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Control of atmospheric gas flow rate in furnaces for MLCCs

High-accuracy flow rate control for stable baking quality, even at manufacturing sites where the temperature changes greatly

Gas flow rate control

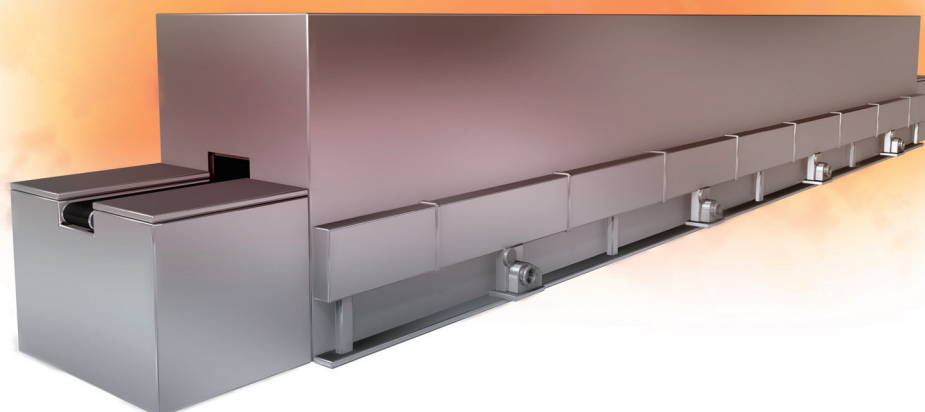| Product | Process sensor Digital Mass Flow Controller | Process/ equipment | MLCC baking furnace |
| Model No. | F4Q＿＿＿ | | |

Current Situation

- ▪ The ambient temperature changes greatly near the furnace.
- ▪ Mass flow controllers are calibrated onsite.
- ▪ Because the continuous furnace is long, the control panel is far from the mass flow controller.

Current Problems

- ▪ The operating temperature range of typical conventional mass flow controllers is too small to cover the temperature range at the manufacturing site.
- ▪ When the calibration result is not good, we send mass flow controllers to the manufacturer for adjustment, so the removal, installation, and calibration costs are high and delivery schedule is tight.
- ▪ During inspection of the furnace, when operating equipment around the mass flow controller, we want to monitor flow rate on the mass flow controller directly, rather than from some remote location.

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Solutions

Solution 1

Usable in a wide range of temperatures from –10 to +60 °C

Unlike typical mass flow controllers, model F4Q has a wide operating temperature range from –10 to +60 °C. Even in an environment where the ambient temperature changes greatly, there is little effect on its flow rate. Since the flow rate is stable, the quality of sintering is stable.

Solution 2

Multiple-point flow rate correction allows matching to a reference flowmeter

This function makes it possible to match the controller to a reference flowmeter at the manufacturing site, reducing removal and reinstallation work, calibration costs, and scheduling pressure.

Solution 3

Settings can be changed by control keys on the flowmeter, and its LCD shows detailed information

The control keys on the flowmeter can be used to change all the settings. The liquid crystal display allows you to see the control status and settings in detail.
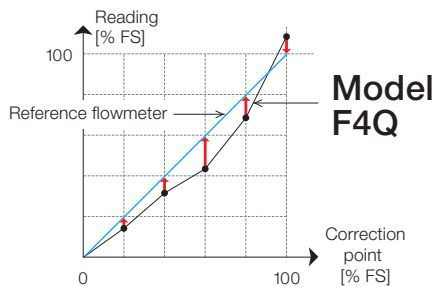
Solution 1

-10 °C +60 °C

Unheated room in winter, etc.

Clean room and Air conditioned room

Near an industrial furnace, etc.

Solution 3

Liquid crystal display

Control keys

Solution 2

Reading [% FS]

100

Reference flowmeter

Model F4Q

Correction point [% FS]

0 100

Related products

Network Instrumentation Module
Smart Device Gateway* Model NX-SVG

Program-less communication can markedly reduce development time.

* A communication gateway that allows the interchange of information between various kinds of control device without programming, enabling smarter development work.

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