

Preventive
Maintenance



Cycle Time Improved by **10%** with Cylinder Monitoring!

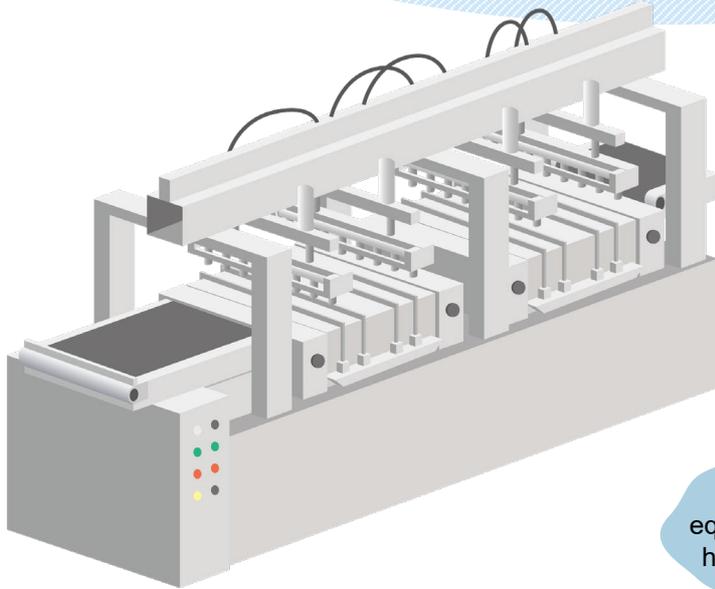
Company “A” had concerns about low equipment performance, which lead to slow production speed and delayed production schedules. The company decided to introduce cylinder monitoring, and saw a 10% improvement in cycle time. What was the secret to its success?

See inside
for details!



Customer's Concern

Company "A" had concerns about low equipment performance, which lead to slow production speed and delayed production schedules. Moreover, it was difficult to judge the timing of maintenance, because there were no clear standards.



Production volume drops when equipment is operated continuously.

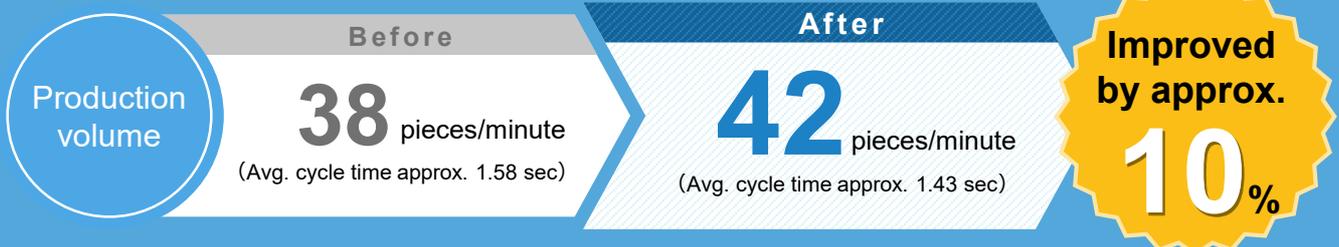
When should we perform maintenance?

It seems like the equipment performance has dropped slightly...



What has improved

By introducing a cylinder monitoring system to its production line, the company is now able to accurately detect even slight delays. This improvement enables operators to judge the optimal timing for maintenance, increasing production volume by approximately 10% from 38 pieces/minute to 42 pieces/minute (average cycle time was reduced from approx. 1.58 sec to approx. 1.43 sec).





Point

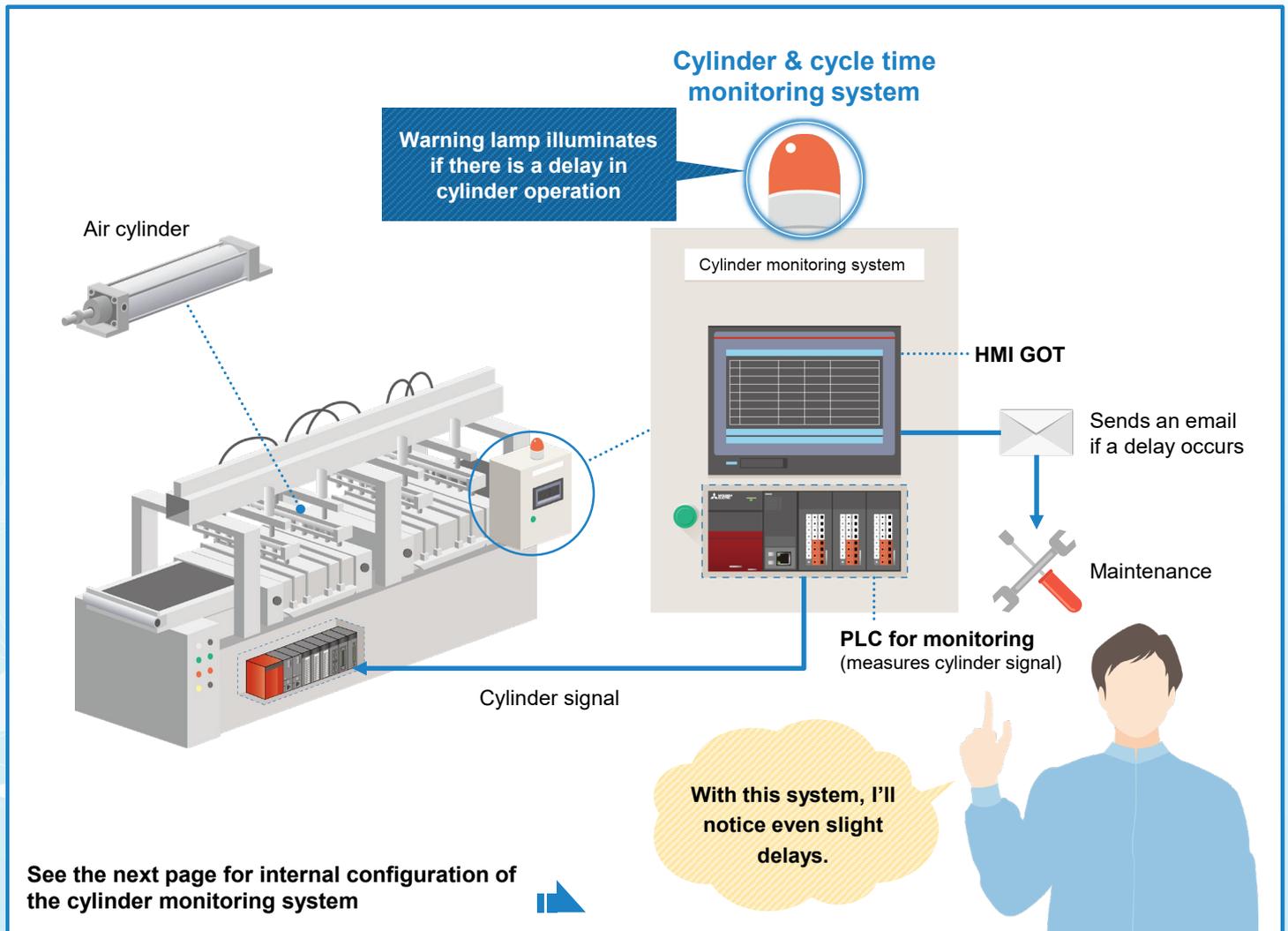
1

The system monitors the operation of each air cylinder and accurately detects slight delays in cycle time.

Point

2

When a delay is detected, maintenance operators are immediately notified via a warning lamp or email. Timely maintenance will help maintain productivity levels.



Return on investment (ROI)

Cost

Approx **700k~1 million** yen
per equipment unit
(includes system construction cost)

Construction period

2 months

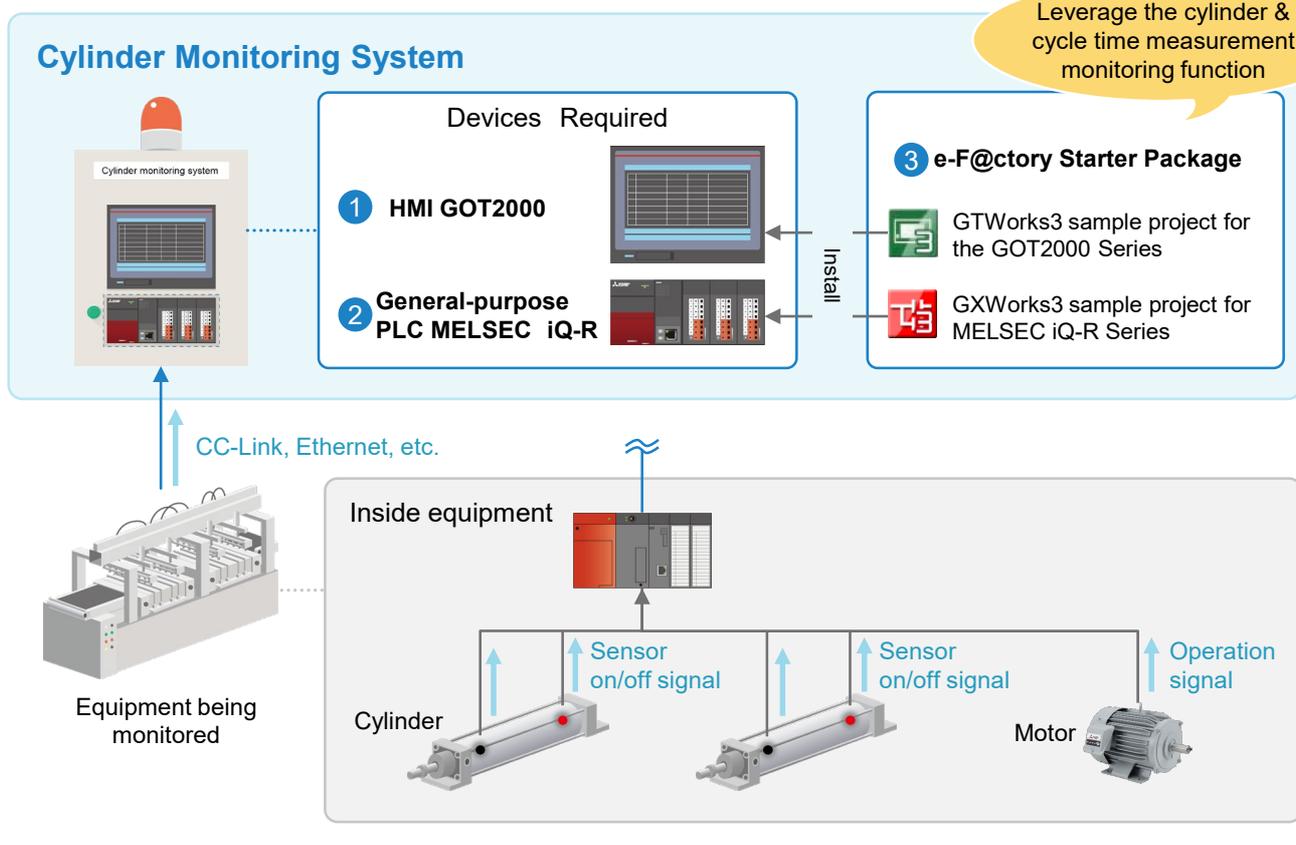
Payout period

2 months

***Interpretation of payout period** In the case of a product with a unit price of 10 yen, daily (8-hour-day) yield is 38 pieces x 60 minutes x 8 hours x 10 yen = 181,400 yen. If this is improved by 10%, daily yield would increase to 181,400 yen x 10% = 18,140 yen. Therefore payout period would be 1 million yen ÷ 18,000 yen = approx. 56 days (≒ 2 months)

Overview of the Cylinder Monitoring System

The cylinder monitoring system introduced in this case is configured from a general-purpose PLC, **MELSEC iQ-R**, and HMI, **GOT2000**, and can be constructed in a short period using the **e-F@ctory Starter Package**, a free sample program provided by Mitsubishi Electric.



Equipment Configuration (example)

Type	Model	Overview	Standard price (yen)
1 HMI GOT2000			
GOT Main Module	GT2712-STBA	Displays details of data from the general-purpose PLC, including cylinder status/operations, and equipment operating cycle 12.1 inch SVGA[800×600] TFT 65536 colors	398,000
2 General-purpose PLC MELSEC iQ-R			
PLC CPU	R16CPU	Measures travel time of the cylinder based on the on/off signal from sensors, and counts the number of times the cylinder operated. Monitors cylinder travel time and sets off an alarm if the set value is exceeded.	380,000
Base Module	R35B	5 slots	21,000
Power Supply Module	R61P	Input: 100 to 240VAC Output: 5V 6.5A DC	20,000
CC-Link Module	RJ61BT11	Network module that receives cylinder sensor on/off signals, etc. from the control PLC inside the machine *Whether or not this module is required primarily depends on the control equipment used for the target machine.	35,000
3 e-F@ctory Starter Package (sample project)			
GX Works3 project (ladder program, etc.), GT Works3 project (screen data, etc.) instruction manual			Free

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⚠ Safety precautions

To use the products listed in this publication properly, be sure to read the relevant manuals before use.