Co-innovating tomorrow™

YOKOGAWA

FA-M3V VITESSE™

e-RT3 Plus
anyone anytime anywhere

SMARTDAC+™

DTSX®

Temperature Sensing Solutions

Solving measurement problems using edge solution products

LF 04L01L01-05EN

Sensing inaccessible temperatures

Application 1:
Temperature measurement of plasma environment

Key products

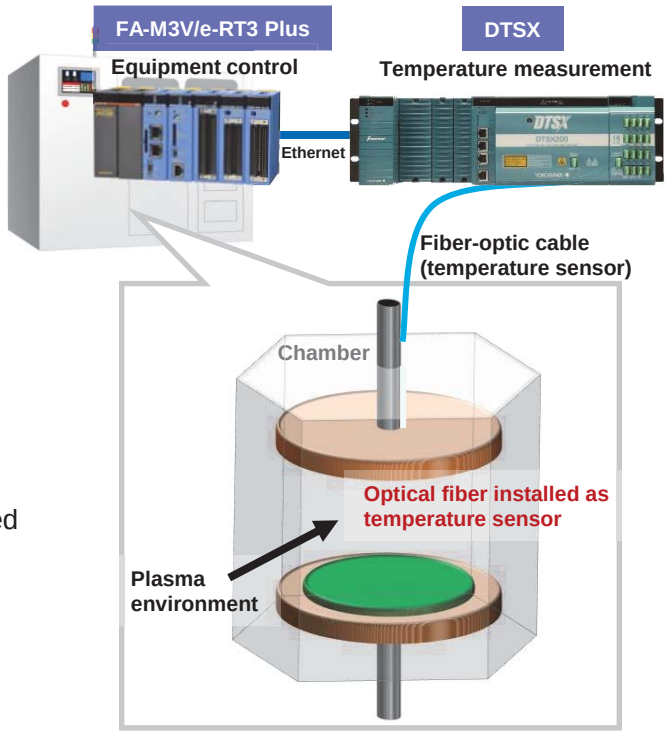
DTSX Distributed Temperature Sensor
FA-M3V/e-RT3 Plus Edge Controller

■ Challenge

Measuring internal chamber temperatures in plasma surface treatment used in semiconductor and printed circuit board manufacturing is difficult as metallic and conductive sensors cannot be used.

■ Yokogawa's solution

Internal chamber temperatures are measured using a fiber-optic cable as temperature sensor as it is not affected by plasma.
Chamber environment information helps to improve process quality. Moreover, acquired measurement data can be uploaded to FA-M3V/e-RT3 Plus for equipment control, storage or transfer to host systems.



Application 2:
In-line mold temperature measurement (deterioration monitoring)

Key products

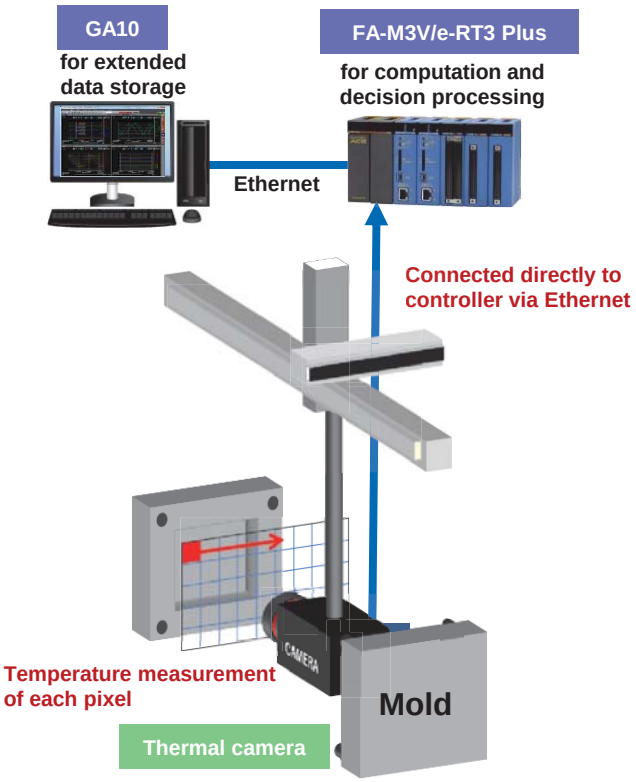
FA-M3V/e-RT3 Plus Edge Controller
GA10 Data Logging Software

■ Challenge

Temperature mottles caused by mold deterioration directly impacts workpiece quality. As it is difficult to install a temperature sensor inside a mold, non-contact sensors such as a thermal cameras are often used. The required proprietary systems are, however, costly and does not integrate well with host systems.

■ Yokogawa's solution

The FA-M3V Edge Controller is directly connected to a thermal camera to deliver cost-effective computation and decision processing using a general-purpose controller, which integrates well with host systems.
It can also be used with Data Logging Software GA10 to enable extended data storage.

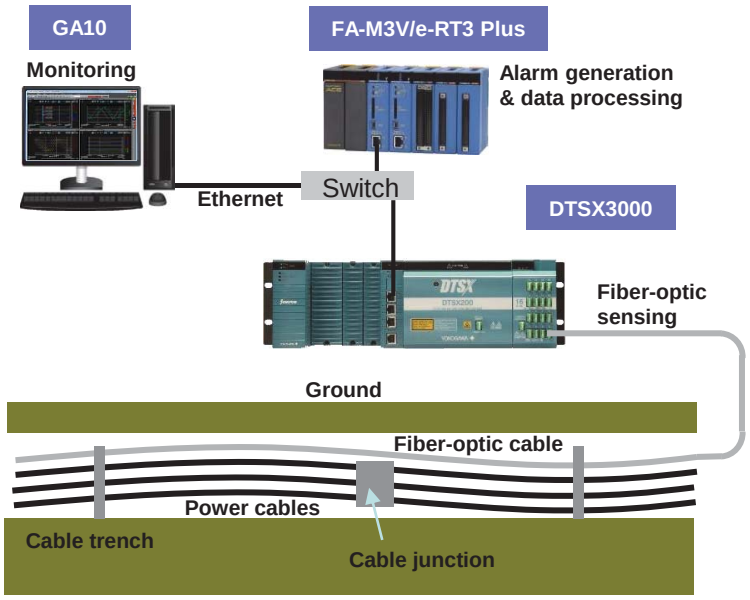


Sensing long-distance temperatures

Application 3:
Long-range temperature monitoring (1)

Key products

DTSX3000 Distributed Temperature Sensor
FA-M3V/e-RT3 Plus Edge Controller
GA10 Data Logging Software



■ Challenge

The risk of cable fire increases when cable junction connections loosen and power cables age. Periodic monitoring of underground long distance cables is, however, difficult due to distance and installed location.

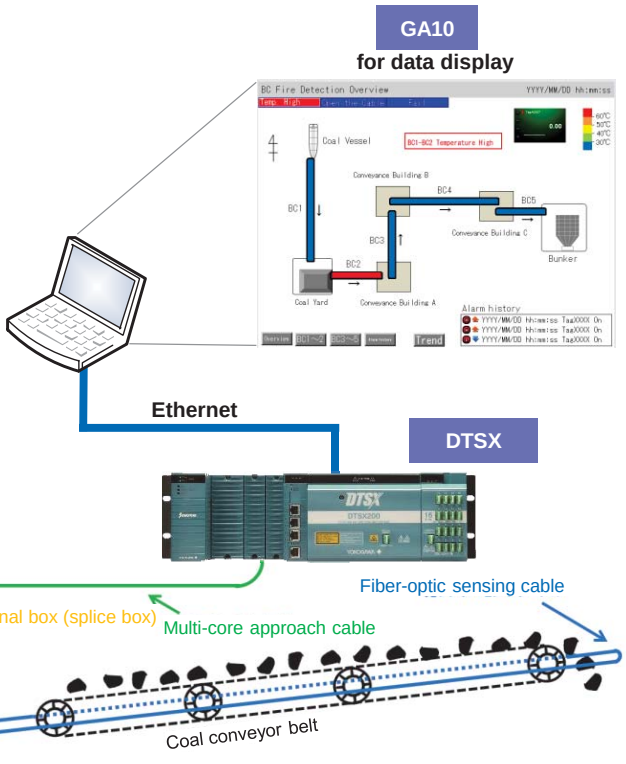
■ Yokogawa's solution

Fiber-optic cables are installed alongside power cables to detect cable fires and temperature anomalies. The DTSX3000 Distributed Temperature Sensor provides temperature monitoring of long distance fiber-optic sensing cables; GA10 and FA-M3V/e-RT3 plus enables temperature monitoring from a PC and generation of alarm signals.

Application 4:
Long-range temperature monitoring (2)

Key products

DTSX200 Distributed Temperature Sensor
GA10 Data Logging Software



■ Challenge

As shown in the figure on the right, long-range, wide-area temperature monitoring, typical of coal conveyors, are mostly done by:
a) Human patrol, or
b) Installing numerous thermal cameras and point sensors.
The challenges faced are monitoring lapses, as well as high initial and maintenance costs.

■ Yokogawa's solution

Temperature can be monitored over a far, wide area and any abnormality detected promptly simply by connecting the DTSX Distributed Temperature Sensor to a fiber-optic cable laid over the area. This enables an early response to minimize any damage.
Acquired data can be graphically displayed using the GA10 Data Logging Software to help pinpoint the problem location.

Sensing wide-area temperatures

Application 5:

Wide-area temperature sensing with thermal camera

Key products

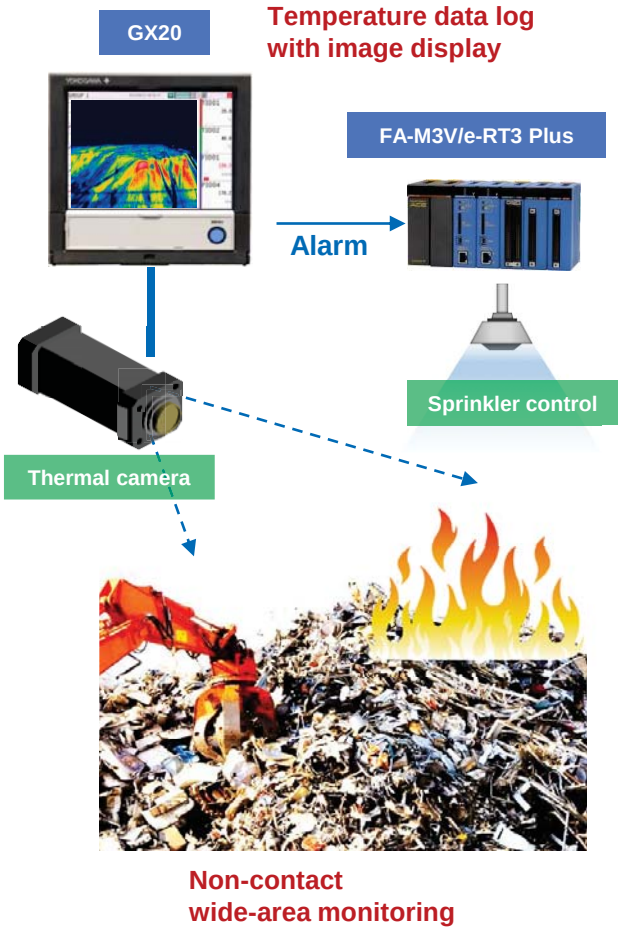
GX20 Paperless Recorder
Thermal Camera Solution

■ Challenge

Waste disposal sites are faced with risks of stored waste igniting spontaneously. Due to a large site area and varying waste volume, however, it is difficult to install temperature sensors to enable early detection of a temperature rise in stored waste to prevent a fire outbreak.

■ Yokogawa's solution

A FLIR high performance thermal camera is connected to a Yokogawa GX20 paperless recorder to perform non-contact temperature monitoring over a large area where installing conventional temperature sensors is infeasible. Non-contact monitoring is not affected by varying waste volumes.
When excessive temperatures are detected, a command can be issued to activate a sprinkler from a GX20 alarm contact or an FA-M3V connected via a network.



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Caution

- For proper and safe use of this product, read the instruction manual thoroughly.
- If faults of this product are expected to result in accidents or losses, install additional external protection and/or safety circuits.
- If the product is to be used in applications which may directly affect or threaten human lives and safety, such as railway facilities, aviation and space navigation, medical equipment or transport equipment, please contact Yokogawa's sales office.

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