

Advanced temperature control

OMRON

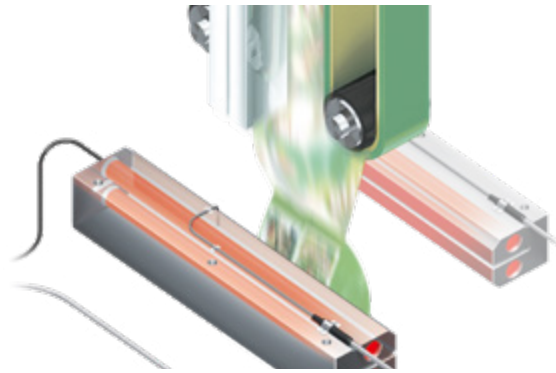
OMRON Temperature Control Solutions





Maintain quality even under thinner packaging materials and packaging material changes for plastic free products

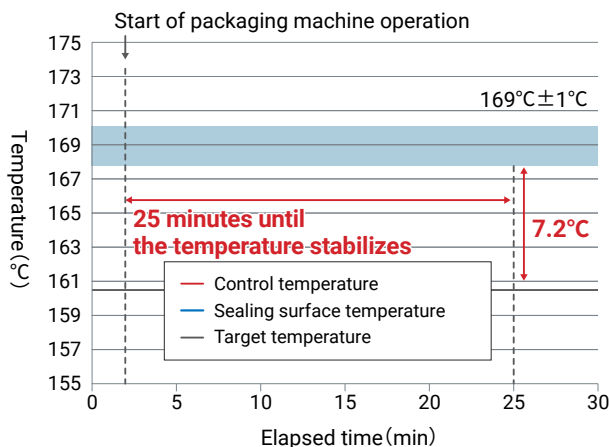
In order to reduce plastic waste, we are making changes in packaging materials and switching to sustainable materials. These challenges have complicated the control of temperature at the time of packaging and the packaging defect ratio has increased. In addition, it takes a great deal of time to adjust the temperature at the beginning of daily operation or at the time of occurrence of defects.



High-precision measurement of seal surface temperature and stable control are realized automatically

BEFORE

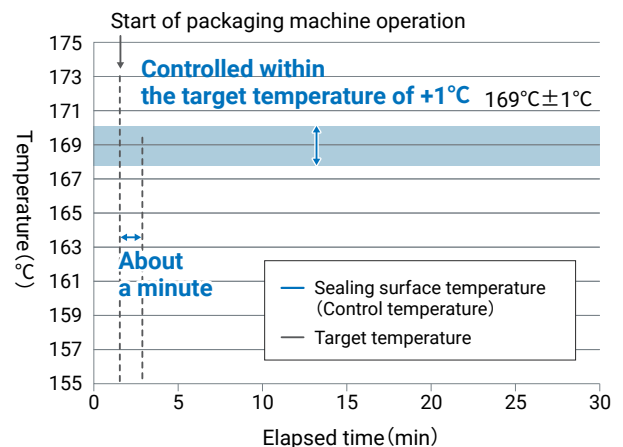
The sealing surface and the temperature sensor were separated from each other, and it was necessary to adjust the target temperature in consideration of the difference between the sealing surface temperature and the control temperature. It took long time for the temperature to be stabilized. In addition, fluctuations in the seal surface temperature during operation of the packaging machine could not be captured correctly, and it caused packaging defect.



AFTER

OMRON's temperature sensor for the packaging machine can be installed near the sealing surface, and the sealing surface temperature can be controlled.

With the "Automatic filter adjustment function" the sealing surface temperature can be stably controlled to the target temperature and temperature fluctuations during packaging machine operation can also be quickly suppressed.



Improve Packaging Quality by Precise Sealing

Temperature Controllers



E5_C Series

Temperature Sensors/Thermosensor



E52 Thermocouples

ES1-N

Solid State Relay



G3NA

G3PF

Timers/Counters



H5CC

H7CC

e-stop



A22E/A22NE-P/A22NE-PD

Pushbuttons



A22NN/NL



Balance Quality and Production Capacity in processes requiring precise temperature Control

The importance of temperature control is increasing due to the miniaturization and lamination of semiconductors and the high capacity of rechargeable batteries. More precise temperature control is required to improve machining accuracy since temperature variations and fluctuations affect quality of products, but to make it possible it takes more time and effort.

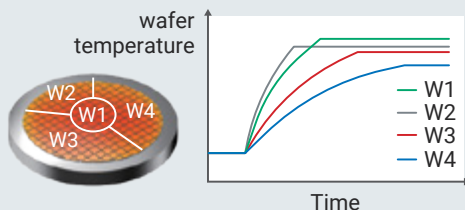


Automatically minimizes surface temperature variation and temperature fluctuations caused by disturbances

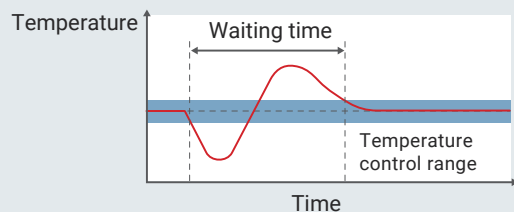
BEFORE

In the multi-point control, the surface temperature variation of the wafer occurs due to the thermal interference of the heater, and it was necessary to adjust the temperature uniformity control by taking a lot of time to suppress it. In addition, the temperature fluctuated due to the routine disturbance¹ during production, and a long waiting time was required until the temperature stabilized.

Yield deteriorated due to surface temperature variation of wafer



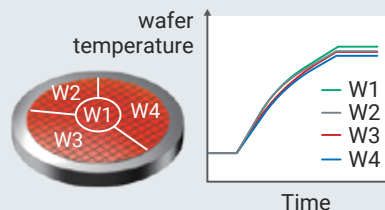
Waiting time is generated by temperature fluctuation caused by routine disturbance*¹



AFTER

When the "Temperature Uniformity Control" is used, the optimized temperature setting that homogenizes the surface temperature of the wafer is automatically calculated. In addition, the "Disturbance suppression function" suppresses temperature fluctuation caused by routine disturbance. With these technologies, we can improve quality and productivity without spending much engineering effort.

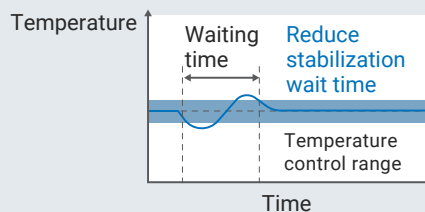
Improvement of yield by equalizing wafer surface temperature. with "Temperature Uniformity Control" FB²



Temperature
Uniformity
Control

Machine
Automation Controller
NJ/NX Series

Reduced takt time by suppressing temperature fluctuation with "Disturbance suppression function"



Disturbance
Suppression
Function

Temperature
Control Unit
NX-TC

Automatic minimization of fluctuations in temperature and manipulated variables by heating and cooling control

BEFORE

There is a great difference between the heating and cooling capacity of the facility, and it is a challenge to determine the optimum heating and cooling PID.

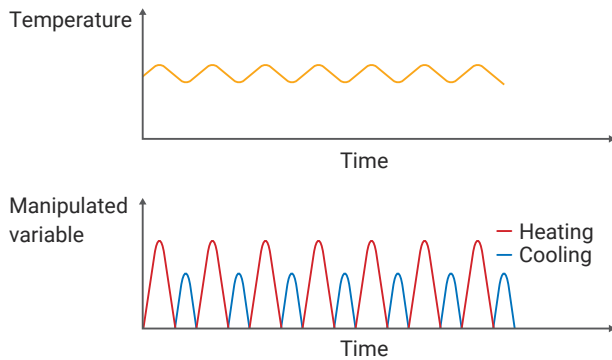
As a result, it took a long time to adjust, and PID was inappropriate. This resulted in excessive cooling, resulting in poor-quality operation and wasted power.

AFTER

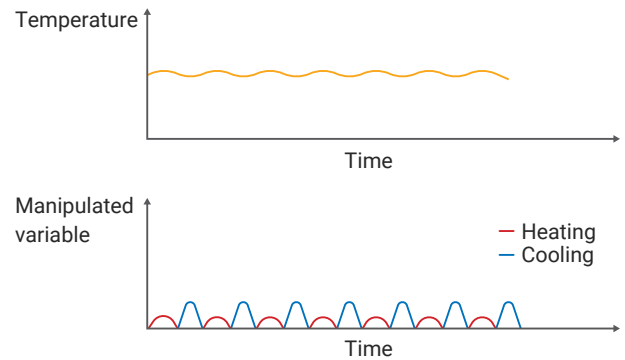
With "Heating/Cooling AT (Auto-Tuning)", the optimum PID can be calculated automatically even if the heating and cooling capacities are different significantly.

"Heating/Cooling AT" eliminates over-cooling and optimize temperature and manipulated variable.

Non optimized heating and cooling cycles cause temperature fluctuations and it consumes excess energy.



Temperature is stabilized by optimized heating and cooling control.



Products that Achieve Advanced Temperature Control

Human Machine Interface



NB Series



NA Series

Temperature Controllers



NX-TC



NX-HTC

Solid State Relays

Monitor Relay



G3RV-ST Series



K8AK-TH

Power Supply

Terminal Blocks



S8VK-X



XW6T



G70V



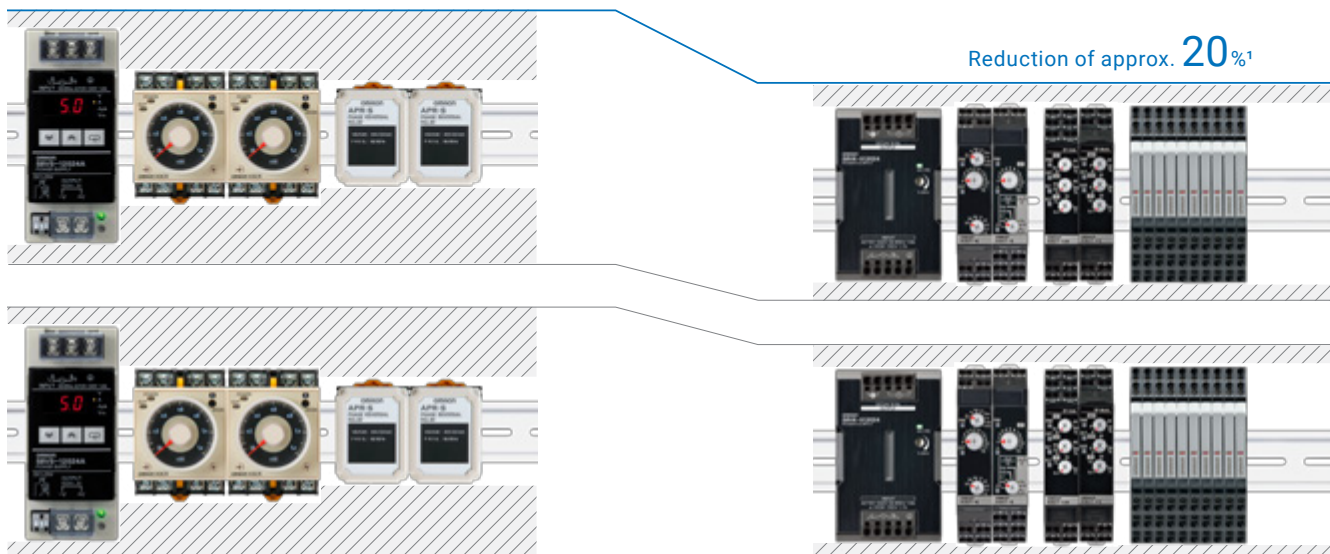
Enhancing safety through two-tiered monitoring for temperature anomalies in the manufacturing process

Preparatory processes for semiconductor/FPD manufacturing involve several high-temperature procedures. Failure to sufficiently control temperatures during these procedures can lead to serious incidents, but adding equipment to improve safety would increase the facility's footprint.



Unified Height Reduces Dead Space and Downsizes Control Panels

When newly designing, you can decrease the height of a control panel to secure a wide view of a whole production line for improved safety.



Legacy
products

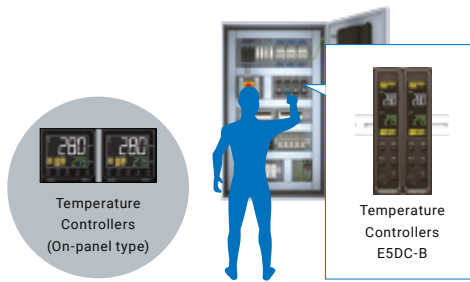
The different heights create a lot of dead space.



Dead space is reduced and the width between wiring ducts is optimized.

Same operability with less wiring

Same operability as on-panel models



Compact 22.5 mm-wide DIN track-mounting model with operability common to E5□C Temperature Controllers saves panel space.

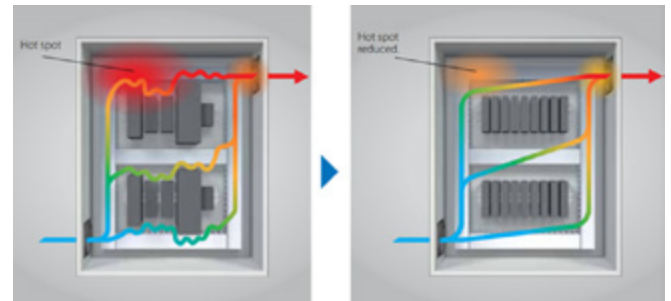
Horizontal connection structure reduces crossover wiring effort



Up to 16 units can be attached by their connectors for power/communication, reducing wiring effort.

Explore better solutions with OMRON's control panel products

OMRON offers an extensive lineup of Value Design for Panel products which require less space, effort, and workload compared to their previous counterparts. By using multiple Value Design products together, you can boost the value of your control panels.



Products for a Reduced DIN Rail Footprint

Temperature Controllers



E5DC



E5GC

Power Management Accessories



S8BA UPS



S8V-CP

Monitoring Relay



K8AK-TH

Solid State Relay



G3PE

Condition Monitor



K7TM



K6PM

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Learn more about
the E5CC

Scan or Click Me



Learn more about
the NX-TC

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- Programming & Configuration • Runtime