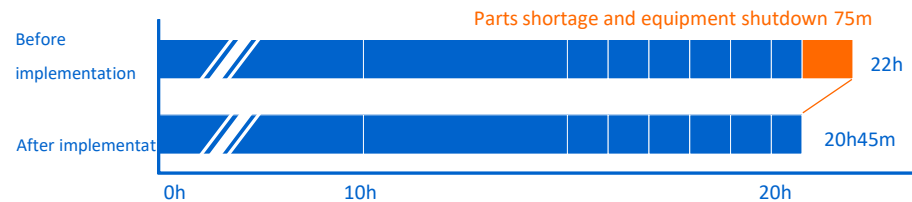
## Reduce equipment downtime (operation loss) due to parts shortages

Accurate part count monitoring and warnings through material management and matching

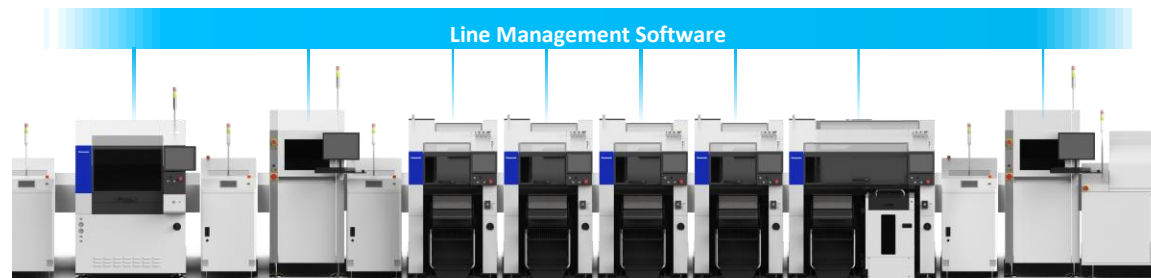
Support operators to supply appropriate parts

Reduced production time = Reduced power consumption=CO2 Emission reduction

**5.6%**  
shortening



\*PanaCIMOP When the function "Operating Monitor" was introduced BC Customer case studies





# Panasonic ECO RELAY JAPAN

Working with local communities to save the earth and raise awareness of global environmental conservation

We are working to raise awareness of the importance of preventing global warming and reexamining our lifestyles by engaging in a wide range of global environmental conservation activities. These activities include preserving local environments such as forests, green spaces, and bodies of water; efforts to conserve "satoyama" (undeveloped woodlands near populated areas); and nature education programs. Additionally, by collaborating with local residents, we contribute to community revitalization efforts.



## A total of 350 people participated in 8 organized by business division.

### Activities in partnership with local governments

Number of participants

**70** people

Arakawa River cleanup activity / Mount Fuji cleanup activity / Senri River cleanup activity / Kaga Coast cleanup activity / Minoshima cleanup campaign

### Cleanup activities around factories

Number of participants

**253** people

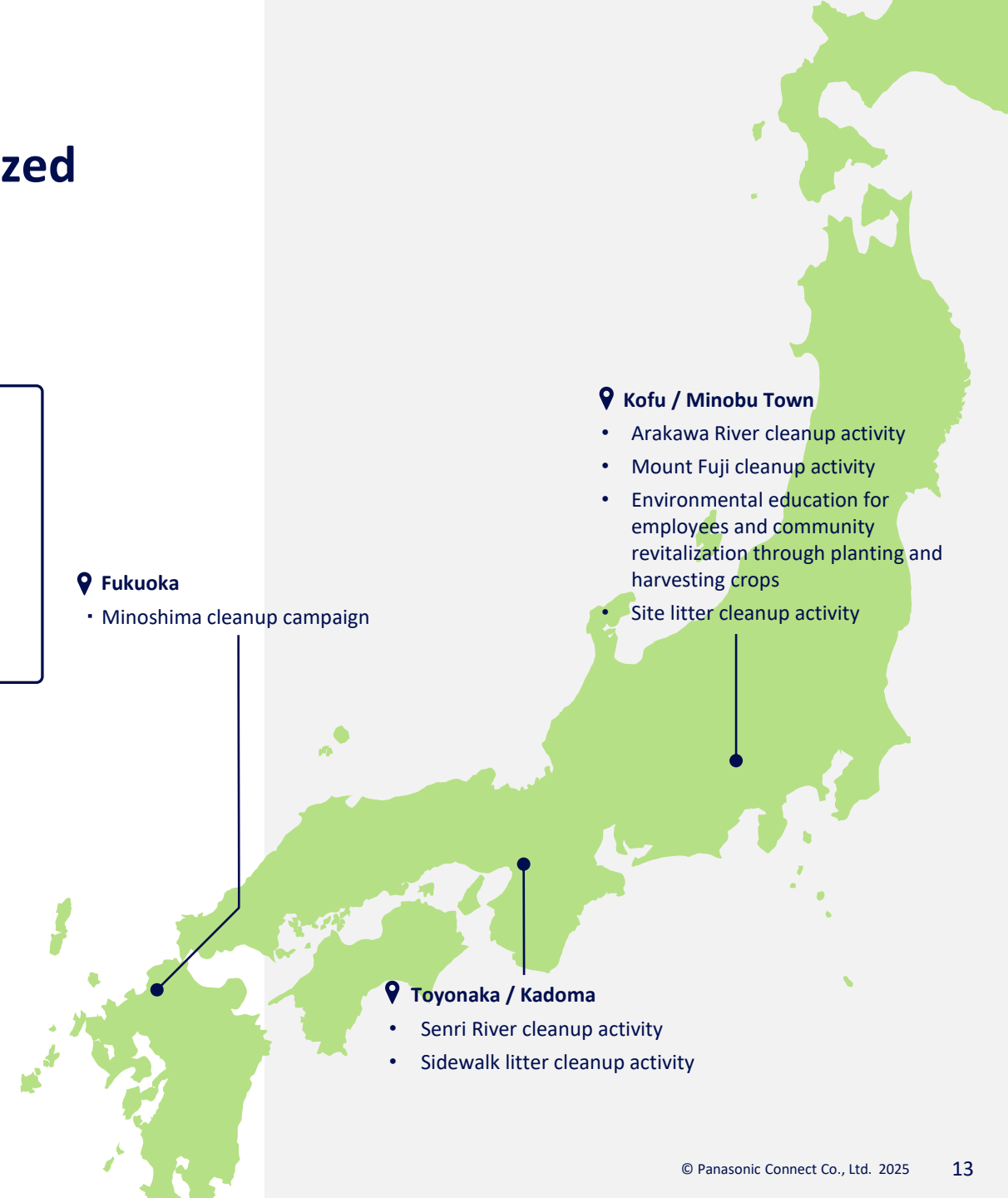
Sidewalk litter cleanup activity around each site

### Activities in rural village zones

Number of participants

**27** people

Environmental education for employees and community revitalization through planting and harvesting crops



#### 📍 Kofu / Minobu Town

- Arakawa River cleanup activity
- Mount Fuji cleanup activity
- Environmental education for employees and community revitalization through planting and harvesting crops
- Site litter cleanup activity

#### 📍 Fukuoka

- Minoshima cleanup campaign

#### 📍 Toyonaka / Kadoma

- Senri River cleanup activity
- Sidewalk litter cleanup activity



**Panasonic**  
**CONNECT**

The logo features the word "Panasonic" in white and "CONNECT" in a light blue color. The "C" in "CONNECT" is stylized with a circular loop. The background is a dark blue grid with a large light blue arc on the left and a medium blue square on the right.