MITSUBISHI ELECTRIC
Changes for the Better

e-F@ctory Case study

Productivity Improvement

Equipment Downtime Reduced by 25% with Low-cost IoT!

Company “A” wanted to achieve high-mix production with minimal workers on a production line that had numerous processes and equipment. By utilizing common tools, the company achieved IoT at low cost, and was able to reduce equipment downtime by approximately 25%.
What was the secret to its success?

See inside for details!

Customer's Concern

Company “A” wanted to achieve high-mix production with minimal workers on a production line that had numerous processes and equipment. The company had no traceability system in place and was struggling to conduct improvements and quality control.

What has improved

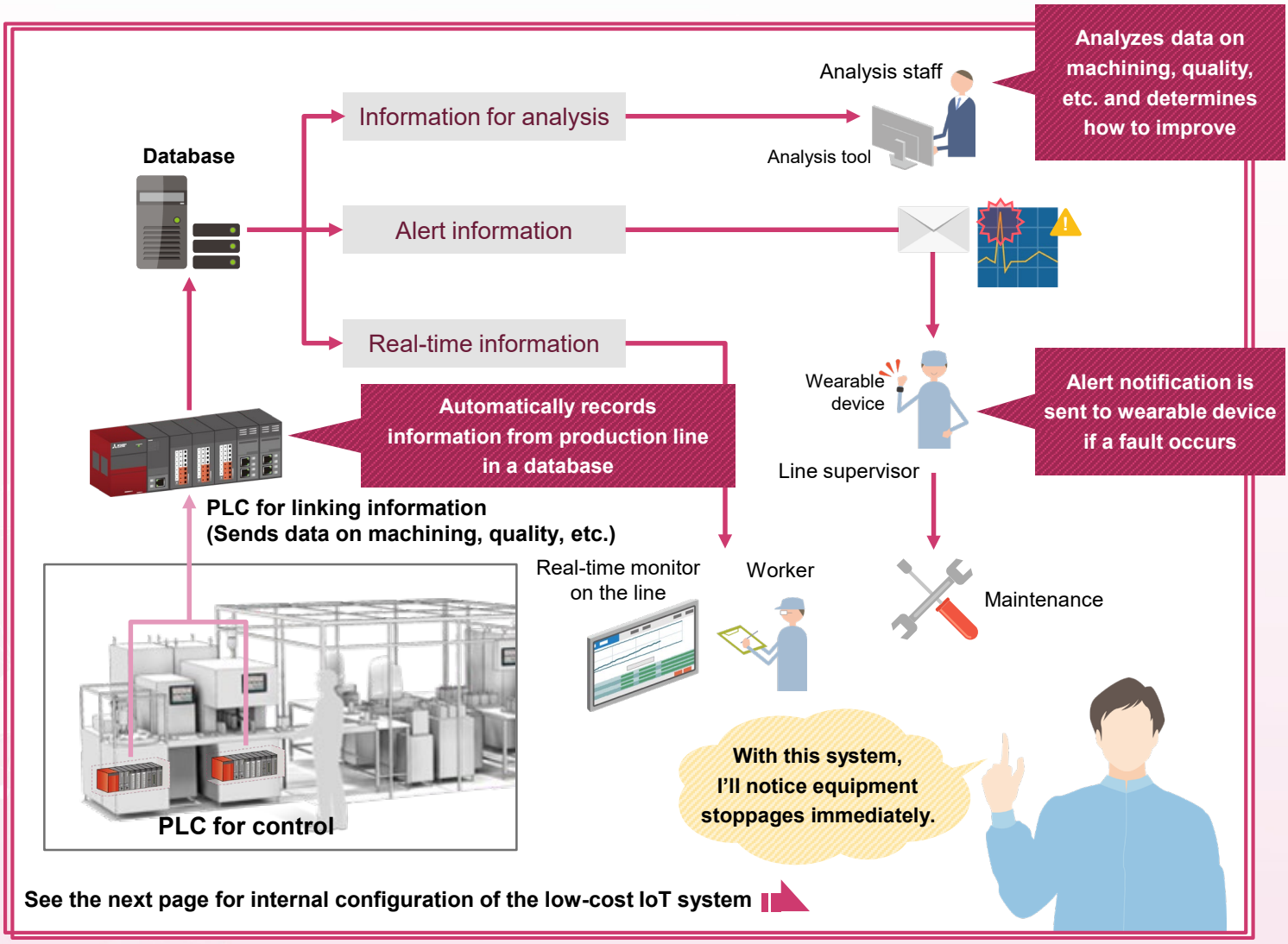
Line supervisor is immediately notified of equipment stoppages with an alert on their wearable device, leading to reduced downtime. Equipment and operation methods can also be improved by collecting data and analyzing them with a BI tool. These measures helped reduce monthly equipment downtime by approximately 25% from 51.3 hours to 38.0 hours.

Equipment downtime	Before	After	
	51.3 hours/month	38.0 hours/month	Reduced by approx. 25%

e-F@ctory Key Points

Point 1 When an equipment or quality fault occurs, the line supervisor is alerted immediately on their wearable device, leading to reduced downtime.

Point 2 The traceability system automatically records information from the production line in a database. By utilizing common tools, the company also achieved IoT at low cost



See the next page for internal configuration of the low-cost IoT system

Return on investment (ROI)

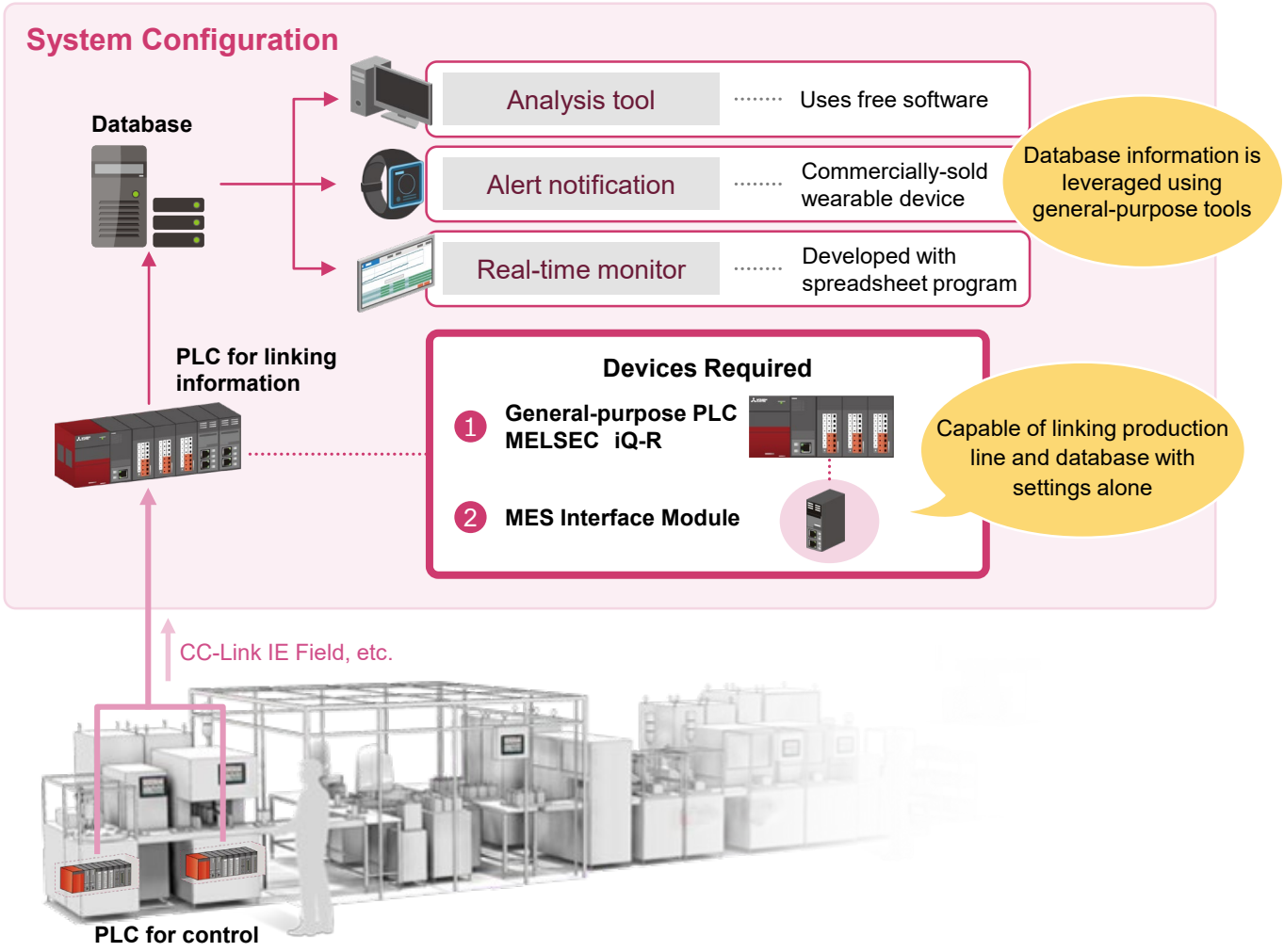
Cost	Construction period	Payout period
Approx. **4 million** yen /line (including system configuration)	**2** years (including concept-planning period)	**3** years

***Interpretation of payout period** If the company was able to achieve additional production of 53.3-38.0=13.3 hours per month, this could be converted to production volume x unit cost, which would be approx. 112,000 yen in the case mentioned here as the amount retrievable in one month. Therefore, the payout period for approximately 4 million yen would be 4 million ÷112,000 = approx. 36 months (3 years).

Overview of Low-cost IoT Migration

The low-cost IoT migration introduced in this example is configured from general-purpose PLC, **MELSEC iQ-R**, and is capable of storing production line information in a database with settings alone by utilizing **MES Interface Module** provided by Mitsubishi Electric. The information stored in the database is leveraged using general-purpose tools.

System Configuration



Equipment Configuration (example)

Type	Model	Overview	Standard price (yen)
1 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 240V AC Output: 5V 6.5A DC	20,000
CC-Link IE Field Module	RJ71GF11-T2	Network unit that receives cylinder sensor on/off signals, etc. from the control PLC inside the machine *Whether or not this unit is required primarily depends on the control equipment of the target machine.	50,000
2 MES Interface Module	RD81MES96N	Module to automatically record production line information into a database with parameter settings alone.	230,000

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