MITSUBISHI ELECTRIC
Changes for the Better

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e-F@ctory Case study

Productivity Improvement

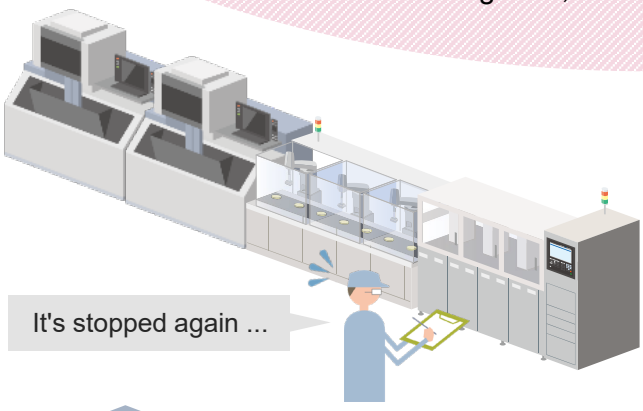
Real-time Monitoring Improves Plant Utilization by 38%!

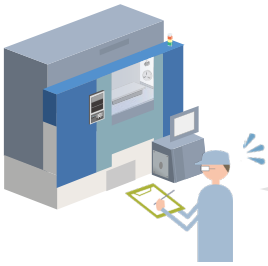
Company A, which had been unable to increase operating rates, wanted to investigate the cause and make improvements.
By introducing a system to monitor new and old equipment crossing factories and processing machines from different manufacturers in an integrated manner, we succeeded in improving the operation rate by 38%.
What's the secret?

See inside for details!

Customer's Concern

Company A was studying a system to grasp production plans, performance, and operation status.
The workers at the site collected the data on paper and Excel, but they were not able to grasp the situation until the following day.
They thought it was necessary to create a system that could be used not only for collecting data, but also for improving the site.





What has improved

Centralized data collection and operation monitoring system to monitor operation status in real time and quickly identify causes of stoppage.
The operation rate was improved to about 90% by the improvement in the downtime.
As a result of the improvement, the production quantity increased and productivity improved.

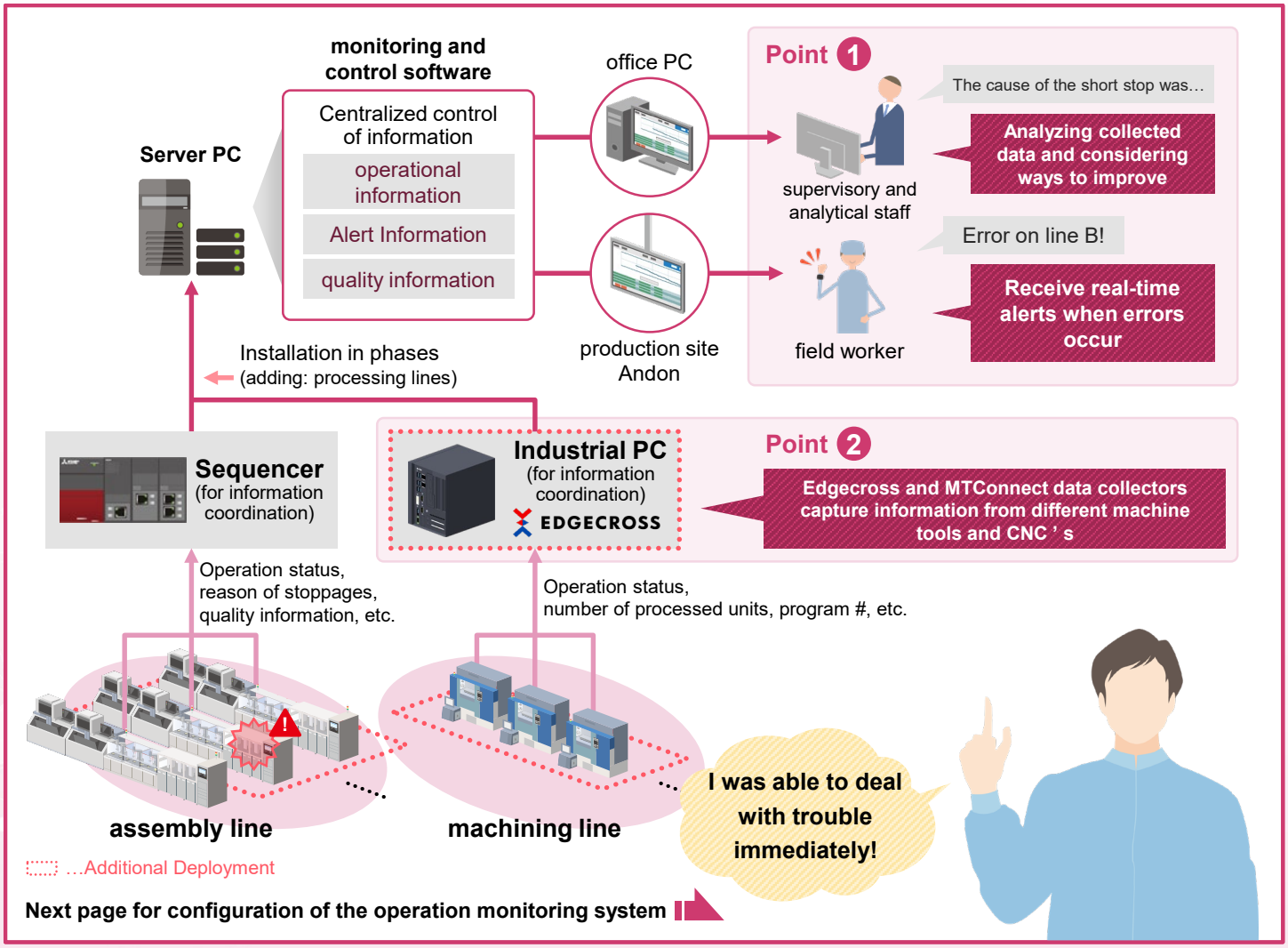
Operating rate	Before	After	
	About 65 % (Loss of shutdown of facilities: **Large**)	About 90 % (Loss of shutdown: **Small**)	Improvement of about 38 %*

*90 ÷ 65 ≒ 138% (38% improvement compared to before).

e-F@ctory Key Points

Point 1 By real time monitoring the situation at the site without human intervention, it is possible to analyze the cause of stoppages and take immediate action in the event of an abnormality.

Point 2 By using Edgecross to collect data from the processing machine, we can monitor the operation of the processing line, which we could not connect to until now.



Return on investment (ROI)

(Initial Deployment Only)

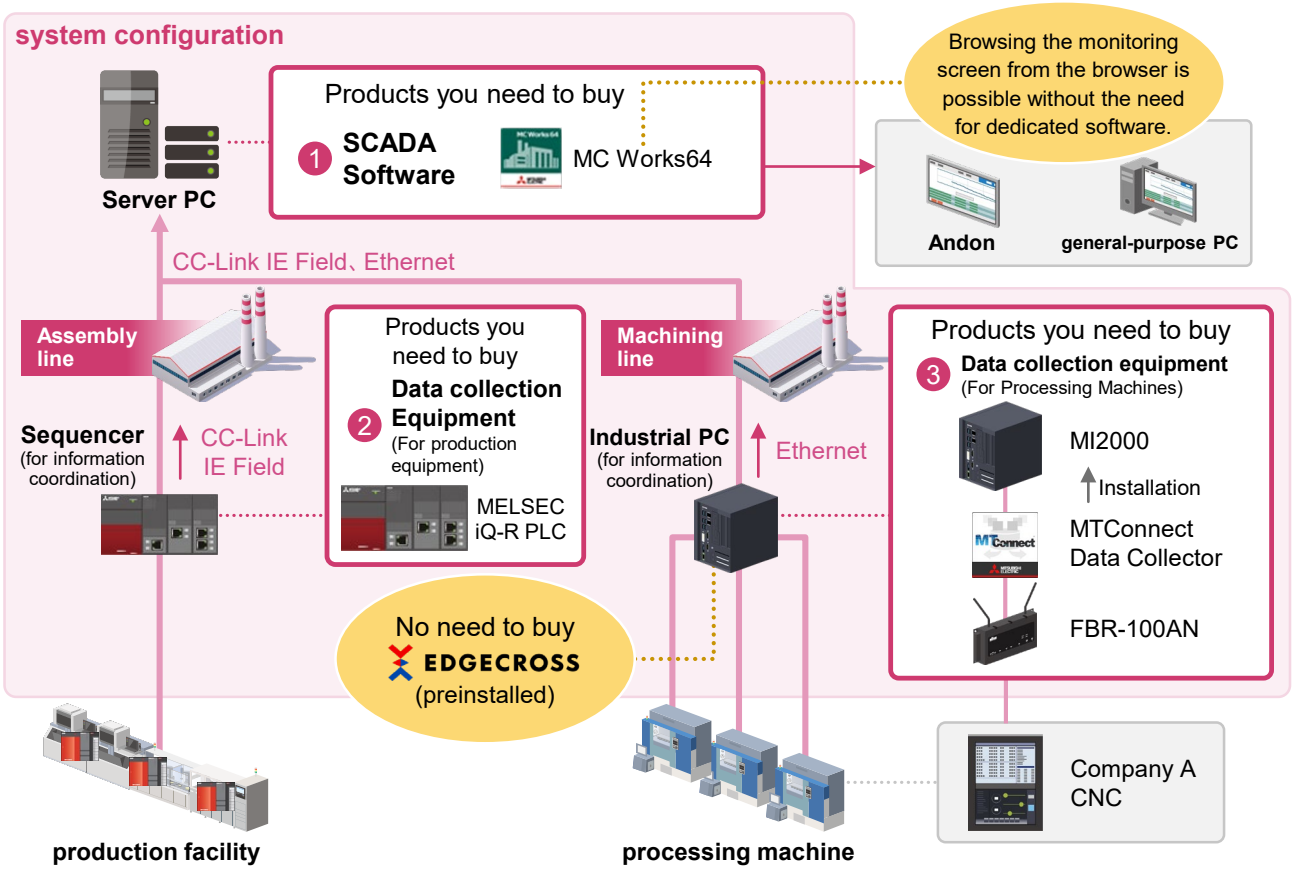
Cost	Construction period	Payout period
About **11.2** million yen ~ (including system construction costs)	**5** months ~	About **3** months

***Initial and additional deployment** In this case, the initial introduction targeted the operation monitoring system of 1 assembly line (Approximately 15 machines) in about 5 months. Afterwards, 15 assembly lines and 6 machining lines were additionally introduced in 4 stages.(Collection data points: Approx. 6,000 points)

***Interpretation of payout period** In this case, since the utilization rate was improved from 65% to 90%, the monthly output (Production quantity x cost) increased by 90 ÷ 65 = 1.38. Assuming that the monthly output before the introduction is 10 million yen, the output after the introduction is 10 million × 1.38 = 13.8 million yen, and the monthly return is 3.8 million yen. If the initial installation cost is 11.2 million yen (Equipment cost: 3.7 million yen, System construction cost: 1.5 million yen x 5 months = 7.5 million yen), the collection period will be 11.2 million yen/3.8 million yen = approximately 3 months.

Overview of the operation monitoring system

The system described in this application consists of an industrial PC, **MELIPC**, and a general purpose PLC, **MELSEC iQ-R**. By using SCADA software **MC Works 64**, data can be collected from a variety of equipment and facilities, regardless of whether they are new or old production facilities, and regardless equipment manufacturers, and real-time monitoring of operational status is possible.



Equipment Configuration (example)

Type	Model	Overview	Standard price (yen)
1 SCADA Software			
MC Works64	SW4DND-MCWDV-MT1500	Creating and displaying monitoring screens (Please purchase the necessary license according to the number of data collection points.)	※
Client License	SW4DND-MCWCLRT-MK5	Licenses required to display monitoring screens in a web browser	※
2 Data collection Equipment (For production equipment)			
CPU Module	R04ENCPU	Program Capacity: 40 K Steps (160 KB)	140,000
Base Unit	R35B	5 Slots	21,000
Power Supply	R61P	Input: 100 ~ 240 VAC Output: 5 VDC, 6.5 A	20,000
3 Data collection equipment (For Processing Machines)			
MELIPC	MI2012-W	Mitsubishi Electric industrial personal computer (Edgecross Basic S/W Pre-Installed)	open
MTConnect Data Collector	SW1-DND-DCMTC-M	Edgecross Data Collector Data can be collected from devices that support MTConnect communication	60,000
Silex protocol converter	FBR-100AN	Protocol converter for machine tool (https://www.silex.jp/products/device_networking/bridge/fbr100an.html)	-

*Please contact the following office.

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