MITSUBISHI ELECTRIC
Changes for the Better

e-F@ctory Case study

Labor-saving

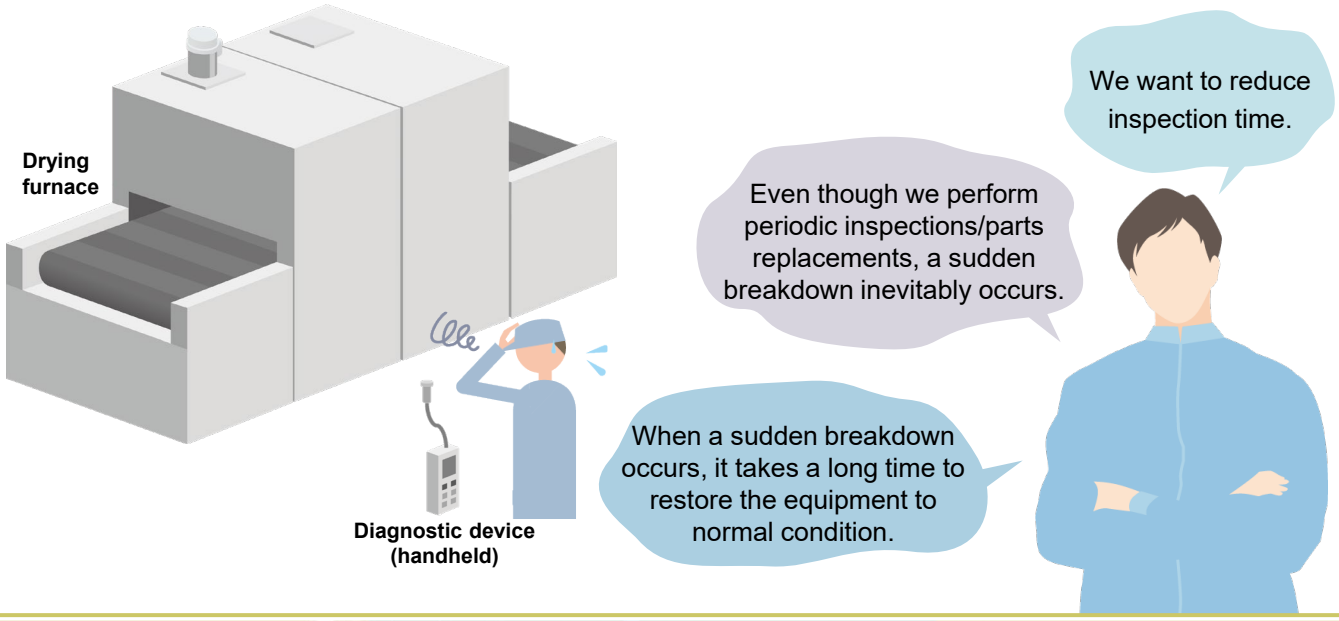
Reduced inspection man-hours to Zero with automatic diagnosis and remote monitoring!

Company A conducted periodical inspections of multiple drying furnaces on the production floor.
By configuring a system that enables automatic diagnosis and remote monitoring for the drying furnaces,
they have reduced the inspection man-hours to zero.
What is the secret to its success?

See inside for details!

Customer's Concern

Workers at company A conducted periodical inspections of multiple drying furnaces, carrying a handheld diagnostic device with them every day.
Since the fan motor of the drying furnace is located in a difficult position to inspect, not only does it take time to inspect, but also the equipment must be shut down for a long time when a sudden breakdown occurs.
Therefore, the company was considering a way to increase the maintenance efficiency.



What has improved

Introduction of the "Rotary Machine Vibration Diagnosis System" and the VNC server function of the GOT enables automatic diagnosis of the fan motor of the drying furnace on the production floor and remote monitoring from a PC or tablet in the office.
This reduced inspection man-hours that were required every day and eliminated production loss caused by sudden breakdowns.

Inspection Man-hours

Before

Approx. **240** hours/year

After

0 hours/year

Production loss due to a sudden breakdown also reduced to zero.

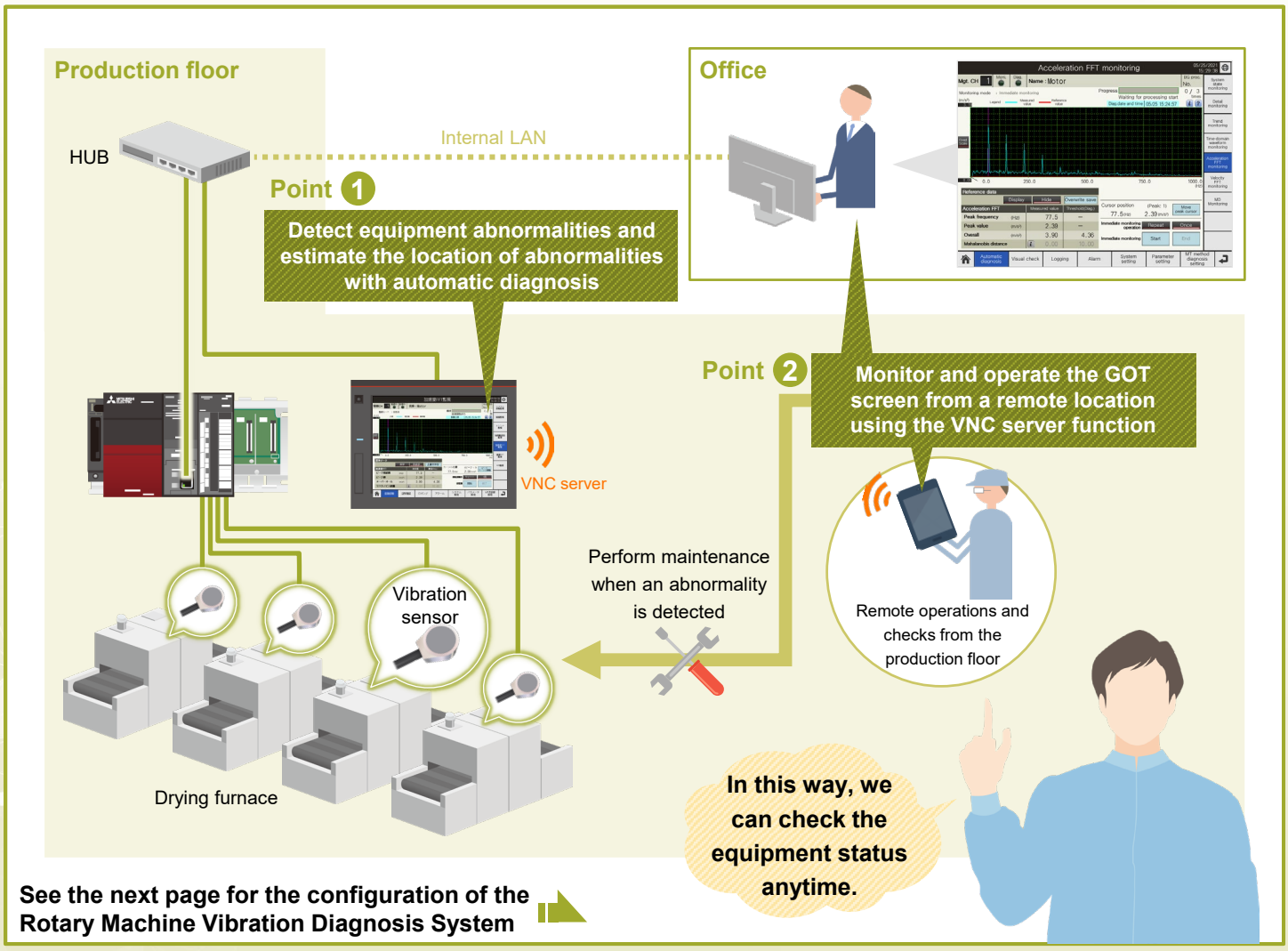
Reduced to Zero

e-F@ctory

Key Points

Point 1 Periodic automatic diagnosis of equipment enables early detection of signs of abnormalities, eliminating production loss caused by sudden breakdowns.

Point 2 Equipment diagnostic results can be monitored remotely from a PC or tablet, making inspection work more efficient.



See the next page for the configuration of the Rotary Machine Vibration Diagnosis System

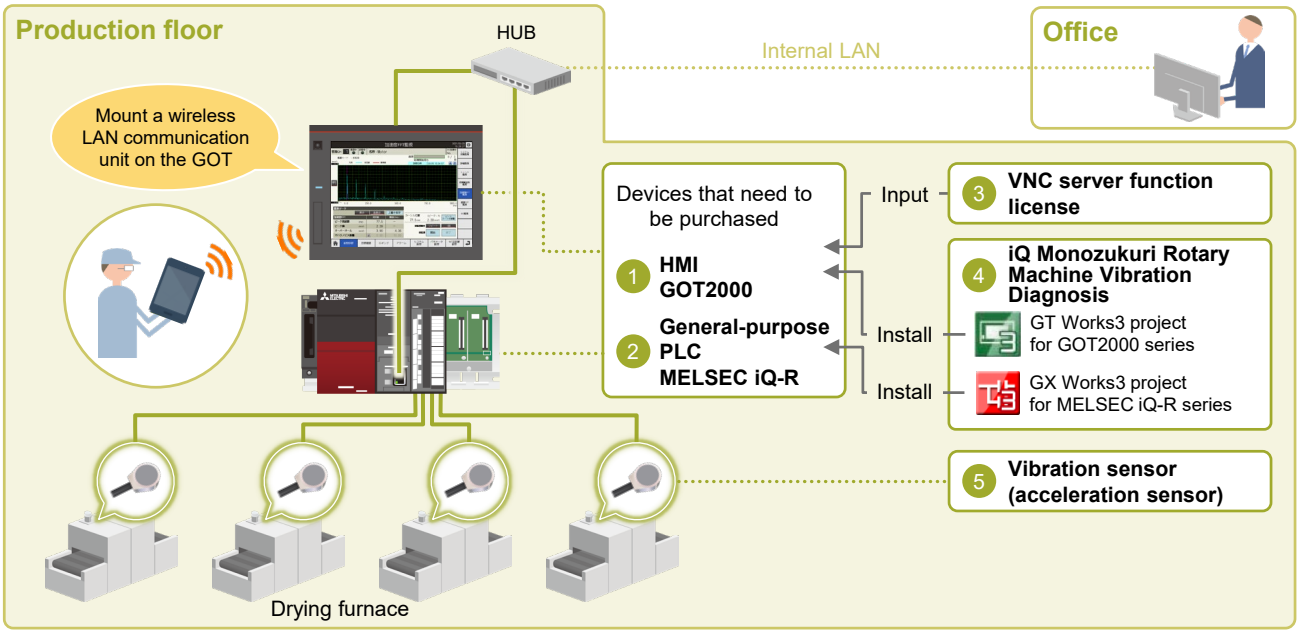
Return on investment (ROI)

Cost	Construction period	Payout period
Approx. **3.9** million yen/system (including system configuration costs)	Approx. **4** months (1 month from base completion to operation start)	Approx. **3** years **3** months /4 equipment

***Interpretation of payout period** Periodical inspection used to be performed once a day, which took approximately one hour.
By introducing this system, 240 man-hours (1 hour x 5 days x 4 weeks x 12 months) of inspection work per year is eliminated. If the cost of inspection work is 5,000 yen/hr, the reduction cost for 1 year is 1.2 million yen, which makes the reduction cost for 1 month 100 thousand yen (1.2 million yen ÷ 12 months).
Therefore, if the introduction cost is approximately 3.9 million yen, the collection period is 39 months (3.9 million yen ÷ 100 thousand yen) = 3 years and 3 months.
If the reduction cost of production loss caused by sudden breakdowns is included, the collection period is further shortened.

Overview of the Rotary Machine Vibration Diagnosis System

The Rotary Machine Vibration Diagnosis System consists of a general-purpose PLC **MELSEC iQ-R** and an HMI **GOT2000.** The system can be easily introduced by simply connecting them to the vibration sensor installed in the equipment and installing the control program and screen data.
By using the **VNC server function** of the HMI GOT2000, it is possible to configure a system in which the diagnostic status can be checked from a remote location with a PC or tablet.



Equipment Configuration (example)

Please separately prepare cables for connection to devices other than the major devices listed below.

Type	Model	Overview
1 HMI GOT2000		
GOT	GT2712-STBA	12.1 inch, SVGA [800×600], 65536 colors
Wireless LAN communication unit	GT25-WLAN	-
SD memory card	NZ1MEM-4GBSD	It must be inserted to the GOT to save the captured images of the GOT and the sample data groups of MT method diagnosis.
2 General-purpose PLC MELSEC iQ-R		
PLC CPU	R16CPU	Firmware version "40" or later
Extended SRAM cassette	NZ2MC-4MBS	For PLC CPU (4 MB)
Main base unit	R33B	3 slots
Power supply module	R61P	Input: 100 V AC to 240 V AC Output: 5 V DC, 6.5 A
High speed analog-digital converter module	R60ADH4	Firmware version "04" or later 4 channels. Up to 4 vibration sensors can be connected.
SD memory card	NZ1MEM-4GBSD	It must be inserted to the PLC CPU to save the vibration data in the CSV file.
3 VNC server function license		
VNC server function license	GT25-VNCSKEY-1	1 license (1 license is required for each GOT unit.)
4 FA application package iQ Monozukuri Rotary Machine Vibration Diagnosis		
Rotary Machine Vibration Diagnosis	AP10-VID001AA-MA	Up to 16 vibration sensors can be connected with 1 license.
5 Vibration sensor (acceleration sensor)		
Vibration sensor (acceleration sensor)[Other vendors' products]	-	For details, refer to "Technical News BCN-E2113-0034".

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