Creative Manufacturing That Helps Slow Down Global Warming

Increasing the performance of ashing devices to help reduce carbon dioxide emissions in semiconductor manufacturing

The advances and downsizing of electronic equipment are largely due to the improved performance and miniaturization of semiconductors. In promoting such improvements, the performance of semiconductor manufacturing systems leads to higher production efficiency, resulting in lower energy consumption. Our leading-edge semiconductor manufacturing systems represent a major step toward reducing carbon dioxide emissions.

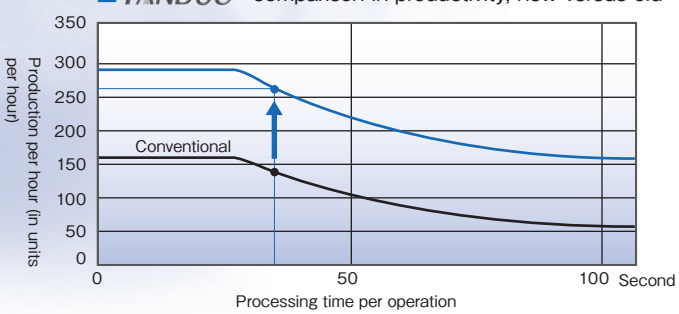
The new ashing※1 device TΛNDUO® employs a new platform※2 intended to double productivity, while suppressing the increase of power consumption to 1.5 times more than that of conventional equipment※3, thereby achieving a 20% cut in energy consumption per manufactured chip.

This lower consumption of energy reduces the annual power consumption per unit by 26 MWh. The reduction in carbon dioxide emissions (converted based on 1 kWh = 360 g of CO_2) represents a decline in carbon dioxide emissions by about 9 tons per year.

About 70% of our semiconductor manufacturing systems are destined for overseas locations. As a major semiconductor manufacturer in the world, we help advance semiconductors, increase production efficiency, reduce manufacturing costs and energy consumption, and help alleviate global warming.

TΛNDUO®

■TANDUO® comparison in productivity, new versus old



*TΛNDUO® is one of our registered trademarks.

Voice

We inherited as much of the concepts (design thinking) and strengths of conventional models as possible, and develop new models in a short time.
After shipping our first model, the same user gave us a repeat order. I feel that our TΛNDUO® is being well-received and that our hard development work has paid off. Environmental measures are an important social contribution of a corporation. Instead of being content with current conditions, we will strive toward reducing carbon dioxide emissions even further.

Toshiya Shimada
Single-Wafer Equipment Engineering Department, Toyama Works

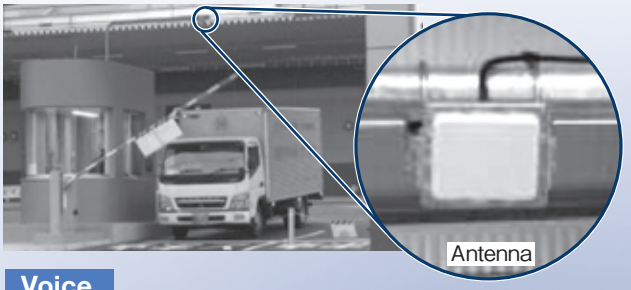
Glossary

※1 Ashing ……The name of a semiconductor-manufacturing process where the rough part called "resist" on a wafer is etched (baked) and then removed
※2 Platform ……A part consisting of the basic cabinet, conveying mechanism, controller and other components that form the foundation of the equipment
※3 Conventional equipment ….Our ashing device "λ (lambda) series" released in April 2003

A major simplification in the entry/exit procedure eliminated the time for idling and waiting.

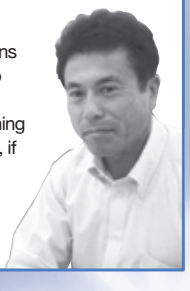
ETC technology has been applied to the entry/exit procedure, thereby contributing to a cut in carbon dioxide emissions.

One distribution center receives about 130 vehicles every day. Until recently, at the time of entry, drivers had to exit their vehicles in order to follow the entry procedure, sometimes forcing several vehicles behind them to wait in line.
The introduction of our DSRC※4 vehicle entry/exit system based on an ETC (electronic toll collection) terminal has now made entry possible in one stop from authenticating a registered vehicle to automatic opening and closing of the gate.
This system has shortened the time needed to complete the entry procedure for vehicles from about three minutes per vehicle on average to only several seconds.
This eliminated the need for idling while waiting to complete the procedure. Trial calculations based on the example of this user show that a contribution has been made to reduce carbon dioxide emissions by 1.4 tons per year.



Voice

This system has been built in an attempt to alleviate the user's burden and increase convenience. I feel that it is very worthwhile being able to help alleviate global warming by reducing carbon dioxide emissions by building a system based on our company's radio communication technology.
I would like to continue to help alleviate global warming by selling more units of this system with my humble, if not quite large capacity.

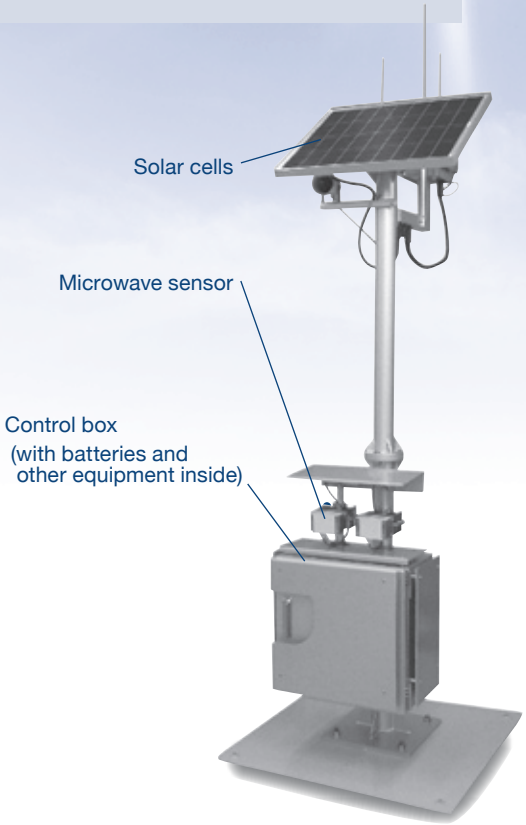


Hideki Muroya
Planning Department,
Wireless Communication Systems Division

Standalone monitor with a photovoltaic microwave sensor

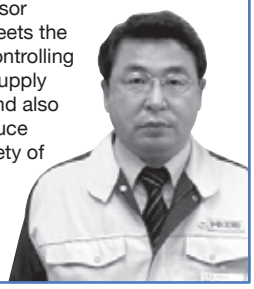
This "standalone monitor for detecting illegal entrants and radio communications" is operated by a microwave sensor using photovoltaic generation. This system constantly charges its internal battery with solar energy and works without discharging any carbon dioxide.

This unit only uses solar energy, and therefore does not discharge carbon dioxide. It consumes 6 W on average or 53 kWh annually, which can be converted to mean a cut in carbon dioxide emissions by 19 kg. This, together with the saving of wiring work and possible power loss (about 2% per 150 m) due to the laying of cable, will constitute a considerable additional reduction, such as when used to monitor remote facilities.
This standalone monitor is based on a microwave sensor and radio technology, and was designed along with the following environmental considerations:
1) The energy-saving function in the internal unit contained in the control box curtails power consumption, thereby reducing the amount of heat generated.
2) This is compliant with the RoHS Directive※5, a European standard banning the use of certain chemical substances.



Voice

We combined a monitoring device based on a microwave sensor with radio technology in an attempt to devise a design that meets the needs of users of our Group. We assumed applications for controlling regions with geographic features and places where a power supply and signal wiring are hard to secure, along with wide areas, and also paid attention to the demand from overseas. This helped reduce carbon dioxide emissions and increase the environmental safety of the substances used.



Koichi Miyashita
Wireless Communication System Engineering Department
Hitachi Kokusai Denki Engineering Co., Ltd.

Glossary
※4 DSRC(Dedicated Short-Range Communication) ····· Narrow-range communication – a radio communication system used in ETC.
※5 RoHS (Restriction of Hazardous Substances) Directive ····· A directive that prohibits the inclusion of certain harmful chemical substances in electrical and electronic products sold in the EU market.