MITSUBISHI ELECTRIC
Changes for the Better

Automating the World

FACTORY AUTOMATION

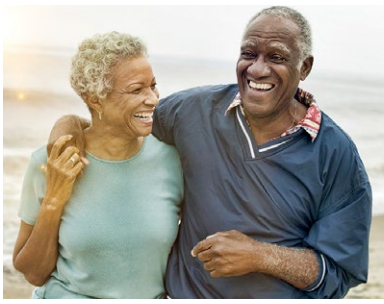
Edgecross-supporting Software Catalog

Aiming for advanced manufacturing
through data collection and management

iQ Edgecross

EDGECROSS

Automating the World



Our Factory Automation business is focused on "Automating the World" to make it a better, more sustainable environment supporting manufacturing and society, celebrating diversity and contributing towards an active and fulfilling role.

Mitsubishi Electric is involved in many areas including the following:

Energy and Electric Systems
A wide range of power and electrical products from generators to large-scale displays.

Electronic Devices
A wide portfolio of cutting-edge semiconductor devices for systems and products.

Home Appliance
Dependable consumer products like air conditioners and home entertainment systems.

Information and Communication Systems
Commercial and consumer-centric equipment, products and systems.

Industrial Automation Systems
Maximizing productivity and efficiency with cutting-edge automation technology.

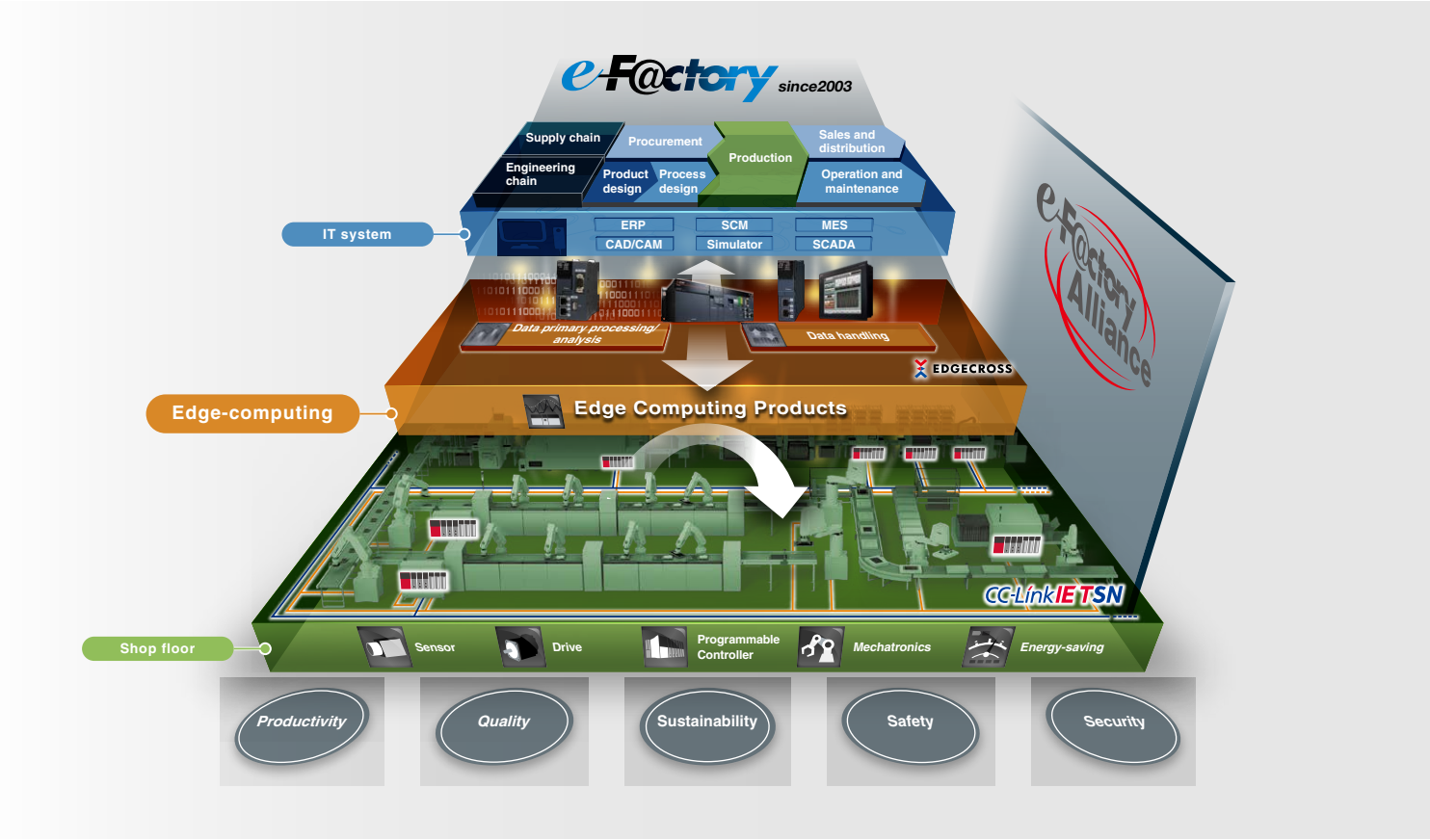
SUSTAINABLE DEVELOPMENT GOALS

The Mitsubishi Electric Group is actively solving social issues, such as decarbonization and labor shortages, by providing production sites with energy-saving equipment and solutions that utilize automation systems, thereby helping towards a sustainable society.

FA-IT Integrated Solution

e-F@ctory

The “e-F@ctory” FA-IT integrated solution proposes ways of utilizing FA and IT technologies that reduce the total cost of development, production, and maintenance activities, continuously support customer kaizen activities, and promote monozukuri that is one step ahead.



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Aiming for advanced manufacturing through data collection and management

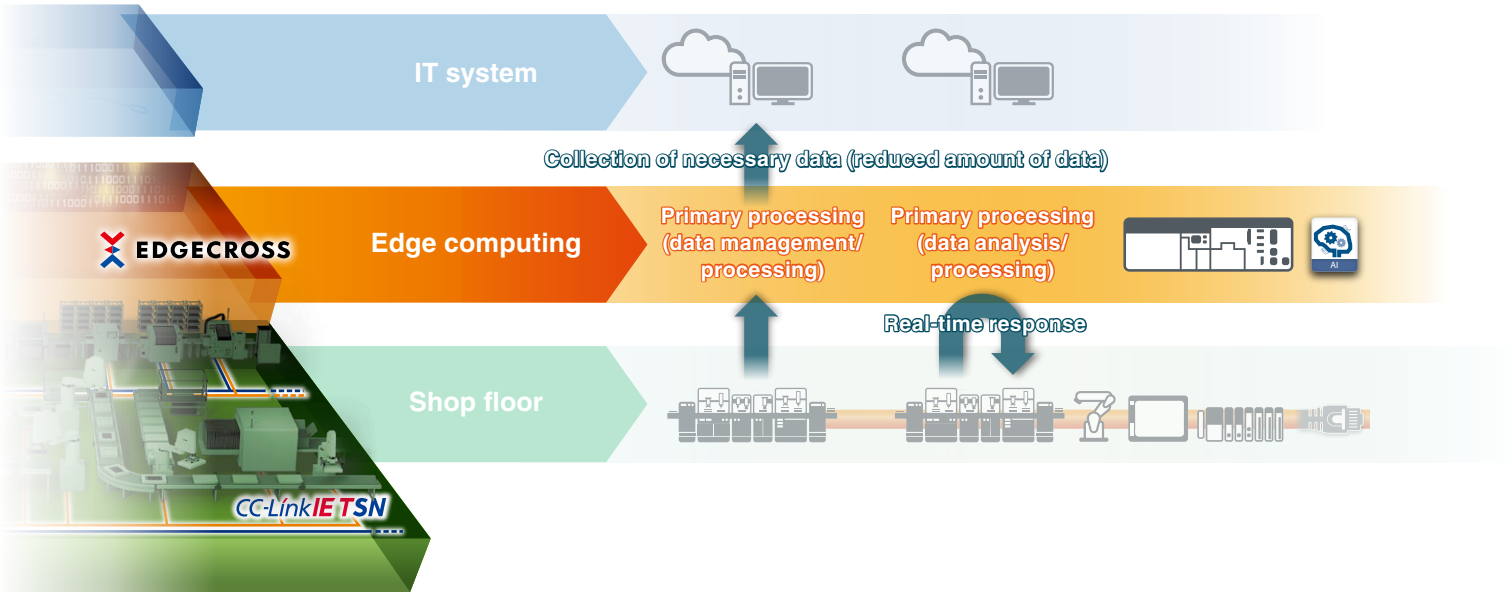
To realize a smart factory, it is necessary to utilize shop floor data in real time and effectively integrate with IT systems. “Edge computing” that primarily processes information between shop floor and IT systems supports these activities.

Utilization of the edge computing is essential for optimization of value chain focused on the shop floor.

▶ To autonomous decentralized system by edge computing

1 Primary processing of the shop floor data can reduce traffic and ensure security when sending data to Cloud or IT systems

2 Real-time data analysis and feedback near shop floor to improve efficiency in equipment maintenance and other operations



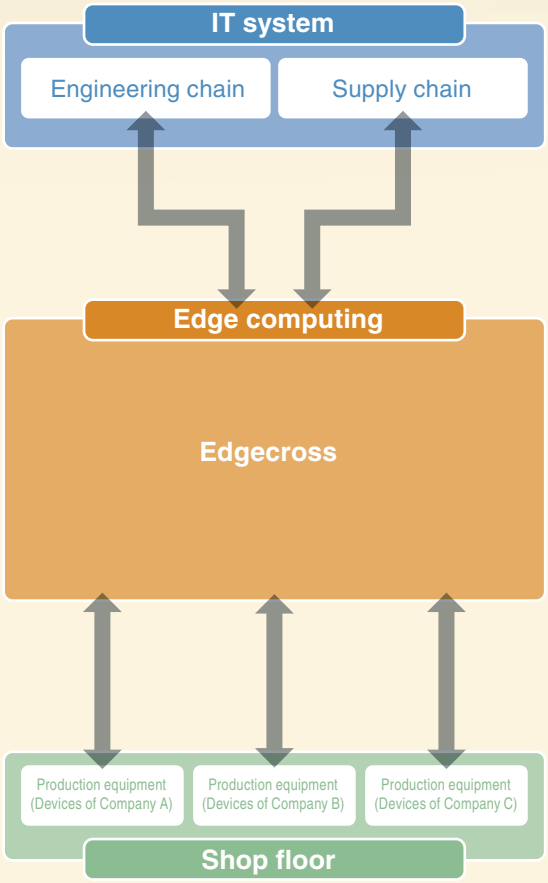
Sloving data collection and management issues by platform in the edge computing area

Issue 1

Data integration for promotion of IoT requires various technology components, and the system complexity is increasing.

Solution 1

Provides simple IoT system as absorbing different technology of shop floor / IT system



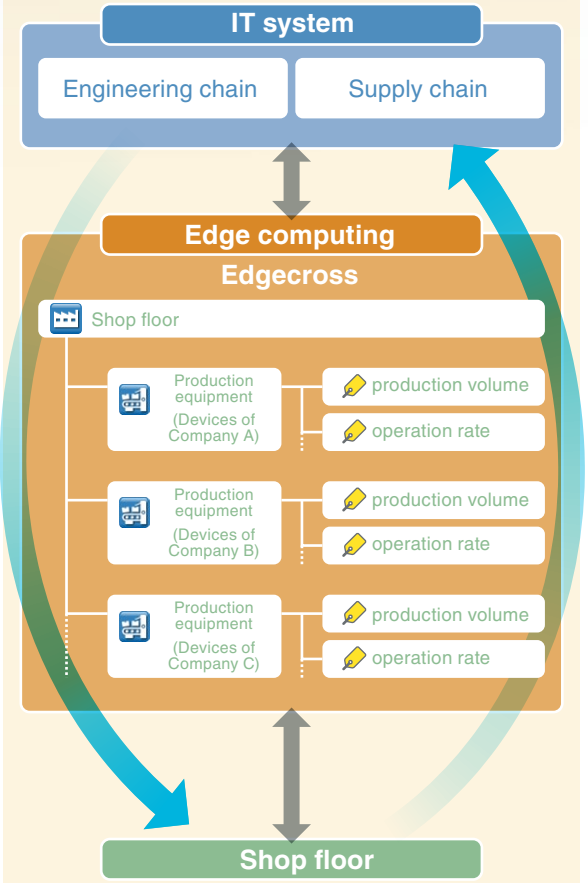
Edgecross serves as a data hub and absorbs differences among communication standards and interfaces to facilitate data integration.

Issue 2

Data adjustment for IoT utilization requires a vast amount of labor.

Solution 2

Promoting IoT-ization by the abstraction (labelling) and centralized management of shop floor data



The data necessary for business processes can be easily extracted by hierarchically managing abstracted (labeled) data.

Improvement of IoT at shop floor by e-F@ctory Solutions utilizing Edgecross

e-F@ctory Powered by EDGECROSS

- Total solutions in manufacturing industry using our FA and IT technologies
- Improvement of all processes in the shop floor is promoted by e-F@ctory Solutions utilizing Edgecross

Utilization of various applications in the edge computing area

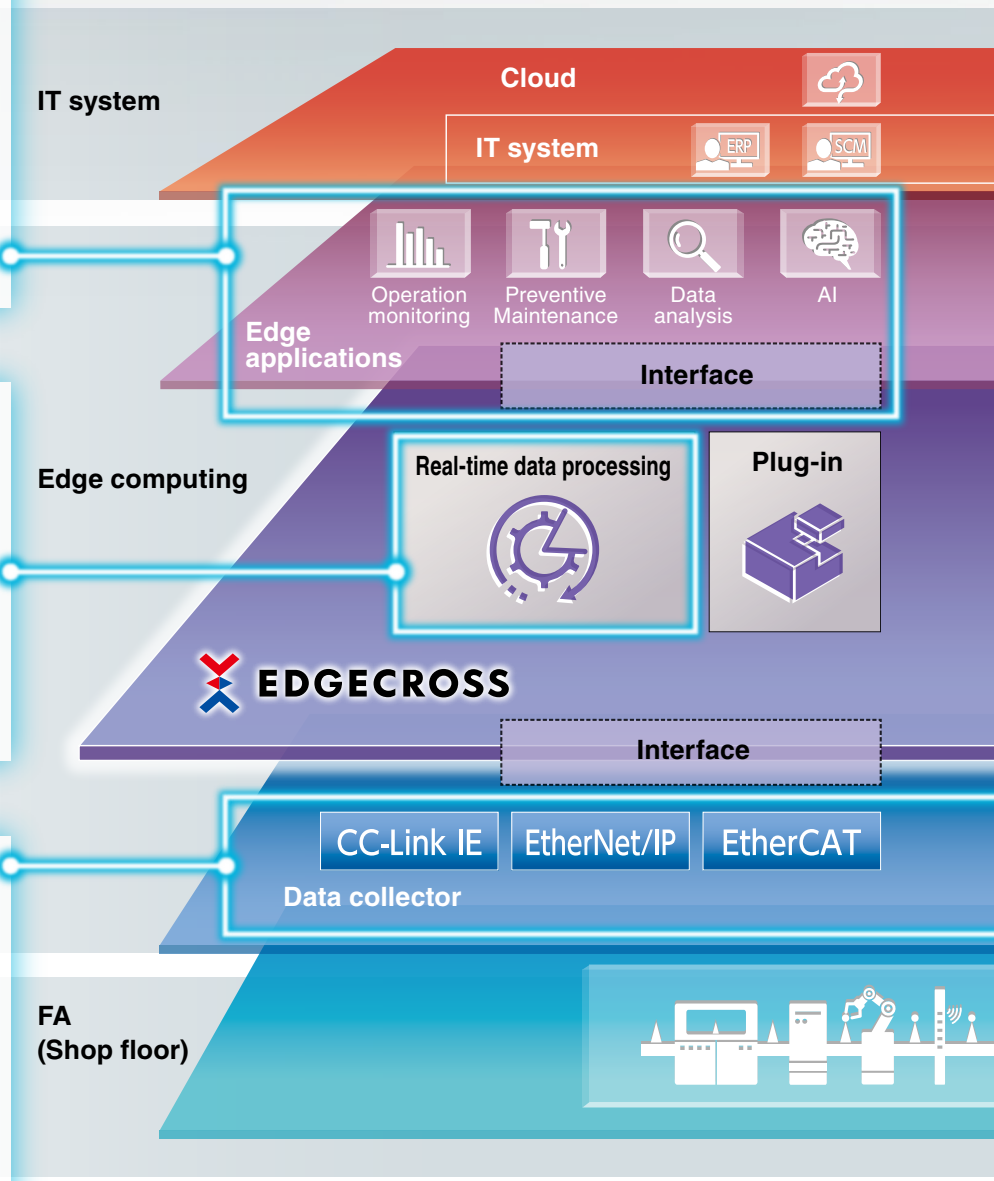
IT applications can be easily applied to FA application.
Applications can be easily selected from an extensive lineup depending on the situation.
The system construction completed in the edge computing area is available.

Real-time diagnostics and feedback

Data analysis and diagnosis performed at a location near a shop floor, to realize feedback to the shop floor in real-time.

Collecting all types of data at the shop floor

Enable data collection from each equipment and device regardless of vendor or network.

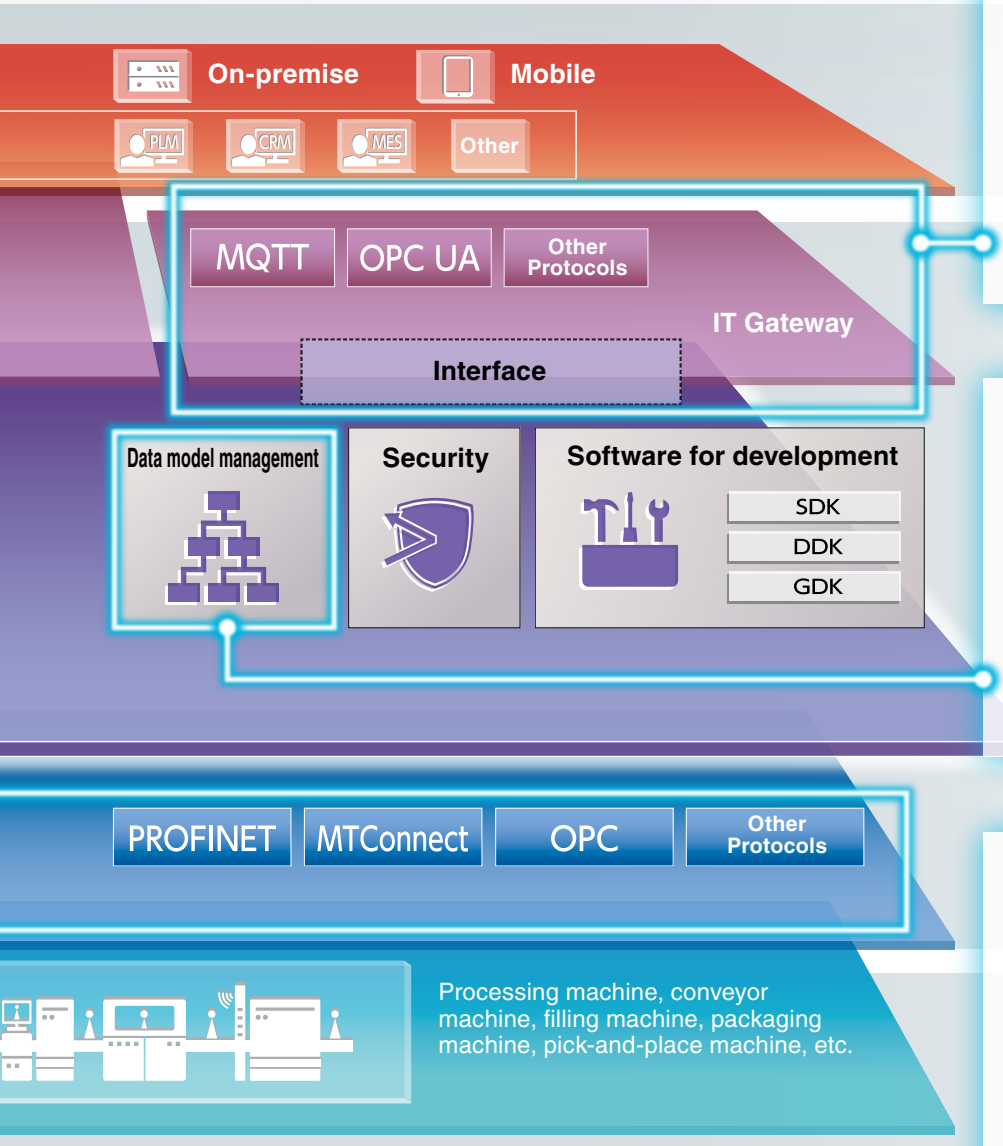


EDGECROSS

Software platform in the edge computing area from Japan realizes collaboration between FA and IT

"Edgecross" is an open software platform in the edge computing area that realizes collaboration between FA and IT across companies and industries.
Free and flexible eco-systems can be established without dependence on application vendors and device manufacturers.

Edgecross Consortium
https://www.edgecross.org/en/



Seamless coordination with IT systems

Realizing supply chain and engineering chain optimization by seamless data coordination with IT systems including the cloud.

Creating models from shop floor

Data can be easily utilized by people or by applications layering and abstracting the vast amount of data of the shop floor.

Operating on industrial PC

Mountable on various manufacturer's industrial PCs.

iQ Edgecross

Edgecross-supporting software

Provides edge applications and data collectors compatible with Edgecross for realizing data collection independent of connection method and protocol.

For improvement of the whole shop floor, it is essential to collect data from all equipment. However, the shop floor has machines of various manufacturers and a large number of connection methods and protocols, and a complex system must be established. Mitsubishi Electric promotes the utilization of "Edgecross" and provides software products for various issues to contribute toward of the customers.

IT Gateway

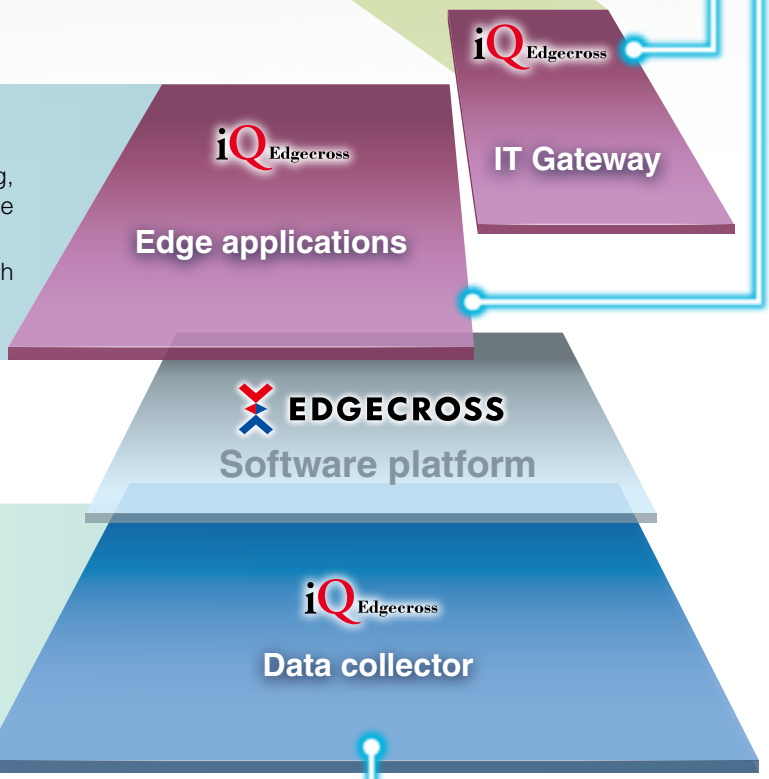
- Program-free data connectivity is possible using cloud and on-premises servers.
- Supports optimization of supply chains and engineering chains.

Edge applications

- Various kinds of processing, such as monitoring, analysis and diagnosis of shop floor data, are executed.
- Wide lineup of applications appropriate to each purpose can be selected.

Data collector

- Collection of all data at the shop floor regardless of device manufacturer and network.
- Data can be collected also from existing equipment.



Data collector P.34

Software that collects data from shop floor via various networks

CC-Link IE TSN
CC-Link IE Control
CC-Link IE Field
SLMP
OPC UA
MTConnect

IT Gateway P.36

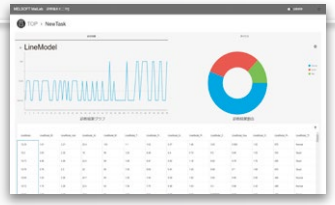
Smart Device Communication Gateway P.36

Enable operation monitoring by linking data model management of Edgecross with devices such as tablets and smartphones

Edge applications P.10

MELSOFT MaiLab P.10

Software that allows a user to analyze/diagnose production data without any specialized knowledge while helping automate the shop floor and improve productivity



EcoAdviser P.14

Software analyzes data collected by Edgecross or the energy-saving data collected by server EcoWebServerⅢ

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IoT platform for integrated monitoring solutions

NC Machine Tool Optimizer P.22

Software for analysis and diagnosis of operating conditions collected from machine tools and peripheral equipment

GT SoftGOT2000 P.26

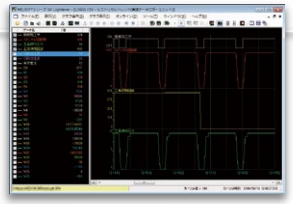
HMI software that operates on personal computers and panel computers

MELSOFT Gemini P.30

Software that allows pre-verification in the digital space of a virtual factory or equipment line

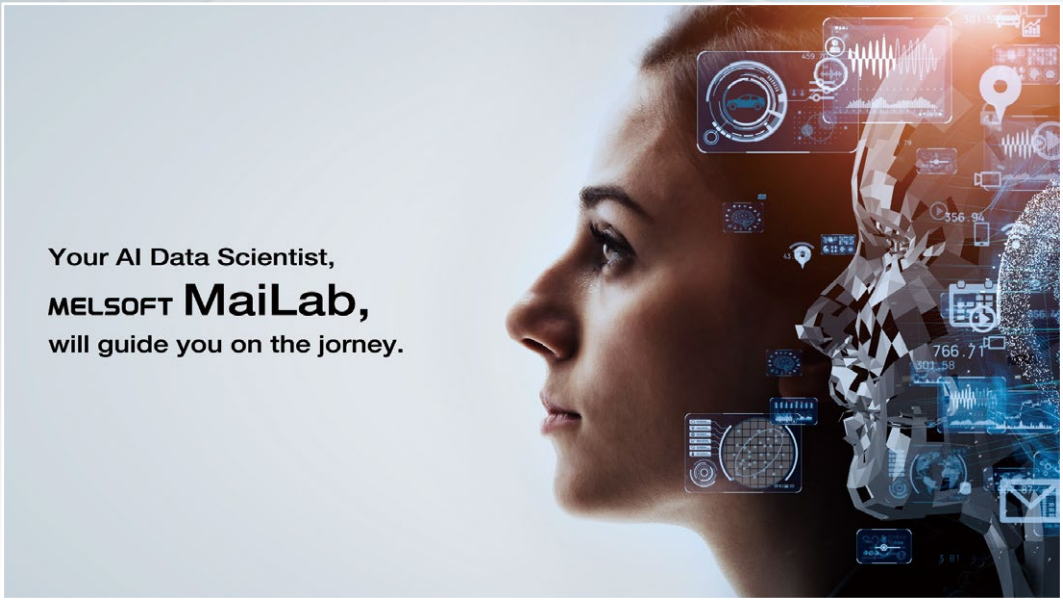
GX LogViewer P.32

A dedicated viewer that displays logging files collected with data logger modules and the CPU data logging function



MELSOFT MaiLab

Software that allows a user to analyze/diagnose production data without any specialized knowledge while helping automate the shop floor and improve productivity



By integrating statistical techniques and an extensive array of AI technologies including deep learning, production processes that were managed by experienced workers can now be automated, contributing to reduced labor costs, improved quality, and improved productivity.

Point 1

In addition to Mitsubishi Electric programmable controllers, MaiLab can connect with a variety of manufacturing equipment and other vender's PLC

Point 2

Shop floor data analysis/diagnosis without any specialized knowledge

Point 3

Flexible system configurations allow data analysis/diagnosis in ideal configurations

Point 4

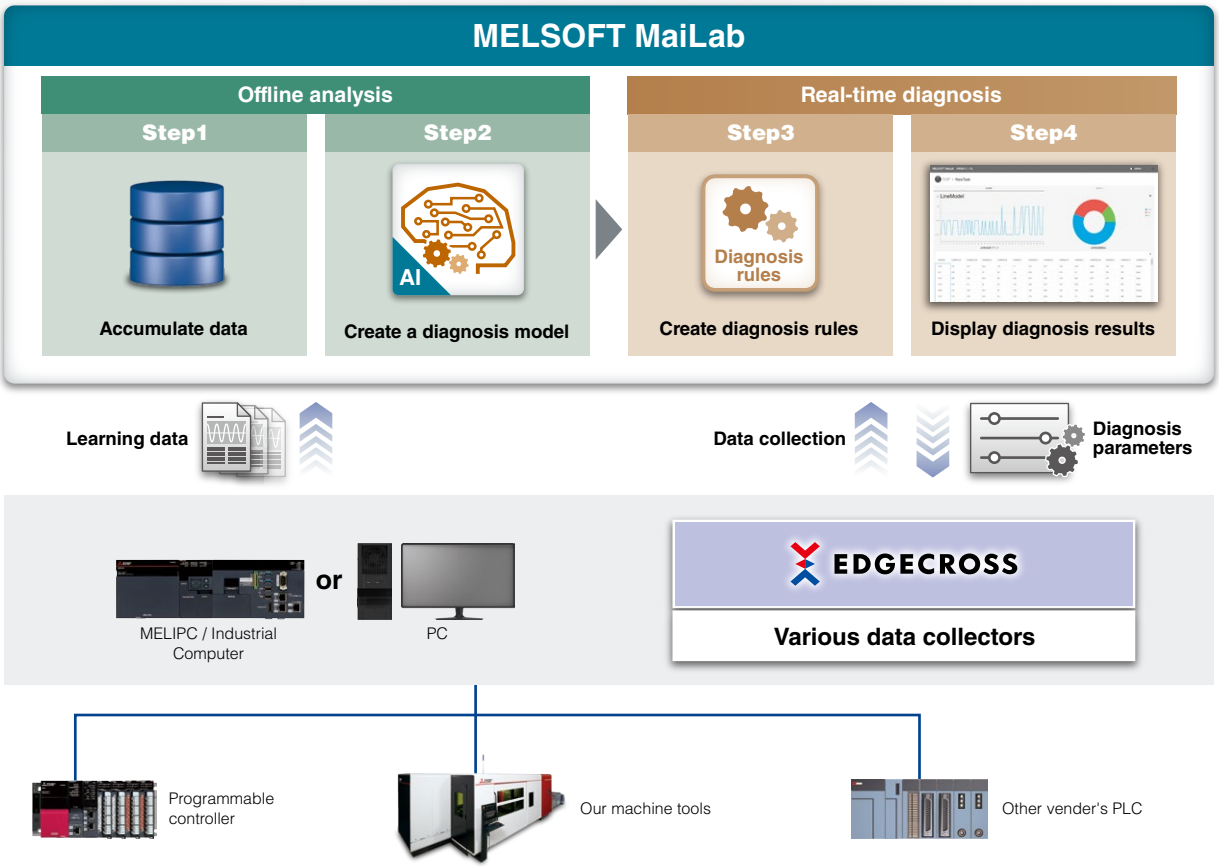
Graphical viewing for intuitive operation

Have you ever had this problem?

Concern 1 Quality control and equipment maintenance such as equipment calibrations and the replacement of consumables are still conducted based on rules of thumb and the intuition of experienced workers.

Edgecross and FA equipment work together to solve customers' problems

Solution 1 Use MELSOFT MaiLab to systematically make the judgments that are still being made based on rules of thumb and the intuition of experienced workers



Effect after introduction

Stable production that is not reliant on workers

With AI conducting work instead of workers, human errors, oversights, and other items beyond human perception are handled by AI.

Reduced Costs

Instead of shop floor workers determining when to replace consumables, AI determines the optimal time for replacements and reduces wasteful replacements which creates savings on the costs of parts.

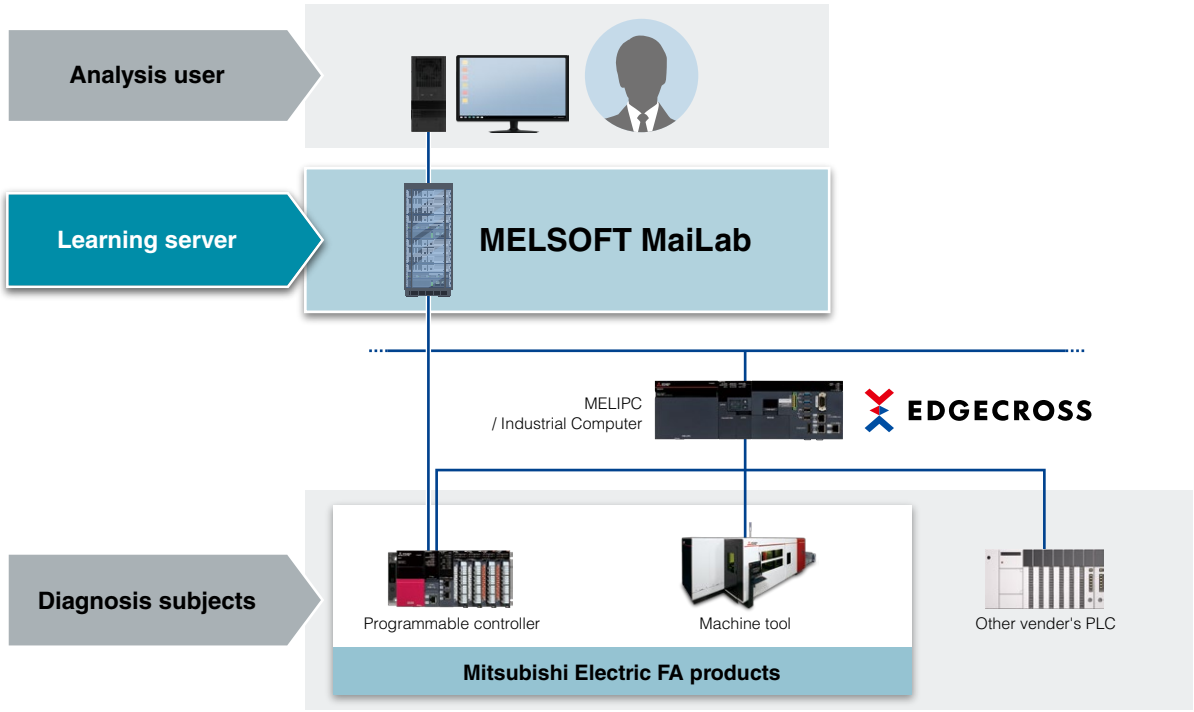
Passing on know-how of experienced workers

With AI setting production parameters and making the judgments that are made by experienced workers based on rules of thumb and intuition, inexperienced workers can also handle operations.

Point 1

In addition to Mitsubishi Electric programmable controllers, MaiLab can connect with a variety of manufacturing equipment and other vender's PLC

Connect with Mitsubishi Electric programmable controllers directly, or connect with third-party programmable controllers and manufacturing equipment using Edgecross.



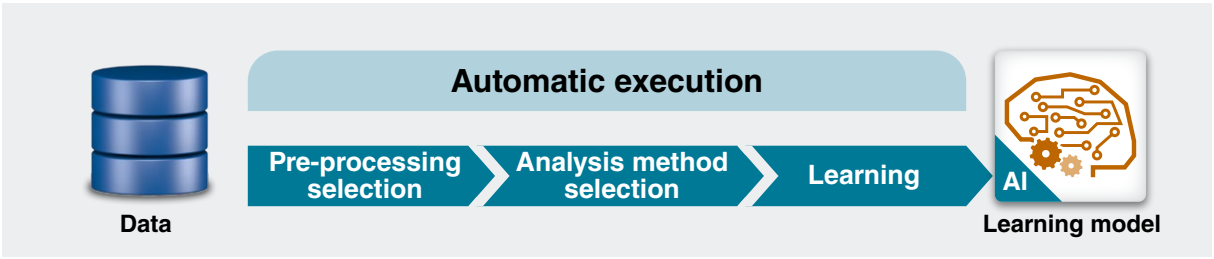
Point 2

Shop floor data analysis/diagnosis without any specialized knowledge

The AI automatic learning function "AutoML" in MaiLab allows workers without specialized knowledge to analyze and diagnose the data from a shop floor to improve productivity. Workers with knowledge of AI can also use Python® code to customize AI as required.

Let AI manage data analysis

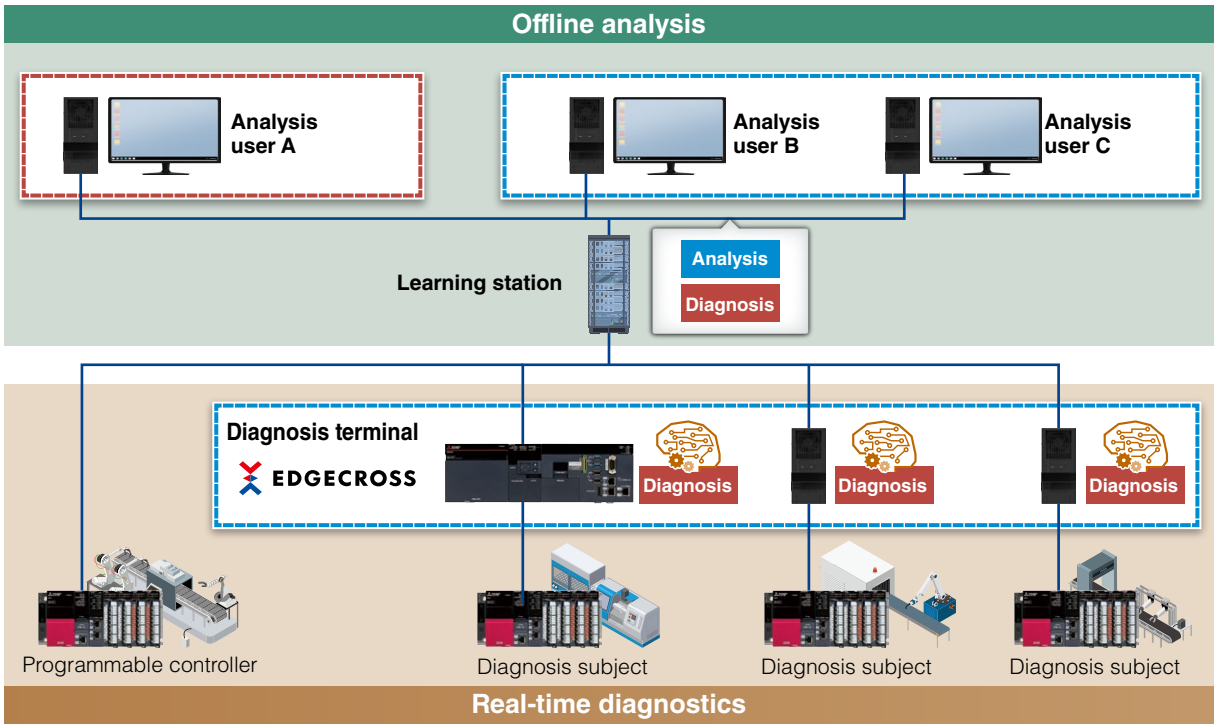
The AutoML function automatically conducts everything from the pre-processing of data to learning models



Point 3

Flexible system configurations allow data analysis/diagnosis in ideal configurations

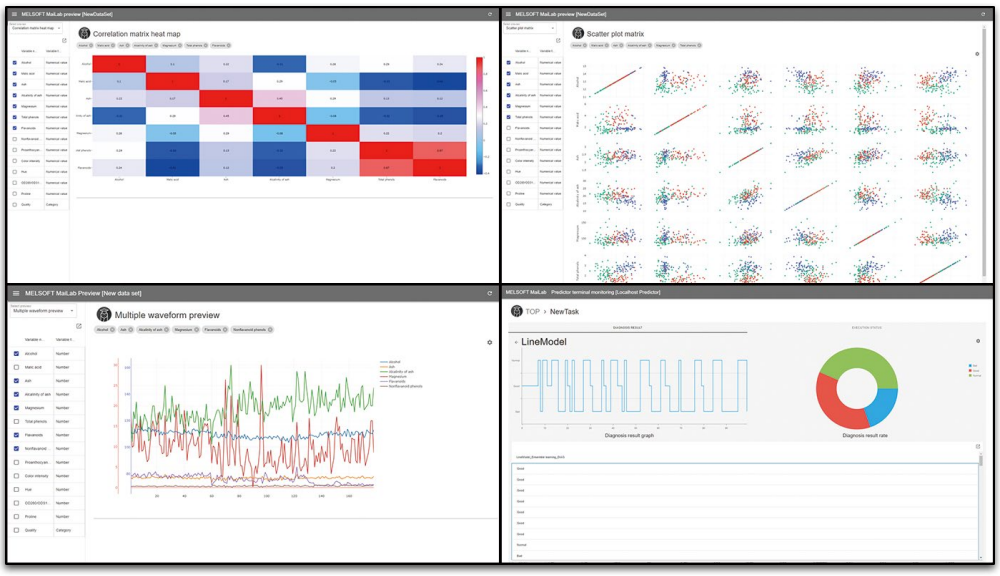
In addition to a basic license, licenses for analysis and licenses for diagnosis are also available. These additional licenses can be purchased as required according to the needs of each site.



Point 4

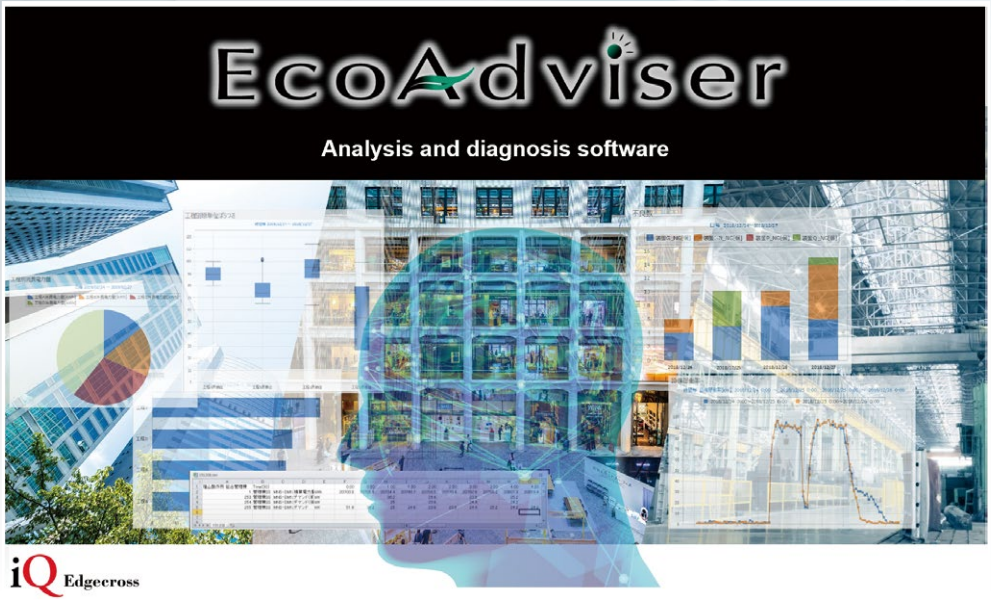
Graphical viewing for intuitive operation

Data from a shop floor can be displayed in a variety of graphs, and intuitive operation makes data analysis/diagnosis easy. Furthermore, users can remotely check the production status of a shop floor when using a tablet.



EcoAdviser

Software analyzes data collected by Edgecross or the energy-saving data collected by server EcoWebServerⅢ



Equipped with Mitsubishi Electric's AI technology, Maisart, the system provides total support for energy-saving activities, from understanding the current situation to extracting and diagnosing the causes of energy loss and verifying the effectiveness of energy-saving measures.

Point 1

Data collected by Edgecross can be charted for energy-saving data analysis

Point 2

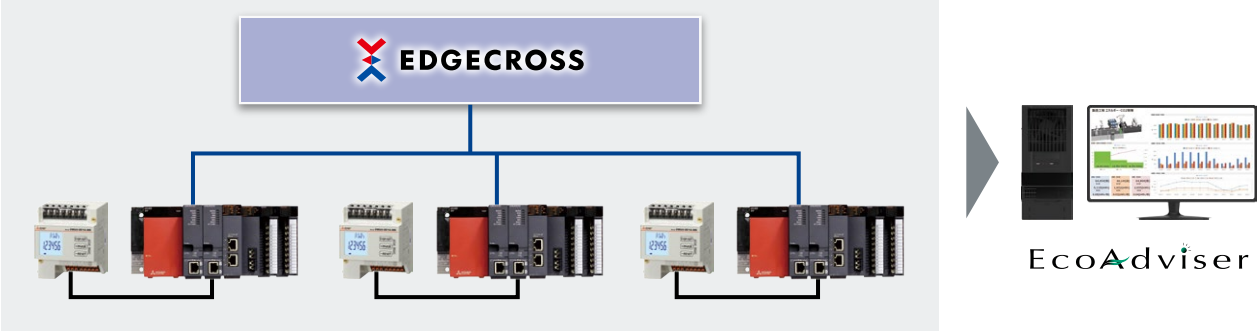
Automatic calculation of energy loss using AI technology

Point 3

AI-powered diagnosis of causes of energy loss

Point 4

Easily verify effects before and after measures



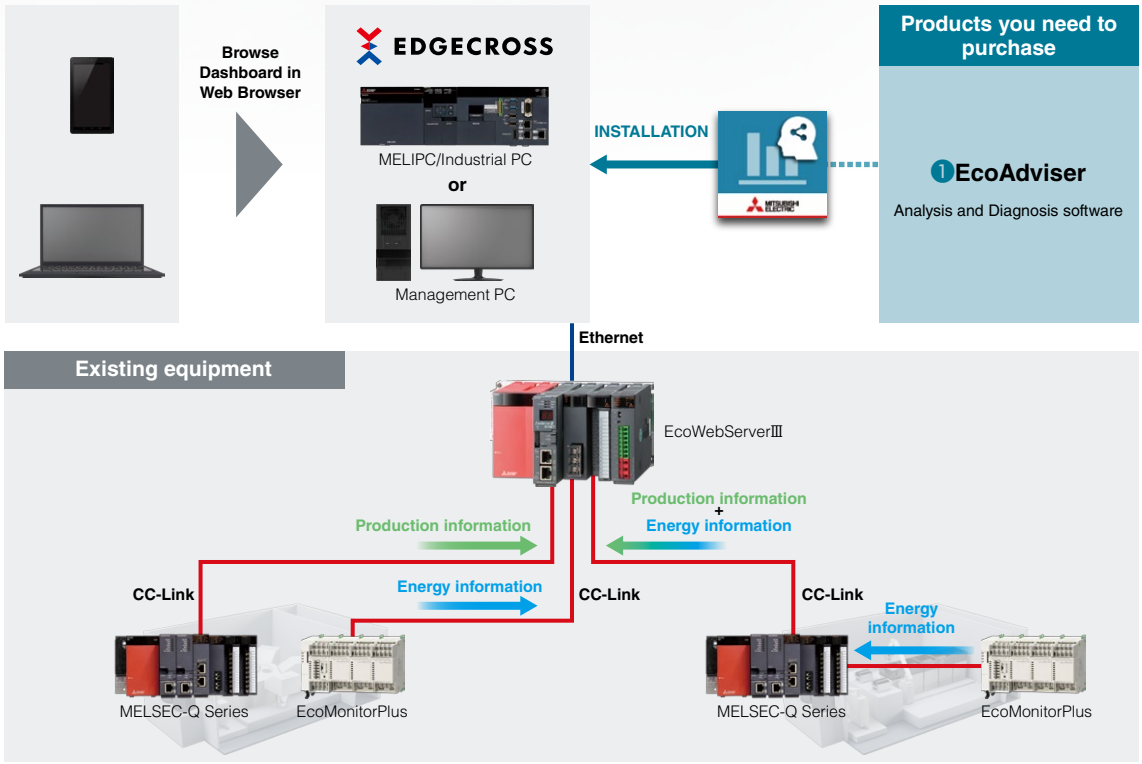
Have you ever had this problem?

Concern 1 Although we have built a system to collect data that can be used to save energy, such as energy and production numbers, how to quantitatively grasp and analyze vast amounts of data to make improvements, there is a limit to what we can do with hands.

Edgecross and FA equipment work together to solve customers' problems

Solution 1 The dashboard creation function allows energy and production information to be displayed simultaneously in multiple graphs for energy conservation analysis from multiple perspectives!

Solution 2 With our company's proprietary AI technology Maisart, it is possible to automatically extract the operating rates of energy loss, facilities and the factors causing their deterioration and display the ranking!



* EcoAdviser is an application for the open software platform Edgecross. Please contact us for information on system configurations utilizing Edgecross.

Effect after introduction

Reduce energy saving analysis effort

The graph creation function, dashboard function and automatic extraction function of energy loss made it possible to quickly grasp the current status of energy use.

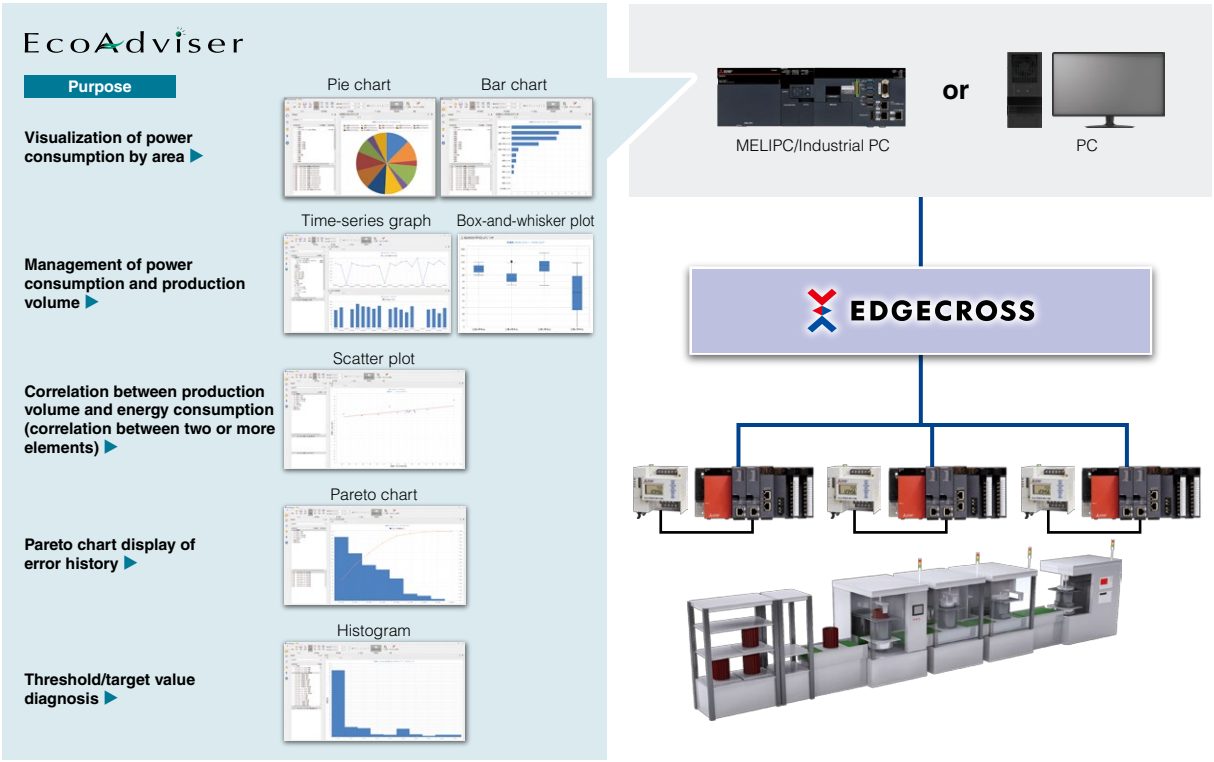
Realize energy-saving effects

The energy loss factor diagnosis function enabled us to estimate the potential losses and generation factors in the process, and to link them to specific energy-saving activities.

Point 1

Data collected by Edgecross can be charted for energy-saving data analysis

Adapted to Edgecross historical data, the collected data can be displayed in various graphs and various analyses can be performed on energy saving data.



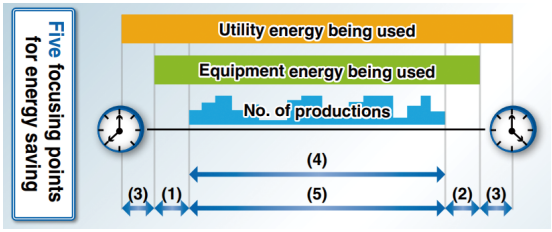
Point 2

Automatic identification of production equipment energy loss data (AI diagnosis version only)

Focusing on five energy-saving perspectives based on Mitsubishi Electric know-how accumulated over many years, energy loss data is identified from each key area.

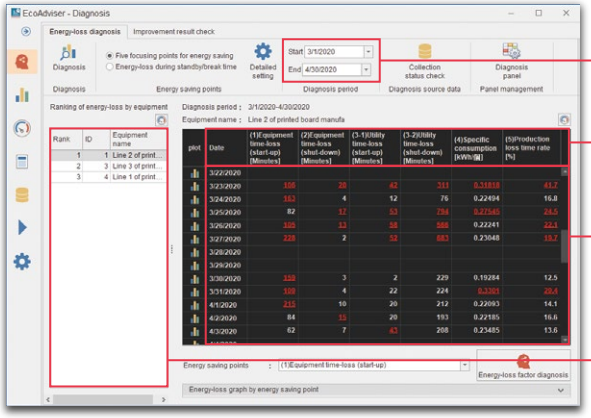
What are Mitsubishi Electric's "Five focusing points for Energy Saving?"

1. Equipment time-loss (start-up): Time from production equipment start-up to production start time
2. Equipment time-loss (shut-down): Time from end of production to time equipment is completely turned off.
3. Utility* time-loss
   - Utility time-loss (start-up): Time from utility start-up to production equipment start-up
   - Utility time-loss (shut-down): Time from production equipment shutdown to time utility is completely turned off.
4. Specific consumption: Basic unit from production start to finish
5. Production loss time rate: Percentage of non-productive time from start to finish



* Auxiliary equipment operating in conjunction with production facilities (e.g., exhaust fans, mist collectors, compressors, etc.)

Energy-loss diagnosis screen



■Diagnosis period
Select a diagnosis period to identify energy-losses.

■Five focusing points for energy saving
Daily energy-losses are displayed for each of significant five focusing points for energy saving.

■Energy-losses identification screen
Daily energy-loss time (Unit: minutes), specific consumption, and production loss time rate are displayed together, and days when energy-losses are larger than usual are highlighted.

■Ranking display
Automatically display in order of energy-loss amount with ranking style.

Point 3

Energy-losses factor diagnosis (AI diagnosis version only)

Based on the date, time and production information, items determined to be a cause of energy-losses are ranked and presented with the expected effect of improvement.

What is “energy-losses factor diagnosis?”

Diagnosis of items that are more relevant to energy-losses on a day when loss is greater than usual.

Diagnosis results

- Monday
- Start-up time was 6:00a.m.
- Daily production was 250 units

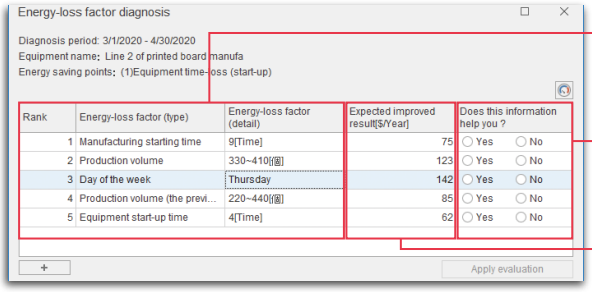
Fact-checking is carried out using the diagnosis results, and concrete countermeasures are implemented.

Countermeasures based on diagnosis results

Monday 6a.m. 250 units

- Revise start-up/shutdown time of equipment at the start of the week.
- Inform personnel that unnecessary early morning start-up is to be eliminated.
- Review production plan, as loss is too large when production volume is low.

Energy-loss factor diagnosis result screen



■Energy-losses factor diagnosis
AI is used to automatically judge the factors that have a significant correlation with energy-losses, and they are displayed in the ranking style. (Day of the week, starting-up time, production volume, etc.)

■Evaluation of diagnosis results
Reflect the user evaluation on the diagnosis results afterwards. The items that Yes is selected are likely to be displayed on the top range.

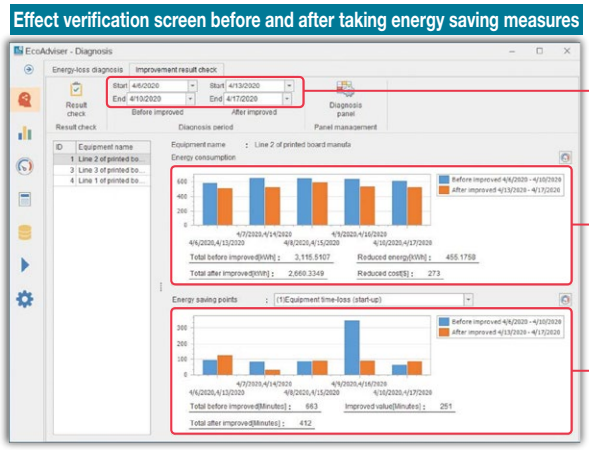
■Expected improvement result
Automatically calculate the expected improvement result and show the result by amount.

Point 4

Easy verification of effects before and after countermeasures (AI diagnostic version only)

By simply selecting a period before and after the improvement, you can easily check the amount of electricity used, electricity charges, and energy loss before and after the measure.

Effect verification screen before and after taking energy saving measures



Diagnosis period
Effect verification is possible just by selecting the period before and after improvement.

Improvement effect of energy consumption and reduction price amount
Comparison based on energy consumption and price is possible.

Improvement effects in the energy saving perspectives
Able to compare energy-losses of the selected energy saving points.

GENESIS64™

IoT platform for integrated monitoring solutions

Through centralized management and utilization of all kinds of data, we provide integrated monitoring solutions that best meet customer needs, such as factory automation, smart building, and social infrastructure systems.

Point 1

Delivers solution proposals in conjunction with other edge applications

Point 2

Easy connection with various devices by supporting open protocols

Point 3

Large amounts of data collected at high speeds can be used for a variety of purposes, including OEE, SPC, and energy management

Point 4

Realization of construction of a monitoring system and a variety of monitoring screens that can be used with any device

Have you ever had this problem?

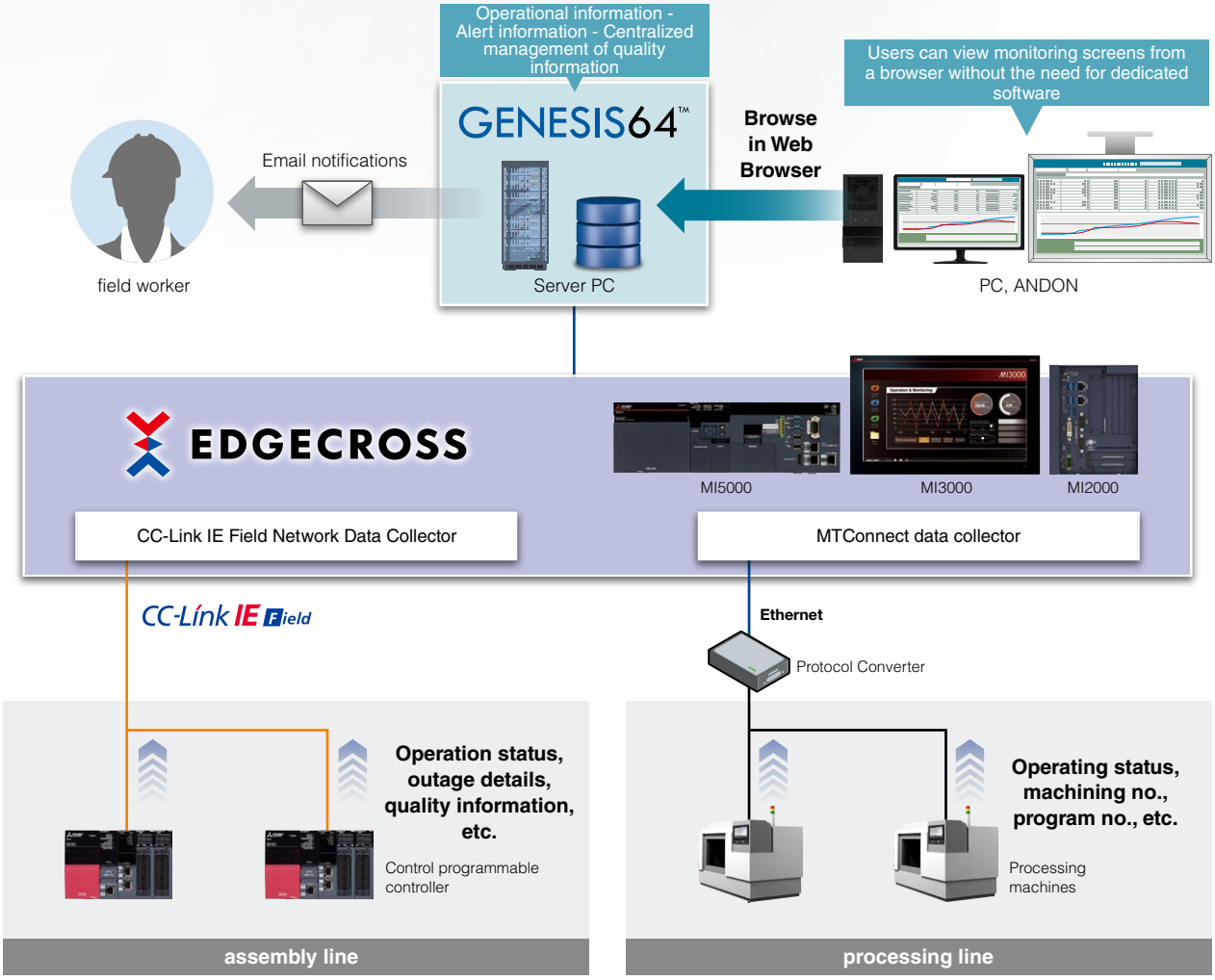
Concern 1 Data collected by human workers make it difficult to determine the cause of short stops

Concern 2 Not immediately aware of equipment shutdown

Edgecross and FA equipment work together to solve customers' problems

Solution 1 Automatic collection and centralized management of a variety of on-site data makes it possible to investigate the causes of short stops and consider remedial measures!

Solution 2 Notifying workers in real time when equipment malfunctions occur!



Effect after introduction

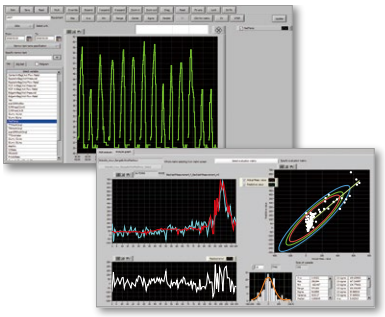
Improve system availability

Centralized data collection and implementation of an operation monitoring system enable real-time monitoring of operation status and quick identification of the cause of the short stops. Improved utilization through reduced downtime.

Point 1

Delivers solution proposals in conjunction with other edge applications

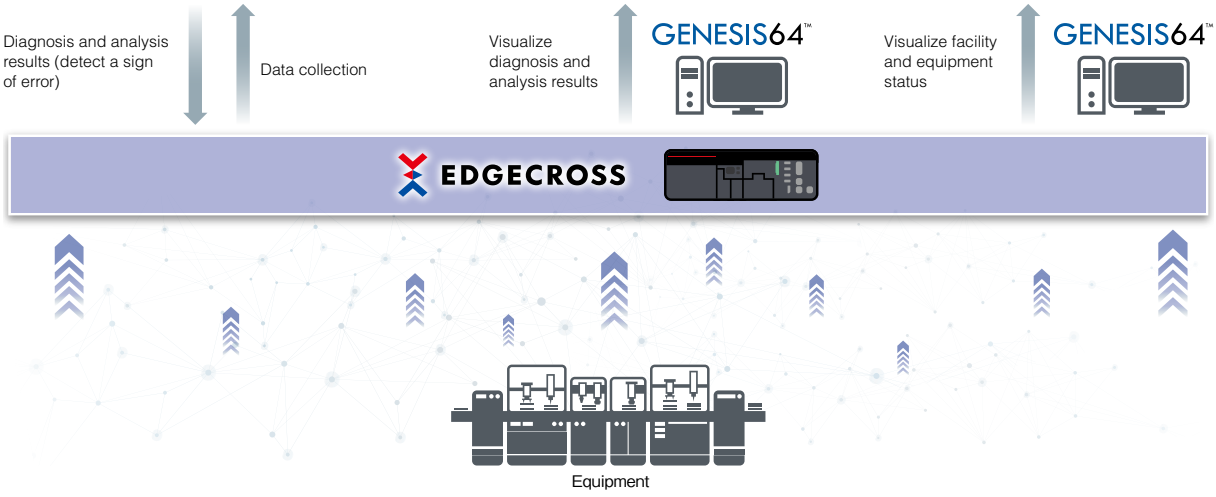
The equipment downtime for preventive maintenance and equipment trouble can be minimized by using the analysis results of data collected via Edgecross and troubleshooting know-how accumulated by customers.



Edgecross application (Real-time Data Analyzer)
One software enables real-time diagnosis and offline analysis of production data

GENESIS64™
Visualize facility and equipment where a sign of error is detected, allowing maintenance before it happens.

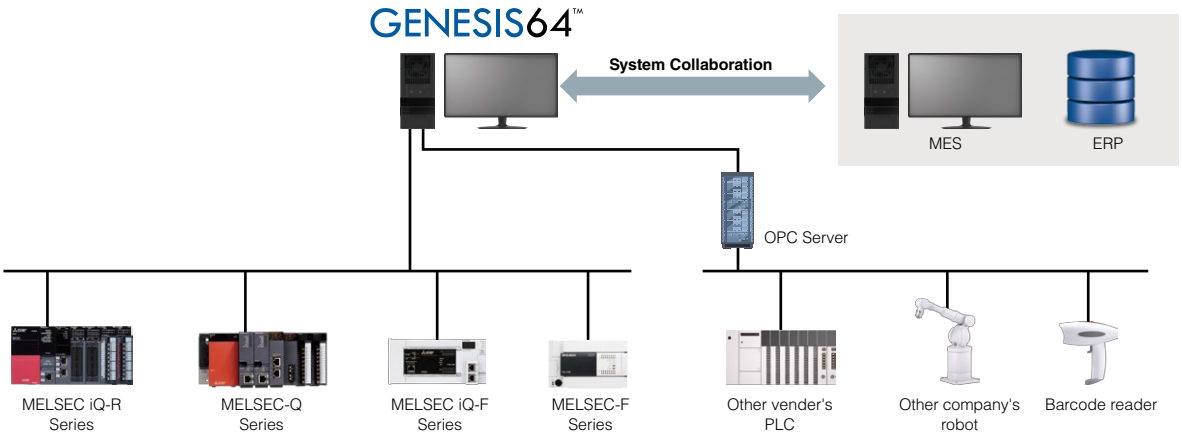
GENESIS64™
Visualize facility and equipment status and KPI information sent from Edgecross.



Point 2

Easy connection with various devices by supporting open protocols

It supports industry-standard open protocols such as OPC™ and MODBUS® for easy connection to a variety of devices. Moreover, it can read and write to various general-purpose databases, which greatly contributed to the integration of FA and IT systems.



Point 3

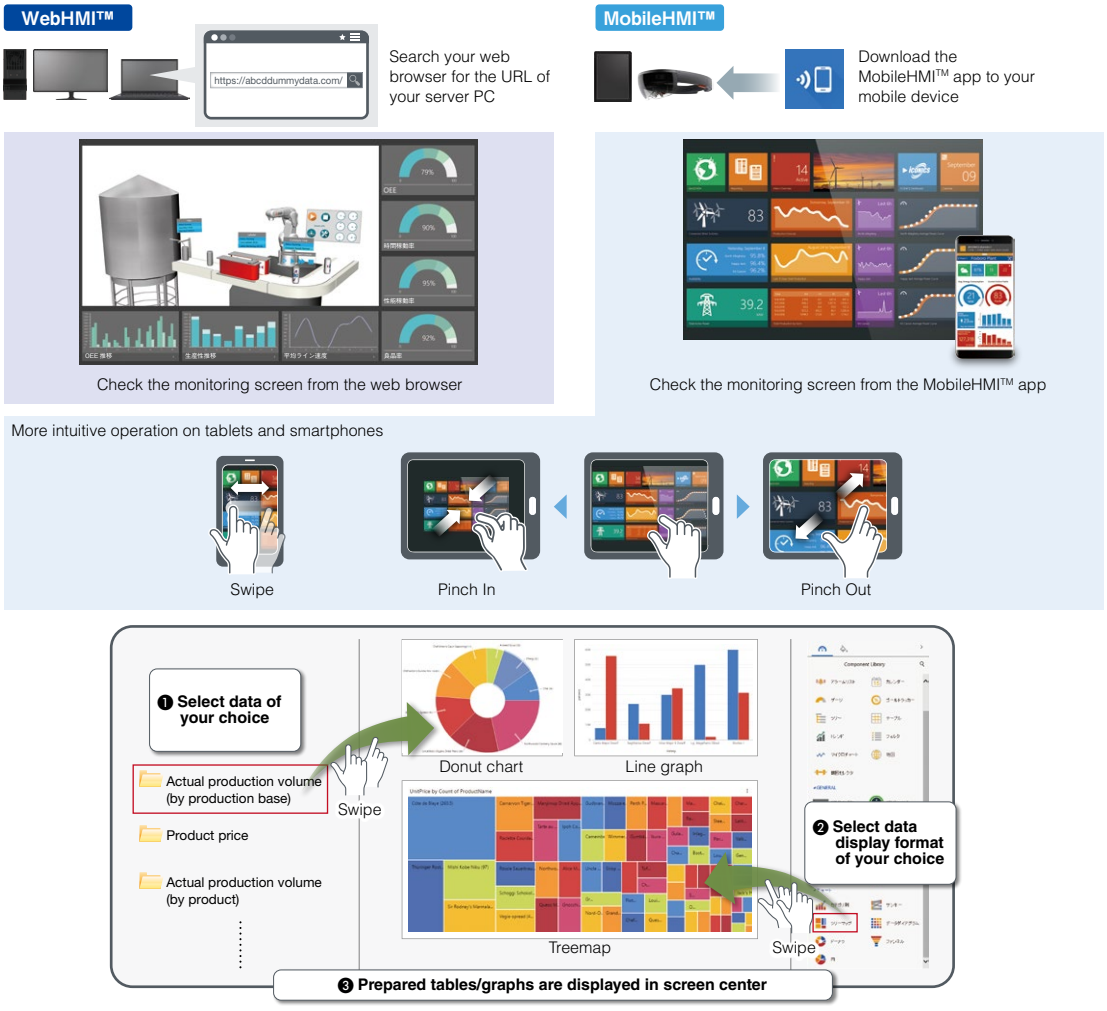
Large amounts of data collected at high speeds can be used for a variety of purposes, including OEE, SPC, and energy management

We help our customers improve their business activities by analyzing large volumes of data collected at high speed with various functions. It also works with other IT tools and analytics applications, enabling OEE, SPC, energy management, and more.

Point 4

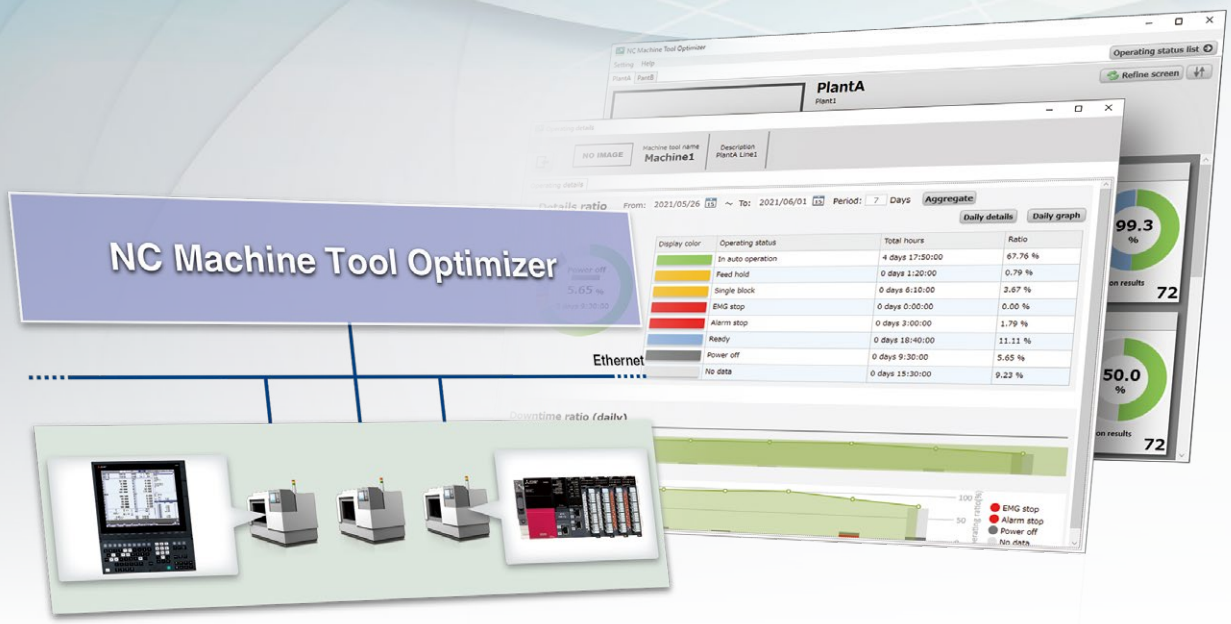
Construction of a monitoring system for any device and a variety of monitoring screens

It supports monitoring via a Web browser or mobile app, and can be configured to monitor any device, including personal computers, tablets, smartphones, and wearable devices. It also supports 3D models and AR, allowing you to build a variety of monitoring screens.



NC Machine Tool Optimizer

Software for analysis and diagnosis of operating conditions collected from machine tools and peripheral equipment



This product analyzes and diagnoses operating information of a wide range of facilities, including machine tools equipped with numerical control units (CNC) made by our company as well as those equipped with CNCs made by other companies, and contributes to improving efficiency at shop floor.

Point 1

Connect to machine tools from a wide range of manufacturers

Point 2

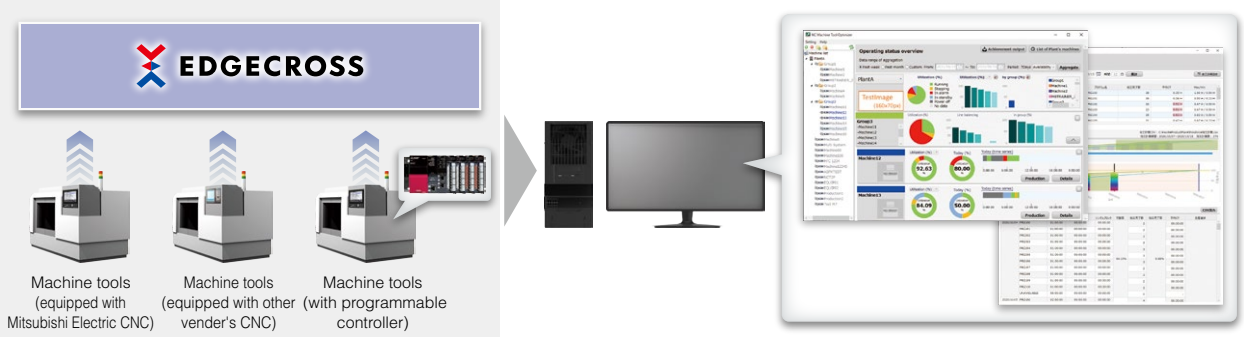
Total monitoring through connection with multiple locations

Point 3

Downtime diagnosis, trend analysis simplified

Point 4

Achieves (actual) comparison and analysis with production plans



Have you ever had this problem?

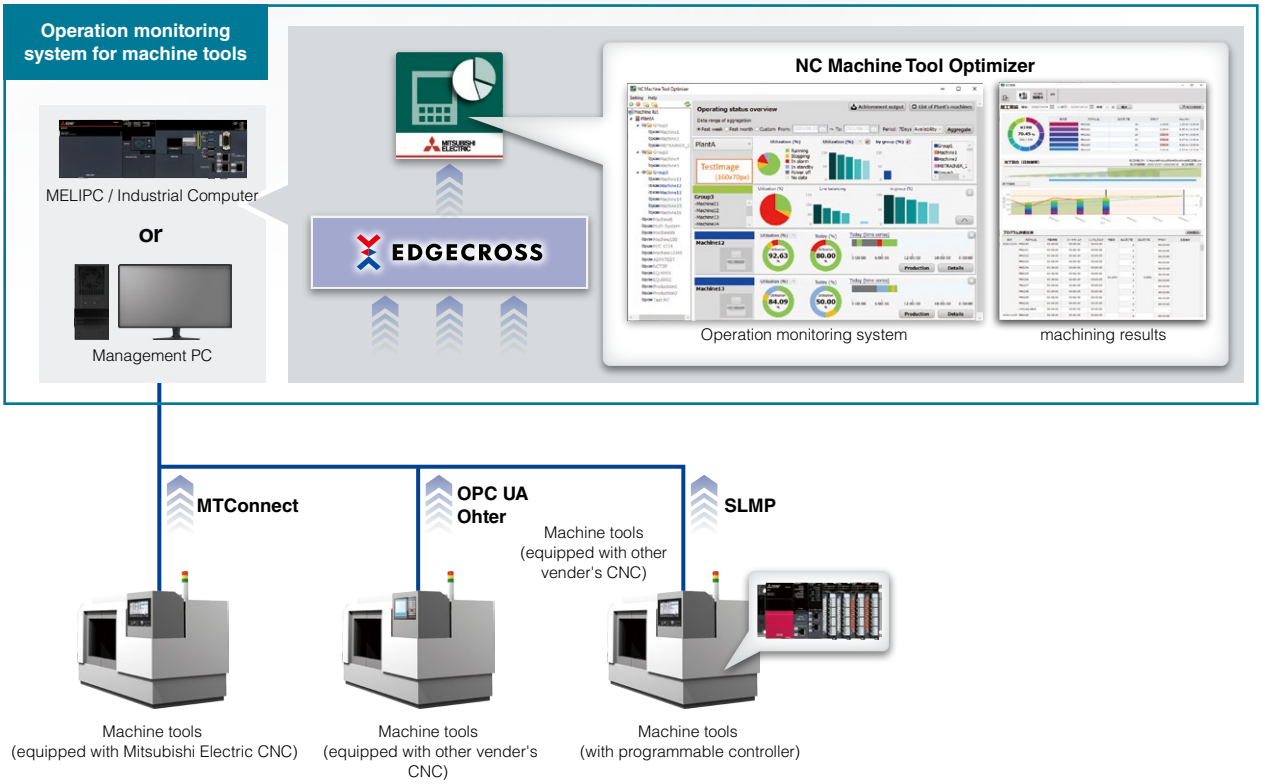
Concern 1 With multiple production bases, it is not possible to accurately understand the operating status and processing performance.

Concern 2 There are a variety of machine tools and FA equipment, making management complicated

Edgecross and FA equipment work together to solve customers' problems

Solution 1 Leveraging Machine Tool Optimizer and connecting to multiple locations to enable full monitoring, operation information and

Solution 2 Visualization of machining results is possible!
Adaptable to machine tools and FA equipment from a wide range of manufacturers by utilizing Edgecross!



Effect after introduction

Connection to multiple locations for overall monitoring.

By connecting multiple production bases and unifying the visualization system, overall monitoring is realized and can be utilized for future improvement layout changes, etc.

Easy diagnosis of downtime, comparison with production plans, trend analysis, etc.

Various charts can be used to show the occurrence status of alarm stoppages and analyze trends in the stopping factors of machines. In addition, actual differences from production plans, such as the number of products produced per machine, can be confirmed, enabling the trend of productivity and the optimization of plans.

Connected to machine tools from a wide range of manufacturers

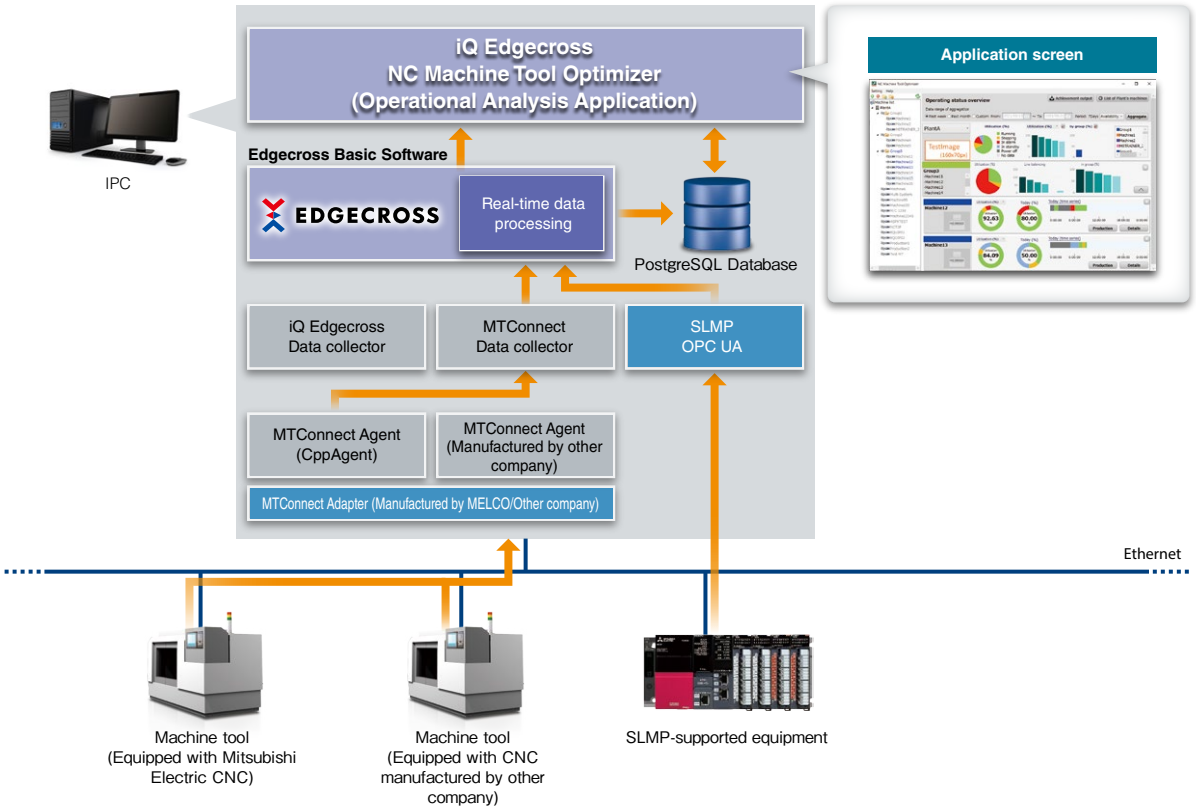
By using various data collector, it is possible to connect with a variety of equipment such as older models NC made by our company, NC made by other companies, and other FA equipment.

Point 1

Edgecross enables support of machine tools and FA equipment from many different manufacturers

Various data collectors support a variety of communication network standards.
In addition, it is possible to connect with various devices such as old programmable controller models manufactured by Mitsubishi Electric, programmable controllers manufactured by other companies, and other FA equipment.

Example system configuration



Point 2

Total monitoring through connection with multiple locations

Overall production operations can be monitored by connecting with multiple production bases and integrating the visualization system. The analysis data accumulated at each shop floor can be used to make management decisions such as future factory layout changes.

Point 3

Easy to diagnose downtime, trend analysis

Various charts are displayed to show the occurrence status of alarm stoppage, etc., and the trend of stopping factors of the machine can be analyzed.

Operation detail screen

Summarized table for each stopping factor that occurred during the specified period / Display percentage graph

Graph showing the percentage of factors causing outages and changes in the utilization rate

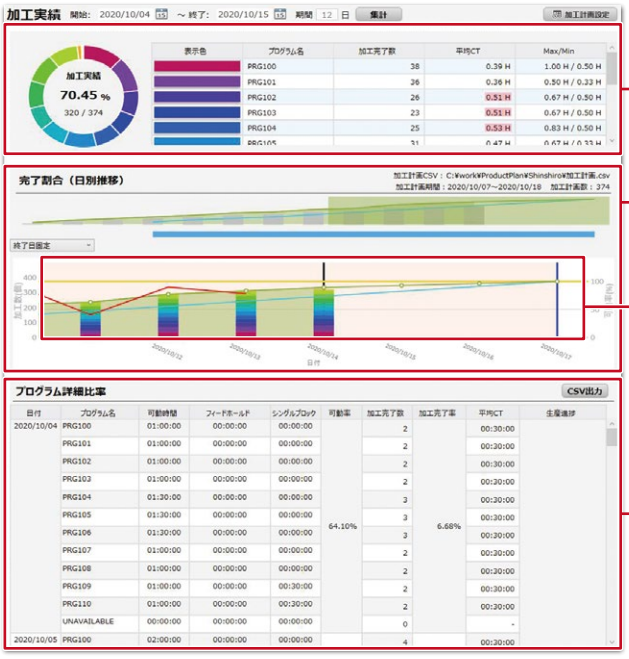
Graphical display of operating status over a specified period by line

Point 4

Achieves (actual) comparison and analysis with production plans

Actual differences from production plans, such as production numbers and progress for each machine, can be confirmed, and can be used to understand productivity trends and optimize planning.

Machining results screen



Show performance, percentage, average cycle time, etc. for each machining program within a specified period

Processing accumulations for the entire aggregation period are shown by day

Display results and forecasts

Performance Details by Day

GT SoftGOT2000

HMI software that operates on personal computers and panel computers

GT SoftGOT2000 is HMI software that operates on personal computers and panel computers. It can be used to collect and visualize the information of industrial devices that are connected to personal computers and panel computers via a network. In addition, as with the GOT2000 Series, screens can be easily created using HMI/GOT Screen Design Software GT Works3.

* When using GT SoftGOT2000, a separate license key (GT27-SGTKEY-U) must be installed. However, when using MELIPC MI3000, the license key is pre-installed so that it is not required separately.

Point 1

Edgecross linkage function for easy visualization and simple analysis of collected data

Point 2

Easily connect data to IT systems with OPC UA client connection

Point 3

Multi-channel connection enables consolidated monitoring of multiple lines

Point 4

Leveraging the GOT Mobile function for GT SoftGOT2000 to realize a large-scale remote monitoring system

GT SoftGOT2000 + personal computer or MELIPC MI3000

Have you ever had this problem?

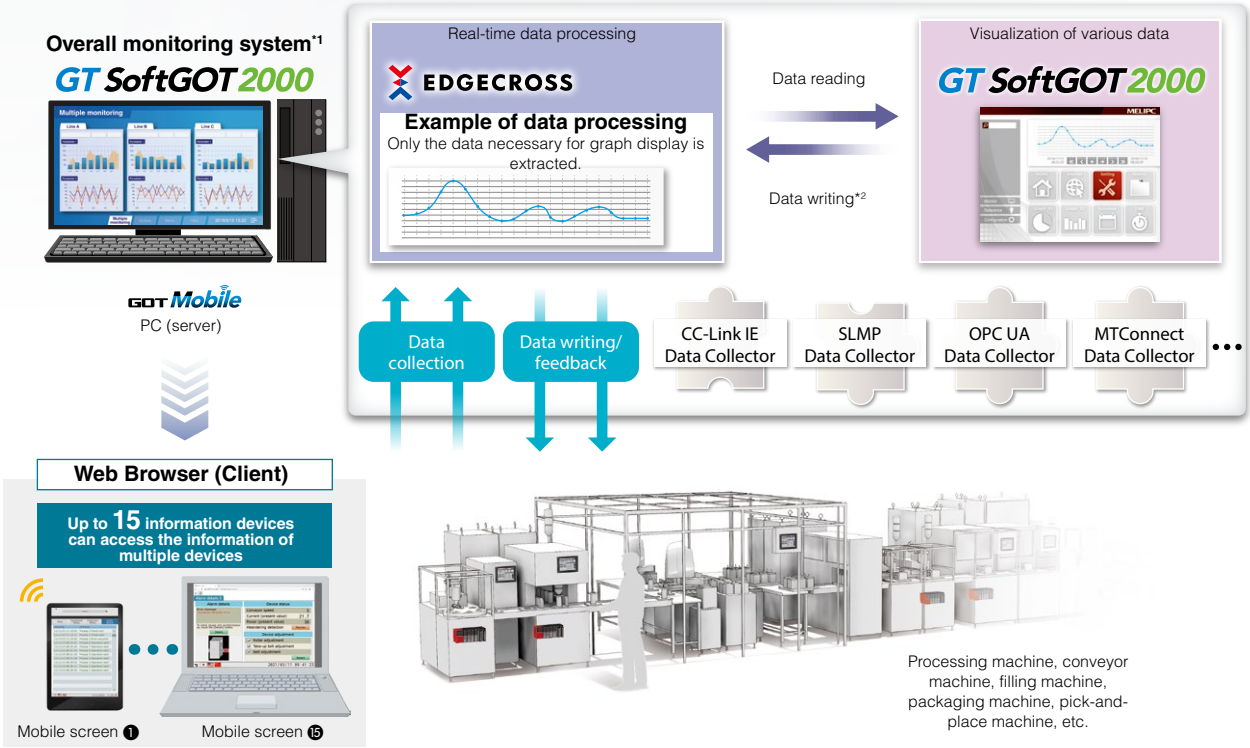
Concern 1 It takes time to solve problems at production facilities and production efficiency does not improve.

Concern 2 Information about the device can not be shared among multiple operators.

Edgecross and FA equipment work together to solve customers' problems

Solution 1 Easily analyze the factors causing the shutdown of production facilities by interacting with Edgecross

Solution 2 Share information among 15 operators using the GOT Mobile function that supports GT SoftGOT2000



Processing machine, conveyor machine, filling machine, packaging machine, pick-and-place machine, etc.

*1. It is required to install Edgecross Basic Software, Data Collector, and GT SoftGOT2000 on a personal computer.
*2. To write data from GT SoftGOT2000 to Edgecross Basic Software, installation of MELSOFT GT OPC UA Client software is required separately.

Benefit after introduction

Reduced downtime, improved production efficiency

The data collected by Edgecross can be visualized and simple analysis can be performed using various functions of GT SoftGOT2000, which leads to faster investigation of problem cause and more efficient production.

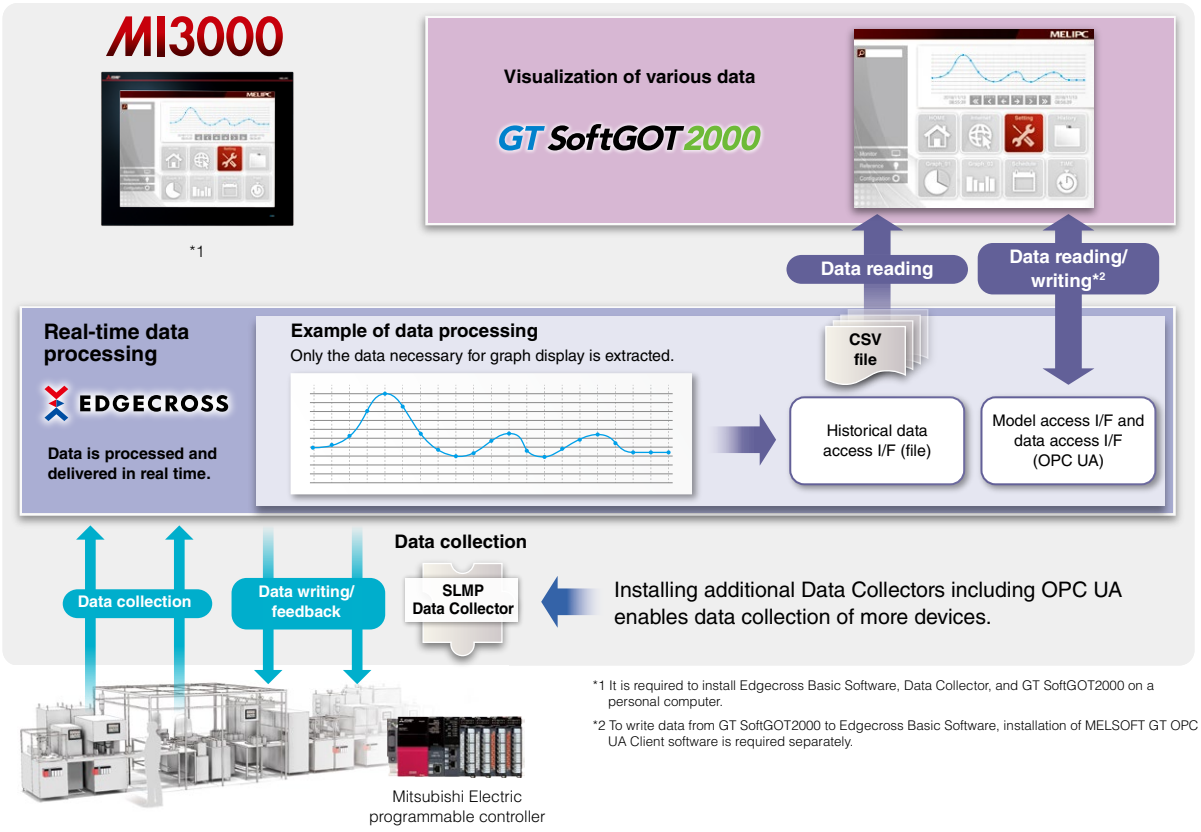
Remote monitoring of the overall monitoring system, improved work efficiency

By applying the GOT Mobile function to the overall monitoring system using GT SoftGOT2000, it is possible to remotely monitor a larger system.
In addition, GT SoftGOT2000 allows multiple operators to check the status of the shop floor from a distance, making it easier to communicate with field workers and improving work efficiency.

Point 1

Edgecross linkage function for easy visualization and simple analysis of collected data

Data collected through Edgecross can be easily visualized and analyzed by using various functions of GT SoftGOT2000, such as graph display and trend display.



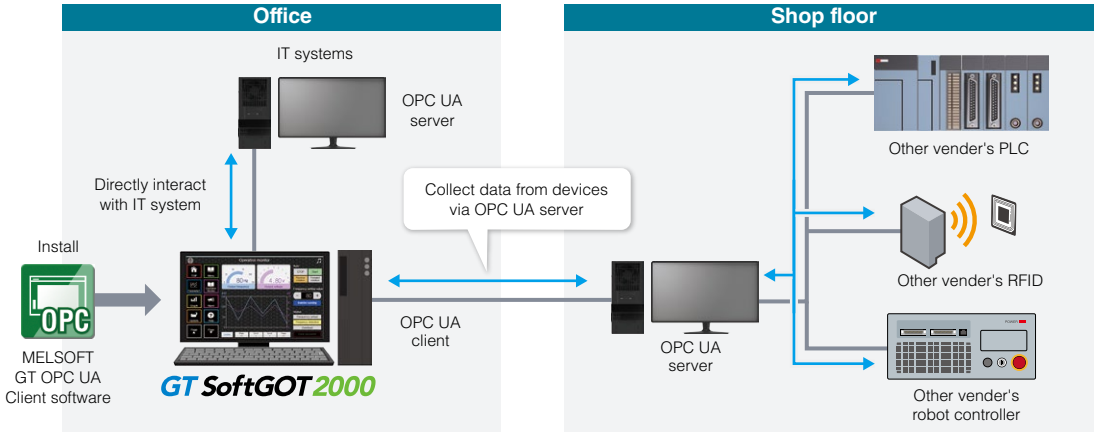
*1 It is required to install Edgecross Basic Software, Data Collector, and GT SoftGOT2000 on a personal computer.

*2 To write data from GT SoftGOT2000 to Edgecross Basic Software, installation of MELSOFT GT OPC UA Client software is required separately.

Point 2

Easily connect data to IT systems with OPC UA client connection

GT SoftGOT2000 accesses an OPC UA server as an OPC UA client. GT SoftGOT2000 can collect data you need via the OPC UA server even if direct connection to IT systems or the devices at the shop floor is not supported.

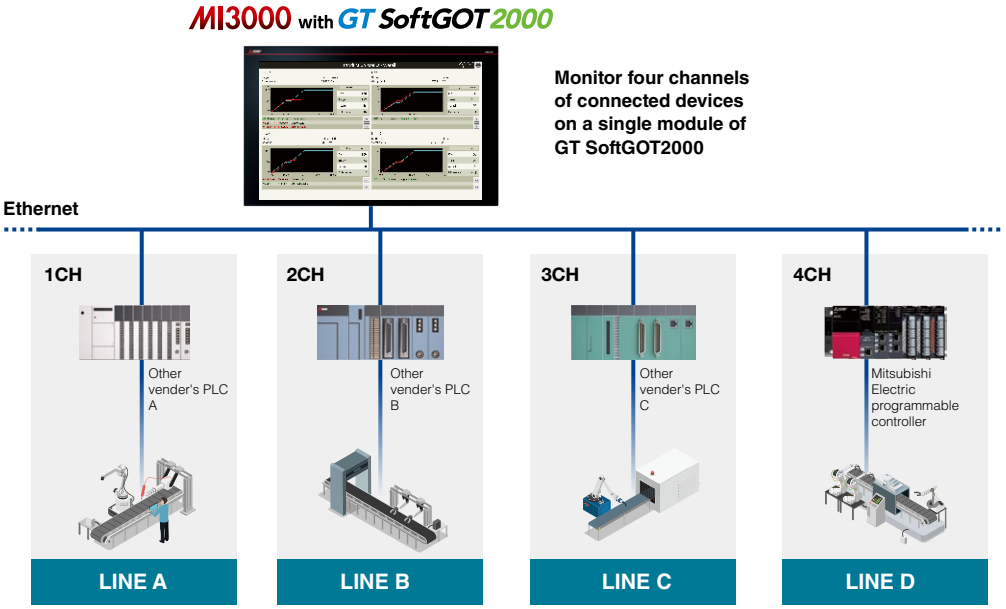


*1. It is required to install MELSOFT GT OPC UA Client software on a personal computer. For more information about how to obtain the software, please contact your local sales office.

Point 3

Multi-channel connection enables consolidated monitoring of multiple lines

Multi-channel connection is supported in Ethernet connection, connection with OPC UA servers, and microcomputer connection only. Up to four channels of industrial devices can be monitored on a single module of GT SoftGOT2000.

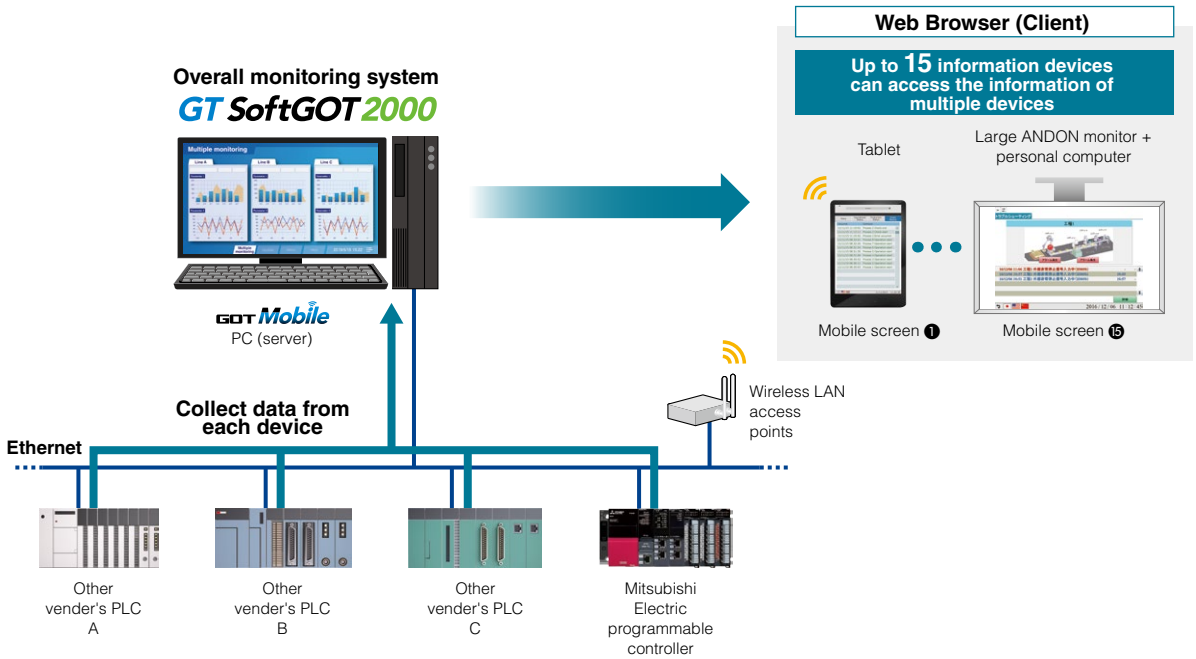


Point 4

Leveraging the GOT Mobile function for GT SoftGOT2000 to realize a large-scale remote monitoring system

The GOT Mobile function can be added to the overall monitoring system that utilizes GT SoftGOT2000 in order to setup multiple ANDON monitors, monitor the shop floor from your office, and visualize the entire factory.
In addition, the GOT Mobile function for GT SoftGOT2000 allows up to 15 clients to connect simultaneously, allowing multiple operators to share information and monitor remotely.

* For GT SoftGOT2000 using the GOT Mobile function, we recommend GT SoftGOT2000 (multi-CH). For Windows® 7 and Windows® 8.1 no edition and Windows® 10 Home edition, use of GOT Mobile features
* A separate license (SGT2K-WEBSKEY-☐) is required.



MELSOFT Gemini

Manufacturing with visible "results" even before launch

This software lets you pre-verify layouts and controls equipment and line operations in a digital space, significantly reducing rework at and after shop floor start-up.

Point 1

Connection with a variety of FA devices and simulators through Edgecross

Point 2

Simple equipment layout with an abundant e-catalog

Point 3

Fault reproduction function with system recorder

Point 4

MELFA-BASIC program conversion output function

* For details of the functions and terms indicated above, refer to the 3D simulator MELSOFT Gemini leaflet. For the leaflet, refer to page 54.

Have you ever had this problem?

Concern 1 We cannot find enough time to do debug during system design, which increases rework at start-up and tends to lead to shop floor adjustment time taking longer.

Edgecross and FA equipment work together to solve customers' problems

Solution 1 With MELFOSFT Gemini, pre-verification is performed during the designing phase, which significantly reduces rework at the shop floor.

Benefits after introduction

Reduced cost

Debug and engineering times are reduced by visually checking operations of the control program with a 3D model and identifying problems in the program in advance.

Reduced shop floor adjustment time

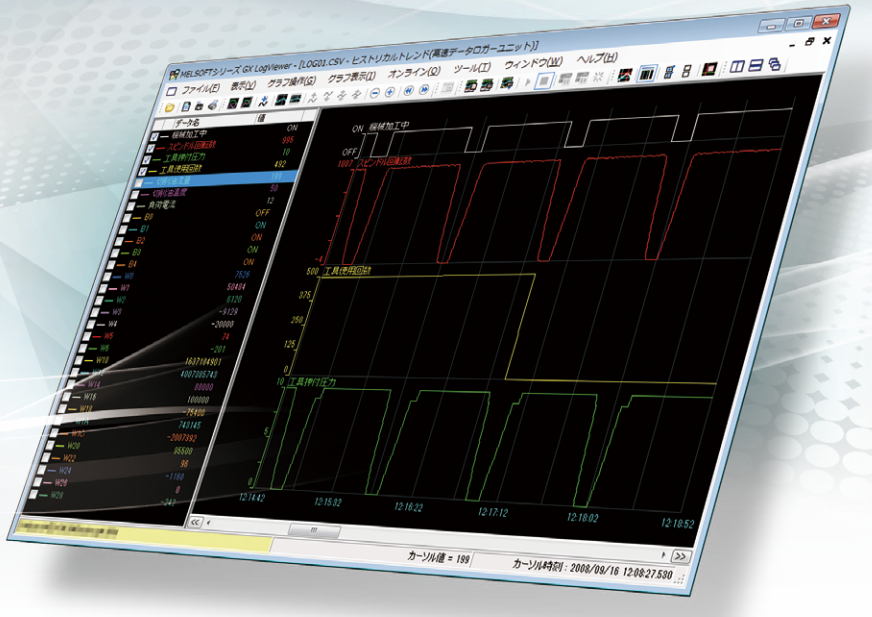
Linkage with simulators enables accurate interference check. This prevents equipment damage due to interference and reduces shop floor adjustment and start-up time.

Shorter cycle time

By identifying wasteful actions and making improvements at the design stage, cycle time is reduced before going to the shop floor.

MELSOFT GX LogViewer

Visualization of the shop floor with trend graphs enables quick troubleshooting



This software displays past data collected by modules that have the logging function. Furthermore, the history of event occurrences can be displayed in the event monitor.

Point 1

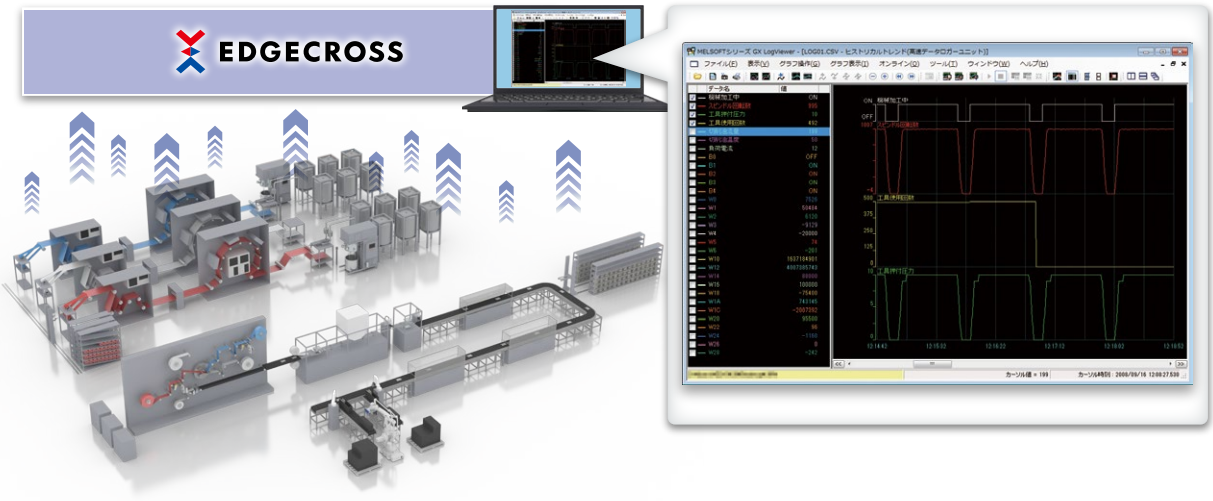
Collected data and events are visually displayed

Point 2

Graphs can be adjusted easily by using the automatic adjustment function and drag and drop operation

Point 3

Past and real-time data are displayed on the trend graphs



Have you ever had this problem?

Concern 1 It is difficult to effectively utilize data collected by modules.

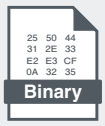
Edgecross and FA equipment work together to solve customers' problems

Solution 1 Logging data and event history data can be visually displayed.

MELSOFT GX LogViewer

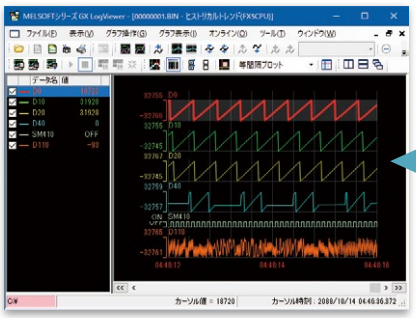
Collected data (Data logging)

CSV format



Binary format

Open

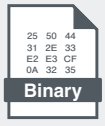


Changes to the data can be easily verified!

Trend graph display

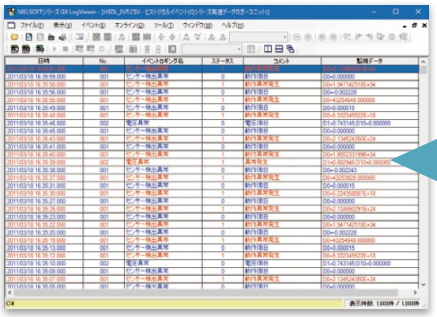
Event occurrence and restoration data (Event logging)

CSV format



Binary format

Open



The history of event occurrences and restoration data can be verified!

Event monitor display

Benefits after introduction

Reduced initial cost

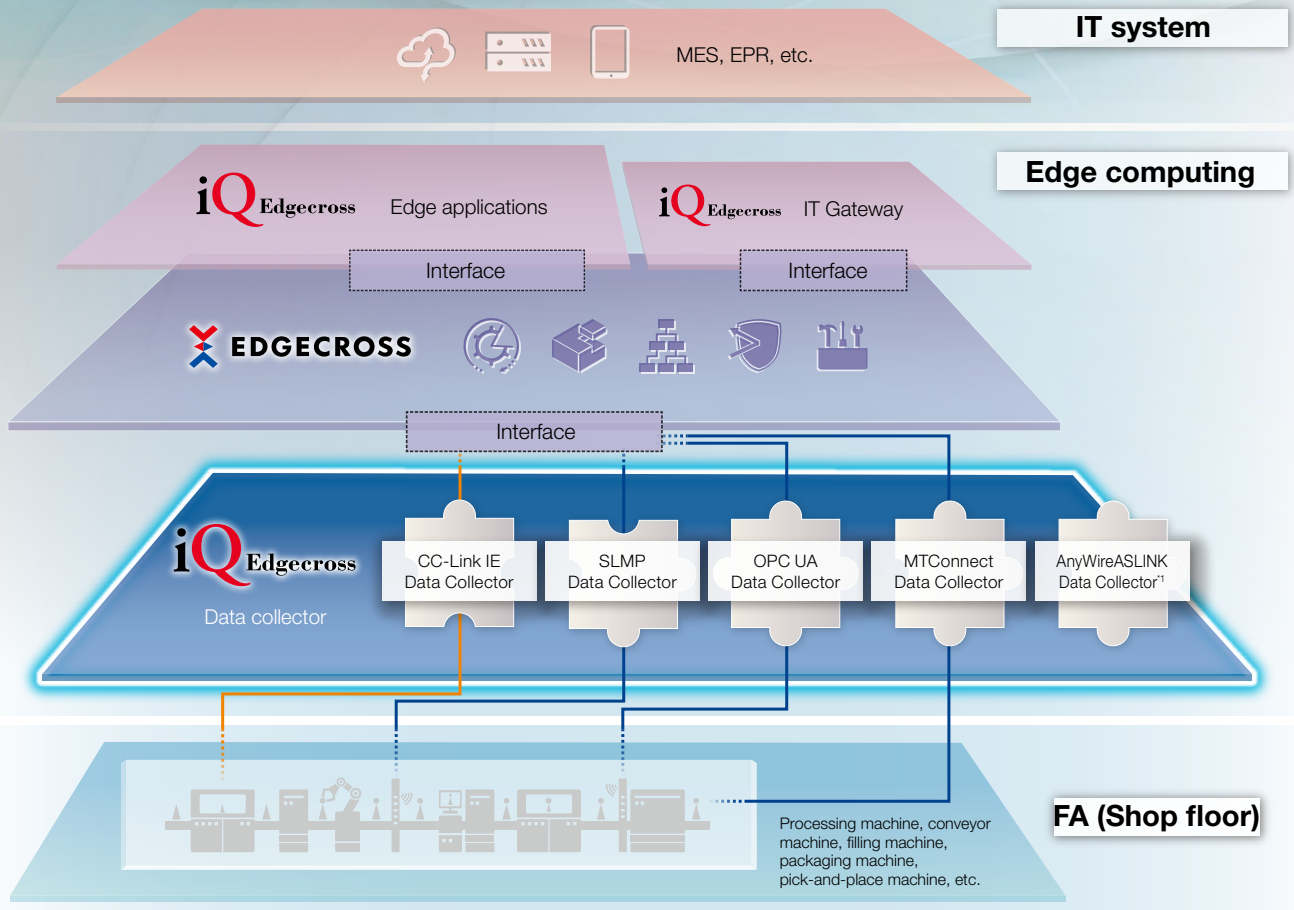
This tool can be downloaded from the Mitsubishi Electric FA site for free. No additional cost is required.

Reduced downtime

The trend graph and the event monitor display allow users to check data visually, enabling efficient verification of changes in the data. Moreover, the history data at the time of failure occurrence can be precisely confirmed, which contributes to downtime reduction.

Data collector

Software that collects data from shop floor via various networks



*1. Please refer to the following URL for the details of the AnyWireASLINK data collector
https://www.anywire.jp/en/anywireaslink

Communication functions (Read/Write) for different network or devices are provided as individual software products.
Data can be collected from existing equipment and devices of various manufacturers without programming.

Point 1

CC-Link IE Data Collector

• Data collector for high speed data collection from CC-Link IE compatible product

Point 2

SLMP Data Collector

• Data collector for practices data collection and writing that SLMP-compatible equipment (our general-purpose programmable controller, MELSEC series, etc.)

Point 3

OPC UA Data Collector

• Data collector for data collection from OPC UA server software or equipment with incorporated OPC UA server

Point 4

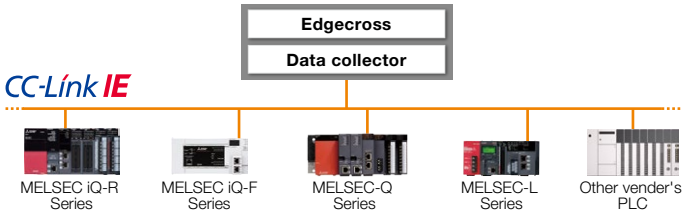
MTConnect Data Collector

• Data collector for data collection from NC machine tools or processing machines compatible with MTConnect communication

CC-Link IE Data Collector

Point 1

1. CC-Link IE TSN data collector *1*2
2. CC-Link IE Field Network Data Collector (for MI5000)
3. CC-Link IE Field Network Data Collector*3
4. CC-Link IE Control Network Data Collector*3



*1. Only supports collect and read.
*2. For connectable devices, refer to the manual for the CC-Link IE TSN communication software Windows® version.
*3. Interface bords required separately.

Connected devices : Products compatible with CC-Link IE

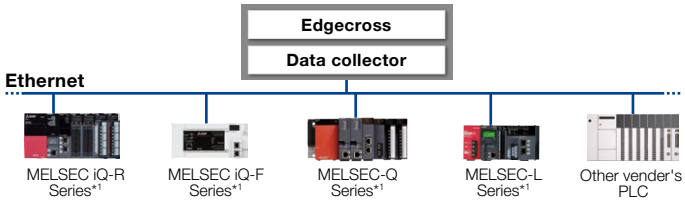
Collection order

1. 0.5 to 10000.0 ms
2. 5 to 999 ms (increments of 1 ms),
1 to 10 s (increments of 1 s)
Every link scan time
3/4 50 to 950 ms (increments of 50 ms)
1 to 10 s (increments of 1 s)

SLMP Data Collector

Point 2

- SLMP Data Collector



*1. For connectable devices, refer to the SLMP data collector manual.

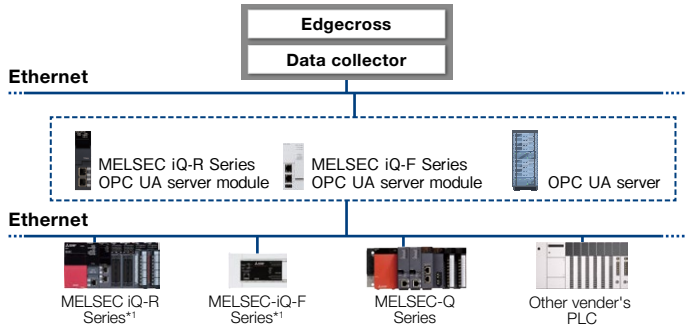
Connected devices : MELSEC programmable controllers and devices compatible with SLMP

Collection order : 100 to 900 ms (in 100 ms unit) or 1 to 3,600 s (in 1 s unit)

OPC UA Data Collector

Point 3

- OPC UA Data Collector



*1. Separately prepare the OPC UA server products.

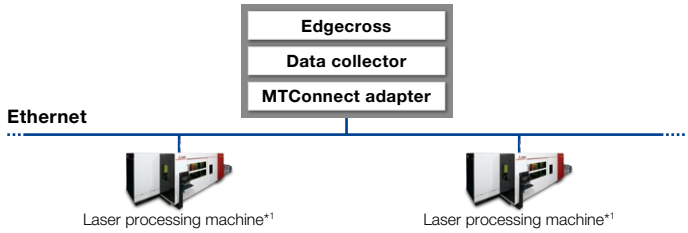
Connected devices : OPC UA server

Collection order : 500 to 900 ms (in 100 ms second) or 1 to 21,600 s (in 1 s unit)

MTConnect Data Collector

Point 4

- MTConnect Data Collector



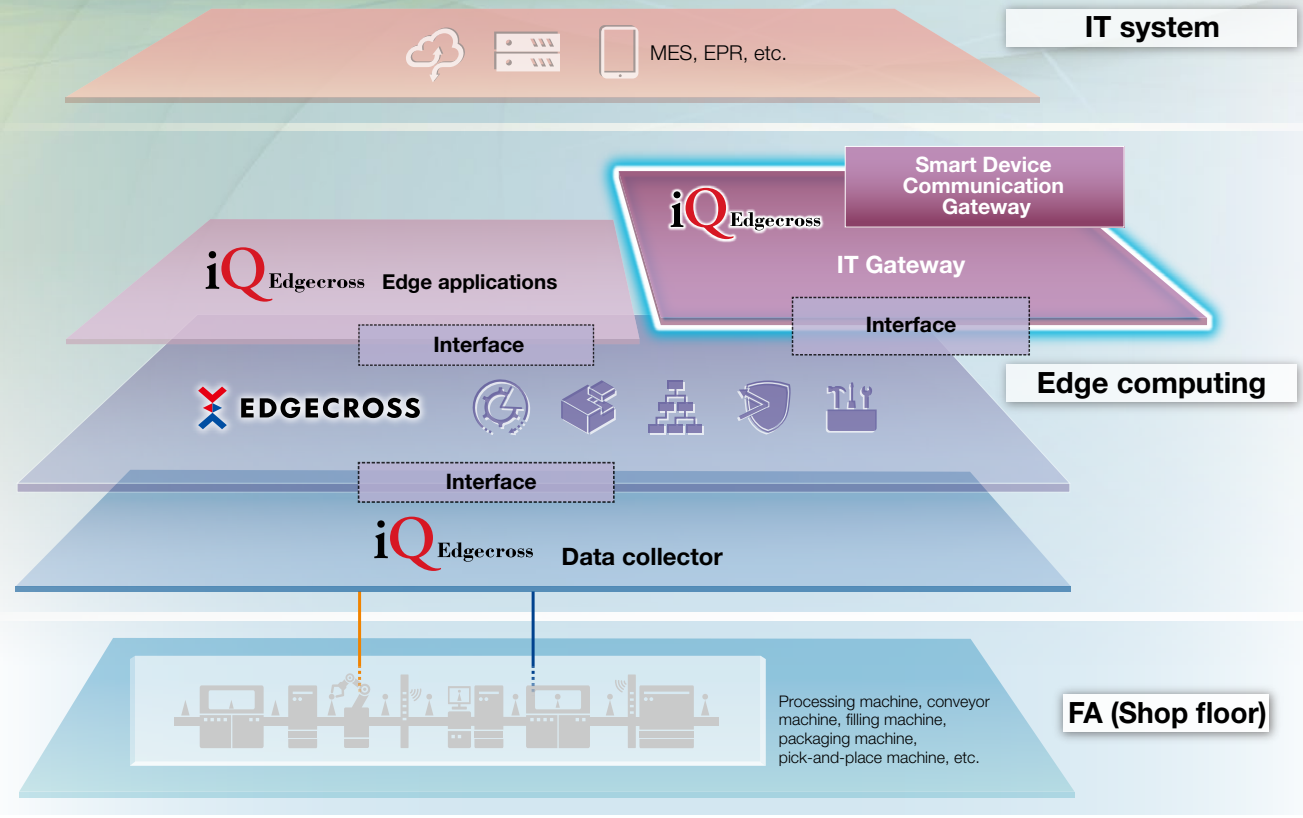
*1. For inquiries about this product, contact your local NC product office at Mitsubishi Electric.

Connected devices : Working machines compatible with MT Connect

Collection order : 500 ms

IT Gateway

Software that supports data transfer from the shop floor to IT system



Program-free data connectivity is possible using cloud and on-premises servers.
Supports optimization of supply chains and engineering chains.

Point 1

Smart Device Communication Gateway

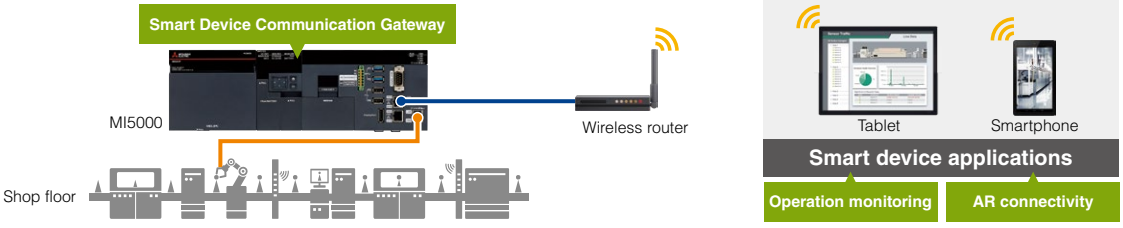
• Enable operation monitoring by linking data model management of Edgecross with devices such as tablets and smartphones.

Smart Device Communication Gateway

Point 1

Operation Monitoring and AR Connectivity

Use Edgecross basic software*1 to collect production shop floor data and leverage smart device communication gateways*1 and smart device applications*2 to view data on tablets and smartphones. Users can check operating status while moving through the shop floor and conduct system maintenance through AR connectivity.



*1. Software preinstalled on the MI5000. Please refer to the MELIPC MI5000 Series User's Manual (Start-up) for details on preinstalled software.
*2. Smart device applications must be developed by the customer. In addition, development requires smart device application SDK for MELIPC manufactured by International Laboratory Corporation (ILC).

iQ Edgecross

MELIPC series

Mitsubishi Electric Industrial PC MELIPC Series

MELIPC

Microsoft Azure Certified

The MELIPC series realizes “real-time control” for device control and “Edge computing” enabling data collection/analysis in the middle level between the IT system and shop floor.

Point 1

MELIPC MI5000

- Windows and VxWorks are preinstalled to high speed collection, analyze, and diagnose information from shop floor.
- CC-Link IE Field Network realizes highly accurate device control

Point 2

MELIPC MI3000

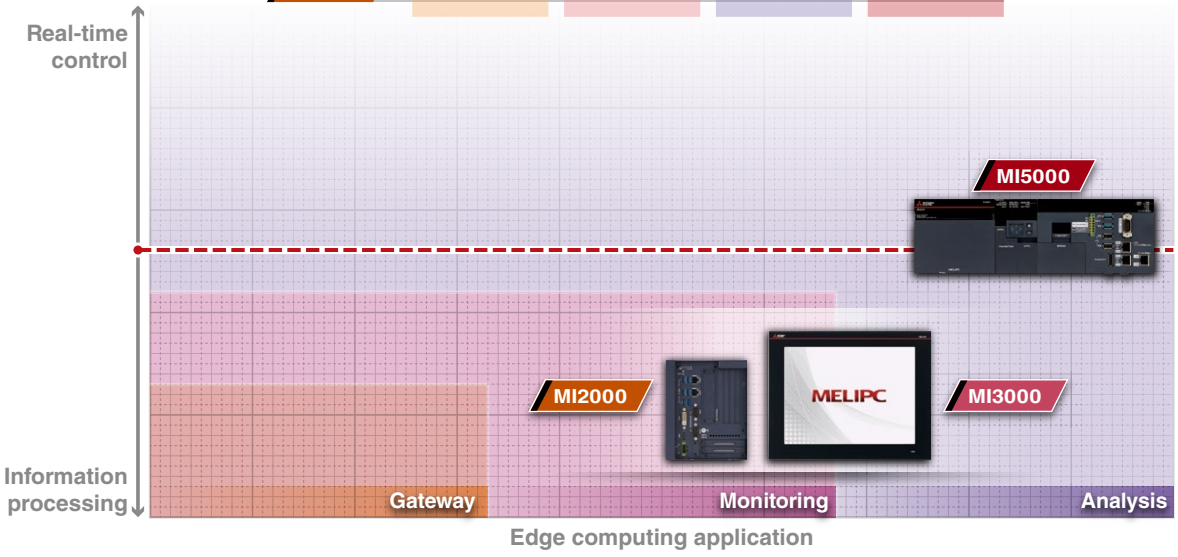
- Display with large screen and high resolution LCD panel for both data visualization and operation
- Data analysis/diagnosis/monitoring

Point 3

MELIPC MI2000

- PCI, PCI Express® expansion ports for system expansion
- Data analysis/diagnosis/monitoring

	Gateway	Monitoring	Analysis	Control
MI5000	●	●*1	●	●
MI3000	●	●	●	—
MI2000	●	●*1	●	—



*1. Connect an external monitoring screen for monitoring.

Point 1

MI5000

Windows® VxWorks®

The following software is pre-installed.
- Edgecross Basic Software
- MI Configurator
- CC Link IE Field Network Data Collector
- SLMP Data Collector

Windows® and VxWorks® pre-installed

The module can run two operating systems at the same time, VxWorks® with deterministic performance for device control and data collection and Windows® for displaying analysis results of collected data, allowing superior processing according to OS. This feature allows one module to realize device control and information processing which were previously managed using a computer and dedicated device, reducing system configuration cost and space for devices.

CC-Link IE Field Network realizes highly accurate device control

Control data and production data of devices can be communicated at 1 ms via CC-Link IE Field Network, realizing highly accurate device control and high-speed production data collection. The module is equipped with CC-Link IE Field Network port and CC-Link IE Field Network Basic port which enable easy connection with compatible products just by setting.

Point 2 Point 3

MI3000/MI2000

MI3000

Windows®

The following software is pre-installed.
- Edgecross Basic Software
- GT SoftGOT2000
- SLMP Data Collector

MI2000

Windows®

The following software is pre-installed.
- Edgecross Basic Software
- SLMP Data Collector

MI3000 MI2000

Display and operate collected data MI3000

Large screen and high resolution LCD panel is equipped as standard for data display and touch operation. Light-touch operation is realized with a PCAP touch panel that is widely used for smartphones and tablet devices. The touch panel with high transmittance offers clear and high visibility display. In addition, pre-installed software GT SoftGOT2000*1 enables the same monitoring functions as the GOT2000 Series.

*1. GT SoftGOT2000 license key (for USB port) (sold separately) is not required.

Data analysis and large volume data storage MI3000 MI2000

Intel® Core™ i3 CPU realizes simple analysis/diagnosis/monitoring of collected data, contributing to quality improvement. Equipped with 2.5-inch HDD/SSD slot*2 and PCI Express®/PCI slot*3, a large volume of data can be stored and functions can be extended.

*2. The 2.5-inch HDD/SSD slot on MI2000 only.

*3. Only PCI Express® on MI3000.

MELSOFT MaiLab

Operating environment

Item	Description
Learning Server	
Computer body	PC,Industrial PC,Server PC
CPU	Recommended: Intel ® Core-i7 or higher - 1 Required: Intel ® Core-i3 or higher
Memory	Recommended: 16 GB or more - 1 Required: 4 GB or more
Hard disk space	Recommended: 64 GB or more - 1 Required: 16 GB or more
OS (Japanese, English, and Simplified Chinese)	Microsoft ® Windows ® 10 (Pro, Enterprise, IoT Enterprise) Microsoft ® Windows Server ® 2019 (Datacenter, Standard, Essentials) Microsoft ® Windows Server ® 2016 (Datacenter, Standard, Essentials)
Diagnostic terminal	
Computer body	PC,Industrial PC,Server PC
CPU	Recommended: Intel ® Core-i7 or higher - 1 Required: Intel ® Core-i3 or higher
Memory	Recommended: 8 GB or more - 1 Required: 4 GB or more
Hard disk space	Recommended: 32 GB or more - 1 Required: 16 GB or more
OS (Japanese, English, and Simplified Chinese)	Microsoft ® Windows ® 10 (Pro, Enterprise, IoT Enterprise) Microsoft ® Windows Server ® 2019 (Datacenter, Standard, Essentials) Microsoft ® Windows Server ® 2016 (Datacenter, Standard, Essentials)

*1. It is necessary not only for methods that require relatively little computational processing, such as multiple regression analysis, but also for methods that require a lot of computational processing, such as deep learning.

Product List

Product name	Model	Sales form
MELSOFT MaiLab - Basic License (New)	SW1DND-MAILAB-MQ12	Annual renewal
MELSOFT MaiLab - Basic Licence (Updated)	SW1DNN-MAILABRE-MQ12	Annual renewal
MELSOFT MaiLab - Additional User License (New/Updated)	SW1DNN-MAILABAN-MQ12	Annual renewal
MELSOFT MaiLab - Additional Diagnostic License (1 license)	SW1 DND-MAILABPR-M	Licensed Products
MELSOFT MaiLab - Additional Diagnostic License (5 license packs)	SW1 DND-MAILABPR-MA5	Licensed Products
MELSOFT MaiLab - Additional Diagnostic License (10 License Pack)	SW1 DND-MAILABPR-MA10	Licensed Products

EcoAdviser

Operating environment

Item	Specifications	
OS	(Microsoft® Windows® 10 pro/Enterprise/IoT Enterprise (64bit)	
Language	Japanese, English, Chinese (Simplified)	
CPU	Intel ® Core™ i3 -550 or higher recommended	
Memory	4 GB or more recommended	
Hard disk	For energy saving analysis applications Software: 4GB or more Data: 15 GB or more *1	For energy saving analysis/diagnostic applications Software: 4GB or more Data: 20GB or more *1
LAN	10/100/1000BASE-TX1	
USB connector (Type A)	1 unit (for hardware key connection)	
CD drive	1 unit (for installing the software)	
Spreadsheet *2	Microsoft® Excel® 2016(32bit/64bit) Microsoft® Excel® 2019(32bit/64bit)	
Display resolution	1024 x 768 dots or more	
Input device	Mouse and keyboard	

*1. Capacity required when the storage period of each data and the number of registered measurement points are set to the maximum.
*2. Downloaded Excel ® purchased from the Microsoft ® store is not available. Use the desktop version.

List of functions

Item	Specifications
Measurement point setting	
Collection Source Settings	Register collection sources and measurement points
Collection source	EcoWebServerⅢ, Edgecross
Number of registered units	Up to 20
Registered measurement points	Up to 284 items/collection source (all sources: up to 5680 items)
Charting features	
Analysis Method (Chart Type)	Select from time series, box whiskers, pie charts, rank charts, scatter charts, histograms, and Pareto charts
Display interval	Set from hourly, daily, monthly and yearly *3
Number of saved	Up to 300 panels
Form preparation function	
Number of saved document settings	Up to 24 (Save daily, monthly and annual report output items with one set value)
preparation of forms	Daily report preparation, monthly report preparation, annual report preparation
Maximum number of items	7,680 items 16 items/sheet x 20 sheets x 24 *4
Output Items	Select from measurement points, manual strength measurement points, variety time zone measurement points, and unit intensity measurement points
Data collection function	
Retention period	Set the retention period for each file type
Data every 15/30/60 minutes Daily data Monthly data Monthly data	2 to 10 years (default: 10)
Diagnostic functions	
Energy Loss Extraction *5	For each facility, five energy conservation key points, standby and rest energy loss are extracted and ranked in descending order of energy loss. Daily energy, utility and production measurement points are shown as time series graphs. Viewable Period: The last 366 days of the diagnostic period from the current time on your PC
Energy loss factor diagnosis	Diagnose energy loss factors from default and additional energy loss factors for optional equipment and five key energy-saving points
Confirmation of improvement effect	Comparing data from two periods to confirm the effects of energy conservation improvement activities on the amount of electricity used and the perspective of energy conservation
Automatic diagnosis	Automatic energy loss extraction, energy factor diagnosis, and confirmation of improvement effects

*3. If the analysis method (graph type) is a box whisker graph, the display will be hourly.
*4. This is when the number of saved document settings is the maximum.
*5. If the number of decimal places in the power quantity is small and the energy loss is not calculated correctly, it is necessary to collect data with higher resolution such as changing the power quantity to the detailed power quantity.

Product List

Product name	Model
Energy saving analysis/diagnostic application (AI diagnostic version)	MES3-EAP1-AI
Energy Saver Analysis Application (Limited Edition)	MES3-EAP1-DA

GENESIS64™

Server product

System requirements

Item	Specifications
CPU	Quad Core 64-bit processor or better
RAM	8 GB or larger
Storage	4 GB or larger (adequate physical memory for the actual data to be saved)
Virtual memory	16 GB or larger (2x RAM capacity recommended)
Operating System (OS)*1	64-bit Windows® OS
Display	Resolution: 1024 × 768 pixels or more
Database*2	Microsoft® SQL Server®
Microsoft® .NET Framework	4.8, 3.5
Web server*3	Microsoft® Internet Information Services (IIS) 7.0 or later
Web browser*3	Microsoft Edge®, Firefox®, Safari®, Google Chrome™, or Internet Explorer® 11*4

*1. Please refer to "Supported OS" table for details.
*2. Please refer to "Supported database" table for details.
*3. Use when displaying a screen on the client. For details on supported web browsers, please refer to "Supported web browser" table.
*4. Internet Explorer® 11 only supported for Windows® Presentation Foundation (WPF) WebHMI™, not HTML5 WebHMI™.

Supported OS

OS*5	GENESIS64™	Hyper Historian™	Energy AnalytiX® Facility AnalytiX® Quality AnalytiX®
Microsoft® Windows® 11*6	•	•	-
Microsoft® Windows® 10*7	•	•	-
Microsoft® Windows Server® 2022	•	•	•
Microsoft® Windows Server® 2019*8	•	•	•
Microsoft® Windows Server® 2016	•	•	•
Microsoft® Windows Server® 2012 R2*9	•	•	•
Microsoft® Windows Server® 2012*9	•	•	•

*5. Operation on Embedded system is not supported.
*6. Operation on Windows® 11 Professional, Enterprise, and IoT Enterprise is supported.
*7. Operation on Windows® 10 Professional, Enterprise, and IoT Enterprise (including 2021 LTSC/2019 LTSC/2016 LTSB) is supported.
*8. Includes Microsoft® Windows Server® IoT 2019.
*9. Operation on Microsoft® SQL Server® 2019 is not supported.

Supported database

Database	GENESIS64™
Microsoft® SQL Azure	•
Microsoft® SQL Server® 2019 (including Express)*10	•
Microsoft® SQL Server® 2017 (including Express)*10	•
Microsoft® SQL Server® 2016 (including Express)*10	•
Microsoft® SQL Server® 2014 (including Express)*10	•

*10. When using Microsoft® SQL Server® Express (free edition), a capacity of one database is limited to 10 GB.

IoT device

System requirements

Item	Specifications
CPU	Intel Atom® 38□□ Dual Core/Arm® 32v7 Dual Core, or comparable processor
RAM	2 GB (4 GB recommended)
Storage	32 GB or larger
OS	Raspberry Pi OS Stretch (Arm®32v7) Ubuntu 20.04 (AMD 64) Ubuntu 18.04 (AMD 64) Ubuntu Server 20.04 (AMD 64) Ubuntu Server 18.04 (AMD 64) Microsoft® Windows® (using EFLOW*11)
Microsoft® Azure® service	Microsoft® Azure® IoT Hub (tier S1 or higher), Microsoft® Azure® Storage Account
Communication	Ethernet, Wi-Fi®, or cellular (3G/4G)

*11. For details on EFLOW, please visit Microsoft Corporation's website.

Screen display

Supported web browser

Web browser	HTML5 technology	Windows® Presentation Foundation (WPF) technology
Microsoft Edge®	•	•*12
Firefox®	•	-
Safari®	•	-
Google Chrome™	•	-
Internet Explorer® 11	-	•

*12. Only Internet Explorer® mode (IE mode) is supported.

GENESIS64™

Feature List (Server Products)

• : included - : not included

		GENESIS64™ Basic SCADA	GENESIS64™ Advanced
How to count tags		Static Tag (count all tags)	Dynamic Tag (count tags in use)
Number of tags		75, 150, 500, 1500, 5K*1	75, 150, 500, 1500, 5k, 15k, 50k, 100k, 250k*1
Server function			
AlarmWorX™ Server & Logger	Alarm visualization	•	•
WebHMI™ Server	Remote monitoring (for web browser)	•	•
AssetWorX™ Server	Asset management using a hierarchical tree structure	• (Excel® based bulk asset configuration tool is not included)	•
Hyper Historian™ Express*2	High-speed/highly reliable data collection	•	•
Redundant/Distribute	Redundant/distributed server	-	•
AlertWorX™	Alarm notification by email	Option	•
MobileHMI™ Server	Remote monitoring (for mobile application)	Option	•
Workflow	Programming by flowchart	Option	•
Hyper Historian™ Standard/Enterprise*2	High-speed/highly reliable data collection (extended version)	Option	Option
BridgeWorX™	Transaction-based processing by flowchart	Option	Option
ReportWorX™	Automated reporting	Option	Option
Connection to devices/external services			
Mitsubishi Electric FA Connector	Mitsubishi Electric products connection (direct driver)	•	•
OPC Classic	OPC Classic connection	•	•
OPC UA	OPC UA connection	•	•
Databases (GridWorX™ Server)	Database access	•	•
MODBUS®	MODBUS® connection	Option	•
BACnet®	BACnet® connection	Option	•
SNMP	SNMP connection	Option	•
Web Services	Web service access	Option	•
IoT Publisher (MQTT/AMQP/JSON)	Data transferring to cloud service	Option	•
Client function			
GraphWorX™	Graphic creation/visualization	• (without 3D function)	•
TrendWorX™ Viewer	Real-time and historical trends	•	•
AlarmWorX™ Viewer	Alarm visualization	•	•
EarthWorX™ Viewer	Monitor widely dispersed assets	-	•
KPIWorX™	Dashboard creation	•	•
ReportWorX™ Express	Manual reporting	•	•
Workbench	Centralized project management	•	•
Asset Navigator	Asset tree display	Option	•
GridWorX™ Viewer	Database access	Option	•
System configuration support function			
Converter-GOT	GOT (HMI) screen conversion	•	•
Asset Builder	Process screen creation support	Option	Option

*1. Select additional tag option to increase tag count if needed.
*2. For functional differences, please refer to the function list (Hyper Historian™ products) on page 38.

GENESIS64™ server product

Product name	Model	Number of tags	Outline
GENESIS64™ Basic SCADA	GEN64-BASIC	75, 150, 500, 1500, 5k	Server for configuration and runtime with modular licensing for small to medium applications.
GENESIS64™ Advanced*1	GEN64-APP	75, 150, 500, 1500, 5k, 15k, 50k, 100k, 250k	Server for configuration and runtime with comprehensive licensing for large and distributed applications.

*1. Runtime-only license version is available. Please consult us when you are requesting for quotation.

GENESIS64™ client product

Product name	Model	Number of clients	Outline
Client for monitoring control*2*3	WEBHMI-BRWSR	1, 5, 25, 100, 500	Fully interactive read/write clients for use on desktops, web browsers using WPF or HTML5, or as mobile app clients.
Client for monitoring control*3 (for mobile application)	MOBILEHMI-CLIENT	1, 5, 25, 100, 500	Fully interactive read/write clients dedicated to access via the MobileHMI™ app on smartphones, tablets, or AR devices.

*2. License for development (multiple persons can develop simultaneously on one server) is available.
*3. Read-only and browser-only client licensing is available.

USB hardware key

Product name	Model	Outline
USB hardware key	HW KEY-USB	USB device to store server/client /optional license. Just inserting this product to the server will activate stored license.*12

*12. Applying license to the server is possible. Please refer to the license registration procedure on page 44.

GENESIS64™

Optional products*4

Product name	Model	Unit	Outline
Hyper Historian™	GEN64-HH-STD GEN64-HH-ENT GEN64-HH-R	75, 150, 500, 1500, 5k, 15k, 50k, 100k, 250k, 500k, 1M (tag)	Time series data historian collecting large amounts of shop floor data at high speed. STD: Supports performance calculations and predefined aggregates. ENT/R: In addition to the above, supports remote collectors, advanced data compression and redundancy. (Model numbers R include two ENT licenses for redundant system).*5
BridgeWorX™	BRIDGEWORX64	SVR (1 transaction) LITE (5 transactions) STD (25 transactions) ENT (1000 transactions)	Graphical data bridging tool to execute simple to very complex data transaction scenarios between automation and enterprise systems. The number of concurrently executing transactions determines which license to choose.*6
ReportWorX™	REPORTWORX64	SVR (1 report) LITE (5 reports) STD (25 reports) ENT(1000 reports)	Report generation engine to configure and run reports on schedule or on demand. Finished reports can be delivered via email, SMS, and file copy. (Supported formats: Excel®, PDF, HTML, CSV). Number of concurrently executing reports determines which license to choose.*7
Asset Builder	ASSET-BUILDER-PA	-	This package supports creation of monitoring screens corresponding to the selected templates. The monitoring screen consists with screens used for process system as standard such as faceplates, tuning screen, and control panel screen.
Energy AnalytiX®	AX-EA-A	-	Energy monitoring, analysis, and management system delivering rich, real-time visualization for energy demand, consumption and cost.*8*9
	AX-EA-METER	1, 5, 25, 100, 500, 1500, 5K, 10K (meter)	Additional Energy AnalytiX® meters.
Quality AnalytiX®	AX-QA-A	-	This quality control package uses highly specialized Statistical Process Control (SPC) calculations for manufacturing quality management, and drive corrective actions based on process trends.*8
Facility AnalytiX®	AX-FA-A	-	This package provides advanced fault detection and diagnostics significantly reducing system downtime and improving operational efficiency.*10
	AX-FA-ASSET	1, 5, 25, 100, 500, 1500, 5K, 10K (asset)	Additional Facility AnalytiX® assets.
CFSWorX™	CFSWORX	-	This package can alert field service workers to respond to equipment service needs based on location. Worker availability and location is monitored. The package tracks field service worker responses and maintains a full audit trail.
IoTWorX™	IOT-CV IOT-CVCA IOT-CVCA-JSON-500 IOT-CVCA-JSON-5000	1, 5, 25, 100 (device)	A solution package running on IoT devices at the edge to monitor shop floor data in the cloud (annual license). *11 IOT-CV: Publish shop floor data to cloud platforms providing bidirectional real-time communication. On-premise visualization for read-only access to local data. IOT-CVCA: In addition to the above, store and forward of historical data points and merge in the cloud. Includes lightweight analytics module for fault detection. IOT-CVCA-JSON-500/5000: In addition to the above, send data in JSON format. Data sharing with other vender's applications in the cloud.

*4. This list does not include options available for GENESIS64™ Basic SCADA only. For details, please refer to the function list (Ⓐ server product) on page 37.
*5. For difference of product functions, please refer to the function list (Hyper Historian™ products) on page 38. *6. Another transaction product is available.
*7. Another report product is available. *8. Hyper Historian™ license is separately required. *9. License per instrument (meter). This license includes 5 meters.
*10. License per device (asset). This license includes 5 assets. *11. This license applies to IoT devices.

NC Machine Tool Optimizer

Operating environment

Item	Contents
Computer body	
CPU	Intel ® Core™-i3 2 or more cores
Required Memory	8 GB or more recommended
OS	
Supported OS	Microsoft ® Windows ® 10 Pro, 10 Enterprise, 10 IoT Enterprise (64 bit)
Language	Japanese
Display	
Resolution	XGA (1024 x 768) or later

List of functions

Function		Overview
Utilization Status List		
Machine List View/Group Monitoring		Viewing the operation of connected machines in tree/list view
Mechanical Settings/Group Settings		Select monitored machines, group setting function of connected machines
Operating status display (real time)	Operating information	Operating status of each machine (Occupancy rate, various status transition graphs)
stopping factor		
Stopping factor display	Periodic Aggregation	Aggregation function of stop-factor information by period specification
	Stopping factor information	Percentage by stopping factor, time series transition graph display
	Operating Details	View related status over time
	More information by day	Charting Outage Periods by Factor
		Aggregate display of downtime by factor
Monitoring function		
Number of monitoring settings	machine unit	Up to 210 machines

Product List

Product name	Model
NC Machine Tool Optimizer	FCSB1813W001

GT SoftGOT2000 Version1 (English Version)

Operating environment

Item	Description
Personal computer	Personal computer that Windows® runs on. PPC-852-21G, and PPC-852-22F manufactured by CONTEC CO., LTD *7 MELIPC (MI5122-VW, MI3321G-W, MI3315G-W, MI2012-W, MI2012-W-CL) *13
OS (English, Simplified Chinese, Traditional Chinese, Korean, German, or Italian version) *6	Microsoft® Windows Server® 2019 Standard (64 bit) *15*17*18 Microsoft® Windows Server® 2016 Standard (64 bit) *15*18 Microsoft® Windows Server® 2012 R2 Standard (64 bit) *5*15*18 Microsoft® Windows Server® 2012 Standard (64 bit) *5*15*17*18 Microsoft® Windows Server® 2008 R2 (Enterprise, Standard) (64 bit) *3*18 Microsoft® Windows® 11 (Enterprise, Pro, Home, Education) (64 bit) *10*15*18 Microsoft® Windows® 10 IoT Enterprise 2019 LTSC (64 bit) (English OPK, language pack installation is recommended for the language to be used) *9*10*15*18 Microsoft® Windows® 10 IoT Enterprise 2016 LTSB (64 bit) (English OPK, language pack installation is recommended for the language to be used) *9*10*15*18 Microsoft® Windows® 10 (Enterprise, Pro, Home) (64 bit/32 bit) *15*18
CPU	Intel® Core™2 Duo Processor 2.0 GHz or more recommended On Windows® 11, 64 bit-compatible processor with dual-core or more or System on a Chip (SoC) recommended
Memory	For a 64-bit OS: 2 GB or more recommended For a 32-bit OS: 1 GB or more recommended For Windows® 11: 4 GB or more recommended
Display	Resolution XGA (1024 × 768 dots) or higher
Hard disk space *8	For installation: 5 GB or more recommended For execution: 512 MB or more recommended
Display color	High Color (16 bit) or higher
Hardware	GT27-SGTKEY-U (license key (for USB port))
Other software	The following software is required to create the project data. • GT Designer3 Version1.100E or later *9*12 The following software is required for interaction with PX Developer. • PX Developer Version1.40S or later • GT Designer3 Version1.105K or later *9 The following software is required to connect with GX Simulator. • GX Simulator Version5.00A or later The following software is required to connect with GX Simulator2. • GX Works2 Version1.12N or later The following software is required to connect with GX Simulator3. • GX Works3 Version1.007H or later The following software is required to connect with MT Simulator2. • MT Works2 Version1.70Y or later The following software is required to use the OPC UA client connection. • GT OPC UA Client *14
Other hardware	Use the hardware compatible with the above OS. • For installation: mouse, keyboard, DVD-ROM drive • For execution: mouse, keyboard • For printing: printer Prepare the following hardware if necessary. • For execution (only when outputting buzzer sound or others): sound function, speaker

*1. Administrator authority is required for installing and using GT SoftGOT2000.
To use GT SoftGOT2000 and other MELSOFT products in a single personal computer together, other MELSOFT products must also run with administrator authority.
*2. The following functions are not supported.
• Application start in Windows compatibility mode
• Fast user switching
• Change your desktop themes (fonts)
• Remote desktop
• Setting the size of text and illustrations on the screen to any size other than [Small-100%] (For Windows® 10, Windows® 8.1, Windows® 8, and Windows® 7)
*3. Windows XP Mode is not supported.
*4. Tapping and press-and-hold operation are the supported touch operation.
The following operations cannot be performed with touch operation because operations such as flicking are not supported.
• Simultaneous 2-point press on the touch switch
• Moving the overlap window and key window by slide operation
When [Allow press-and-hold of a mouse button to function as a right-click] is selected in the [Environment Setup] dialog of GT SoftGOT2000, the following operations also cannot be performed.
• Touch switch operation with [Momentary] selected for [Action]
• Touch switch operation with [ON] selected for [Delay]
• Operation of the utility call key
*5. Modern UI Style is not supported.
*6. Operation in a virtual environment such as Hyper-V is not supported.
*7. Refer to the manual of the PC CPU module to be used.
*8. When using GT Designer3 or PX Developer besides GT SoftGOT2000, additional free space is required.
For the available space required when using GT Designer3, please refer to the GT Works3 operating environment.
For the available space required when using monitor tool functions of PX Developer, please refer to the following manual.
⇒ PX Developer Version □ Operating Manual (Monitor Tool)
When using a user-created application, free space is required separately.
*9. Use GT Designer3 included in GT Works3 that contains GT SoftGOT2000.
*10. The following OSs are not supported.
• Microsoft® Windows® 10 IoT Enterprise for Retail or Thin Client
• Microsoft® Windows® 10 IoT Enterprise for Tablets
• Microsoft® Windows® 10 IoT Enterprise for Small Tablets
*11. The environments that use the following lockdown features are not supported.
• Unified Write Filter
• Assigned Access
• USB Filter
• Layout Control
• AppLocker
• Shell Launcher
*12. For MI3321G-W and MI3315G-W, use the English version of GT SoftGOT2000.
*13. Microsoft® Windows® 10 IoT Enterprise 2016 LTSB is preinstalled. For the specifications of the MELIPC, refer to the following.
• MELIPC MI5000 Series User's Manual (Startup)
• MELIPC MI3000 User's Manual
• MI2012-W User's Manual
*14. To use the OPC UA client connection, use Windows® 7 or later.
*15. Disable high-speed startup.
If enabled, GT SoftGOT2000 may not operate properly when the personal computer is shut down and then started.
*16. Some digital pens are unusable.
*17. Only Desktop Experience is available.
*18. ARM64 and ARM32 are not supported.

GT SoftGOT2000

List of functions

Function		Description
Alarm	User Alarm Observation	Collects the alarms by monitoring the device.
	System Alarm Observation	Collects the alarms by monitoring the system.
	Alarm Popup Display	Displays the collected alarms in a popup window.
Placing a Historical Trend Graph		This function displays the device data collected by logging in chronological order in a trend graph.
Logging		Collects device values.
Recipe		Executes the batch write or batch read on multiple devices.
Device Data Transfer		Transfers data between devices.
SoftGOT-GOT Link Function		Monitors the GOT by using the personal computer (GT SoftGOT2000).
Operator authentication		Performed based on the operator management information corresponding to each operator.
Operation Log		Only available to GT2107-W for GT21. Only available to GS21-W-N for GS21. Logs the operation performed on the GOT.
Multi-channel		A function to monitor up to four FA controllers (PLC CPU, temperature controller, inverter, etc.) on one GOT by writing multiple communication drivers in the GOT.
Station No. Switching		Switches the station number of the GOT monitoring target.
GOT Network Interaction		Controls pieces of equipment on the same network to prevent simultaneous operations.

Product List

Product name	Model	Description
License key for GT SoftGOT2000 *1	GT27-SGTKEY-U	USB port license key
GOT Mobile Function License for GT SoftGOT2000 *2	SGT2K-WEBSKEY-1	1 license
	SGT2K-WEBSKEY-5	5 licenses

*1. To use GT SoftGOT2000, a license key for GT SoftGOT2000 is necessary for each personal computer. GT SoftGOT2000 can be used on MELIPC MI3000 without a licence key. GT SoftGOT2000 is included in HMI/GOT Screen Design Software MELSOFT GT Works3.
*2. One license is required for each personal computer on which GT SoftGOT2000 is installed.

MELSOFT Gemini

Product List

Professional : Greater freedom
A basic version that allows customers to create model data for simulation from 3D CAD data.

Essentials : Immediately usable
A simplified version that omits some functions such as model data creation for simulation.

	Professional	Essentials
Layout configuration	•	•
Process modeling	•	•
e-catalog	•	•
CAD import	•	•
File generation in various formats	•	•
Graph/statistics feature	•	•
Component modeling	•	-
Simple physical simulation function	•	-
File size reduction function	•	-
Robot teaching	•	•
Point group data import	•	•
2D drawings import	•	•
Connection to a PLC	•	•
Component creation wizard	•	-
Simple CAD	•	-
File output for VC Experience (free Viewer)	•	•
MELFA-BASIC program conversion output function	•	•
Variable pair import/export function	•	•

License types

❶ Standalone
Node-locked; one license fixed per computer. Perpetual and limited duration licenses are available.

❷ Network
The software is licensed on the server. Client PCs*1 can use MELSOFT Gemini simultaneously as the number of licenses allows on the server.
*1. Installation of MELSOFT Gemini is required.

Usage	Product name (MELSOFT Gemini ○○)	Term of license	Term of maintenance contract	Model name	Price
Standalone	Professional Standalone	Perpetual	1 year	SW1DND-3DSIMR-MQ12	Open price
	Essentials Standalone	Perpetual	1 year	SW1DND-3DSIME-MQ12	Open price
Standalone Maintenance contract renewal	Professional Standalone Annual maintenance	-	1 year	SW1DND-3DSIMR-MHQ12	Open price
	Essentials Standalone Annual maintenance	-	1 year	SW1DND-3DSIME-MHQ12	Open price
Network	Professional Network	Perpetual	1 year	SW1DND-3DSRK-MQ12	Open price
	Essentials Network	Perpetual	1 year	SW1DND-3DSEK-MQ12	Open price
Network Maintenance contract renewal	Professional Network Annual maintenance	-	1 year	SW1DND-3DSRK-MHQ12	Open price
	Essentials Network Annual maintenance	-	1 year	SW1DND-3DSEK-MHQ12	Open price
Standalone Limited time only	Professional Standalone Limited time only (6 months)	6 months	6 months	SW1DND-3DSRT-MQ06	Open price
	Professional Standalone Limited time only (12 months)	12 months	12 months	SW1DND-3DSRT-MQ12	Open price
	Essentials Standalone Limited time only (6 months)	6 months	6 months	SW1DND-3DSET-MQ06	Open price
	Essentials Standalone Limited time only (12 months)	12 months	12 months	SW1DND-3DSET-MQ12	Open price
Network Limited time only	Professional Network Limited time only (6 months)	6 months	6 months	SW1DND-3DSRKT-MQ06	Open price
	Professional Network Limited time only (12 months)	12 months	12 months	SW1DND-3DSRKT-MQ12	Open price
	Essentials Network Limited time only (6 months)	6 months	6 months	SW1DND-3DSEKT-MQ06	Open price
	Essentials Network Limited time only (12 months)	12 months	12 months	SW1DND-3DSEKT-MQ12	Open price

Operating environment (recommended configuration)

Item	Content
OS	Microsoft® Windows® 10 (64-bit) Microsoft® Windows® 11
CPU	Equivalent to/greater than Intel® Core™-i7-8xxx processor
Memory	8 GB
Hard disk space	3 GB
Drive	-
Graphics card	Nvidia GPU with at least 4 GB dedicated memory (Equivalent to/greater than GeForce GTX 1080)
Display resolution	1920 × 1080 (Full HD) or more
Mouse	3 buttons

* Not dependent on Windows® language.

MELSOFT GX LogViewer

Operating environment

Item		Contents
Personal computer		A personal computer on which Microsoft® Windows® operates
CPU	Microsoft® Windows® 11	2 or more cores on a compatible 64-bit processor or System on a Chip (SoC)
	Microsoft® Windows® 10	Intel® Core™ 2 Duo Processor 2GHz or more
Required memory	Microsoft® Windows® 11	Recommended 4 GB or more
	Microsoft® Windows® 10	64-bit OS: Recommended 2 GB or more 32-bit OS: Recommended 1 GB or more
Available hard disk capacity		2 GB or more
Monitor		Resolution 1024 × 768 pixels or higher
.NET Framework*1		Microsoft .NET Framework 4.0 or later
OS (Japanese version, English version, Simplified Chinese version, Traditional Chinese version, Korean version, German version, Italian version)		Microsoft® Windows® 11 (Home, Pro, Enterprise, Education) Microsoft® Windows® 10 (Home, Pro, Enterprise, Education, IoT Enterprise 2016 LTSB *2*3)

*1. If .NET Framework 4.0 is not installed, approximately 500 MB of memory is required in the system drive to install it.
*2. 64-bit version only
*3. Traditional Chinese version, Korean version, German version, and Italian version are not supported.

Data Collector

Operating environment

Item	In Content					
	CC-Link IE TSN Data Collector	CC-Link IE Field Network Data Collector	CC-Link IE Controller Network Data Collector	SLMP Data Collector	OPC UA Data Collector	MTConnect Data Collector
Computer body	PC/AT compatible					
CPU	Intel Atom® E3826 1.46 GBHz or higher	Intel ® Core™ i3 CPU 1.90 GBHz or higher		Intel Atom® E3826 1.46 GBHz or higher	Intel Atom® E3826 1.46 GBHz 2 Core More than	Intel Atom® E3826 1.46 GBHz or higher
Required Memory	4 GB or more	8 GB or more		4 GB or more		
Display	XGA (1024 x 768 dots) or higher					
Free storage space	4 GB or more					

Product List

Product name	Name of the form
CC-Link IE TSN Data Collector *1 *2	|SW1DNN-DCCCIET-M
CC-Link IE Field Network Data Collector (MI 5000) *1 *4	SW1DNN-DCCCIEFM-M
CC-Link IE Field Network Data Collector *1	SW1DNN-DCCCIEF-B
CC-Link IE Controller Network Data Collector *1	SW1DNN-DCCCIEC-B
SLMP Data Collector *1	SW1DND-DCSLMP-M(D)
OPC UA Data Collector *1	SW1DND-DCOPCUA-M(D)
MTConnect Data Collector *1	FCSB1810W001

*1. For details on connectable devices and performance specifications, refer to the manual.
*2. our company products "CC-Link IE TSN communication software for Windows ® (SW1DND-CCIETCT-M)" are included.
*3. Free download from FA site.
*4. I preinstalled it on a our company industrial PC, MELIPC MI 5000 J.

MELIPC Series

Operating environment

Product name	OS
MI5000	Microsoft® Windows® 10 IoT Enterprise 2016 LTSB (64 bit), VxWorks® 7.0
MI3000	Microsoft® Windows® 10 IoT Enterprise 2016 LTSB(64bit)
MI2000	Microsoft® Windows® 10 IoT Enterprise 2016 LTSB(64bit)

List of functions

Item	Specifications				
	MI5000		MI3000		MI2000
	Windows® Department	VxWorks® Department	Windows®		Windows®
Model	MI5122-VW		MI3321G-W	MI3315G-W	MI2012-W
MPU	Intel® Core™ i7 4Core		Intel® Core™ i3 2Core		Intel® Core™ i3 2Core
Work RAM	12GB	1GB	8GB		8GB
Internal Storage	SSD 45GB	SSD 4GB	SSD 64GB		SSD 64GB
Backup RAM (MRAM)	-	Latch devices	-		-
Additional storage	CFastx1*1[LINK1]	-	M.2(2280)SATA SSD×1		2 x 2.5 "SATA (SSD/HDD), 1 x CFastX
built-in field network	-	CC Link IE Field X1	-		-
LAN	10BASE-T/ 100BASE-TX/ 1000BASE-TX1	10BASE-T/ 100BASE-TX/ 1000BASE-TX1	10BASE-T/ 100BASE-TX/ 1000BASE-TX3		10BASE-T/ 100BASE-TX/ 1000BASE-TX2
USB	USB 2.0 x 2, USB3.0 x 2	-	USB 3.0 x 2, USB2.0 x 2		USB3.0 x 6
Serial	RS-232X1*2[LINK1]		RS -232 x 1, RS-232/422/485*3 x 1[LINK1]		RS-232/ 422/485*3 x 2[LINK1]
Show	Display Port x 1	-	DisplayPort x 1		DVI-I x 1/HDMI x 1
Bus expansion	-		PCIe x 1, mini PCIe x 2		PCI x 1, PCIe x 1
External Dimensions (WXHXD) [mm]	362 x 106 x 119		349.8 x 558.4 x 88.8	307.3 x 383.2 x 86	142 x 177 x 238

*1. Prepare optional items (16/32/64 GB).
*2. You can switch between operating systems in settings.
*3. Switch RS- 232/422/485 in settings.

Product List

Product name	Model
MI5000	MI5122-VW
MI3000	MI 3321 G-W, MI 3315 G-W
MI2000	MI2012-W

How each software works with MELIPC

• : possible X : not possible

Item	MELIPC			
	MI1000	MI2000	MI3000	MI5000
Edge Applications				
MELSOFT MaiLab (learning server)	X	•	•	•*4
MELSOFT MaiLab (diagnostic)	X	•	•	•
EcoAdviser (energy conservation analysis)	X	•	•	•
EcoAdviser (energy conservation analysis and diagnosis)	X	•	•	•
GENESIS64 Basic SCADA	X	•	•	•
GENESIS64 Advanced	X	•	•	•
NC Machine Tool Optimizer	X	•*5	•*5	X
GT SoftGOT2000	X	•	•*6	•
Data Collector				
CC-Link IE TSN Data Collector	•	•	•	•
CC-Link IE Field Network Data Collector	X	•*8	•*8	•*7
CC-Link IE Controller Network Data Collector	X	•*9	•*9	X
SLMP Data Collector	•*6	•*6	•*6	•*6
OPC UA Data Collector	•	•	•	•
MTConnect Data Collector	X	•	•	•

*4. It is necessary not only for methods that require relatively little computational processing, such as multiple regression analysis, but also for methods that require a lot of computational processing, such as deep learning.
*5. We recommend using it with more disk space than 300 GB.
*6. Pre-installed software.
*7. CC-Link IE field network data collector (for MI 5000) is pre-installed.
*8. You must purchase a CC-Link IE field network interface board separately.
*9. You must purchase a CC-Link IE controller network interface board separately.

Discover the latest information in Factory Automation

Factory Automation Global website

Mitsubishi Electric Factory Automation provides a mix of services to support its customers worldwide.
A consolidated global website is the main portal, offering a selection of support tools and a window to its local Mitsubishi Electric sales and support network.

From here you can find:

- Overview of available factory automation products
- Library of downloadable literature
- Support tools such as online e-learning courses, terminology dictionary, etc.
- Global sales and service network portal
- Latest news related to Mitsubishi Electric factory automation

Mitsubishi Electric Factory Automation Global website:
www.MitsubishiElectric.com/fa

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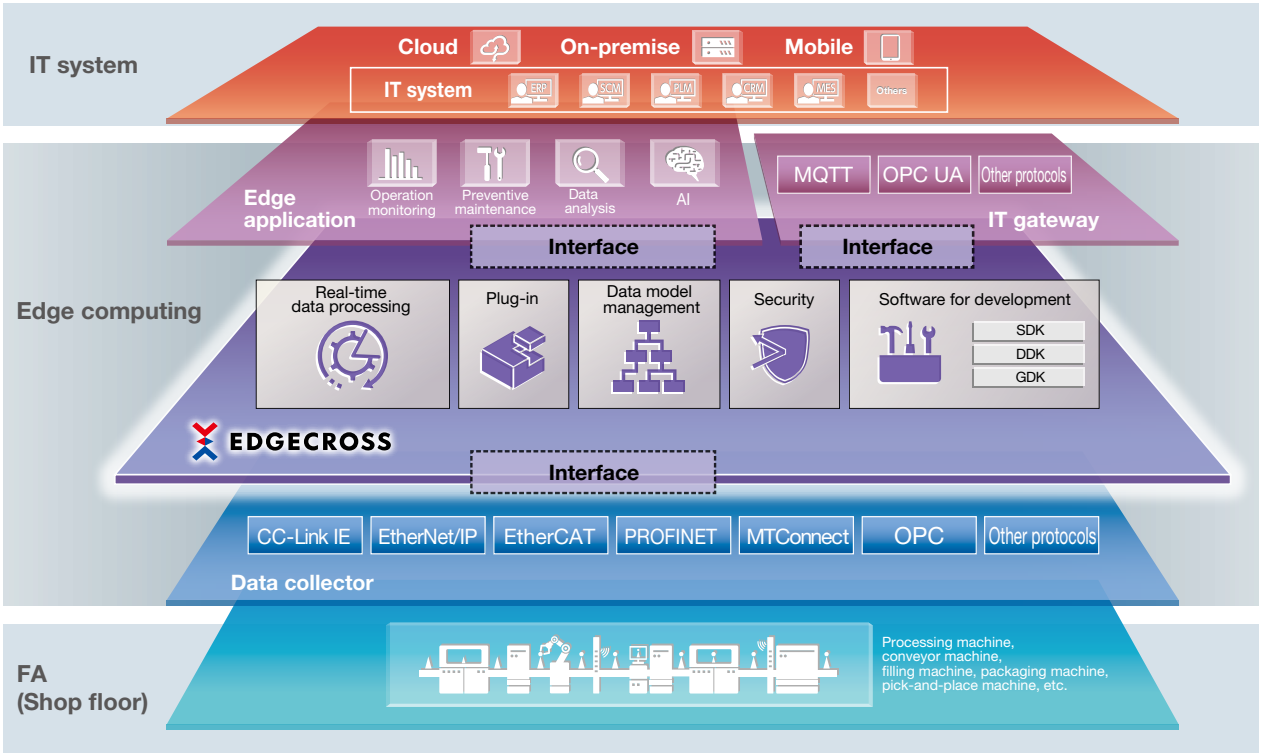
Open Platform Edgecross

In the manufacturing industry, IoT adaptation is accelerated to enhance competitiveness and create new value. Following the trend, Edgecross Consortium aims to create new added value based on the edge computing layer beyond the borders of companies and industries, contributing to IoT adoption in the manufacturing industry.

EDGECROSS CONSORTIUM

Creating new value with a focus on the edge computing domain



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Edgecross Consortium
https://www.edgecross.org/en/

Mitsubishi Electric AI technologies Maisart

AI is made compact, reducing computing load and enabling the integration of artificial intelligence on the shop floor.

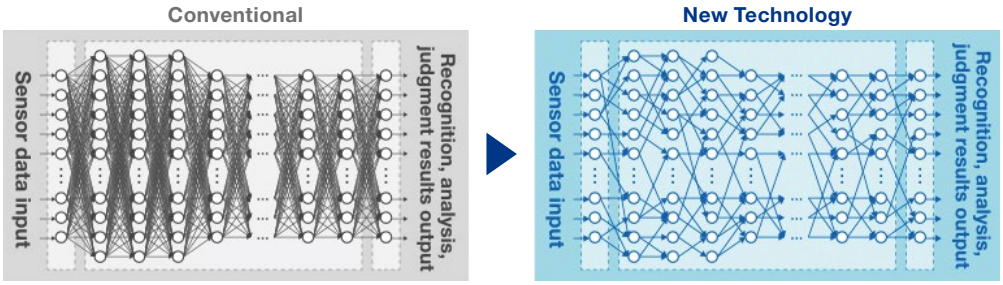
Our FA knowledge supports the application of AI technologies to customers' systems.

Our edge-computing products simplify data collection and support the construction of AI systems.

Features

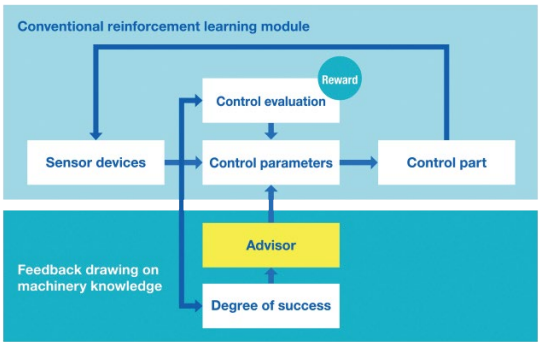
Deep Learning

Compared to conventional methods, our compact algorithms reduce deep learning branches by 1/30- 1/100.



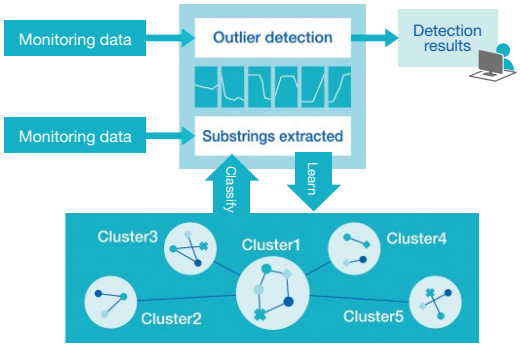
Reinforcement Learning

Reduces the number of pre-learning trials approximately 1/50 compared to conventional methods by estimating the degree of success through improving learning efficiency using equipment domain knowledge.



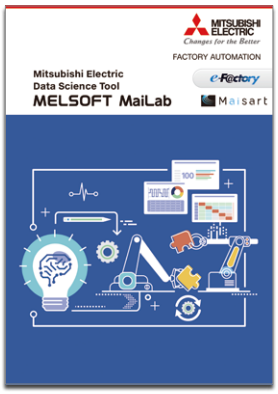
Big Data Analytics

Reduces the number of operations necessary to detect abnormal signs by 1/40 through streamlining time series data analysis using equipment domain knowledge.



"Maisart" is the name of Mitsubishi Electric's AI technology brand and stands for Mitsubishi Electric's AI creates the State-of-the-ART in technology, with the idea of making everything intelligent (smart) by leveraging original AI technologies.

List of related catalogs

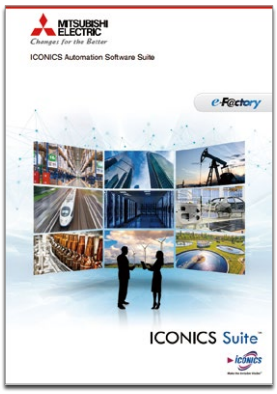


•MELSOFT MaiLab catalog

L(NA)08865ENG

•EcoAdvise

Y-0792A



•ICONICS Automation Software Suite catalog

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3D Simulator

MELSOFT Gemini

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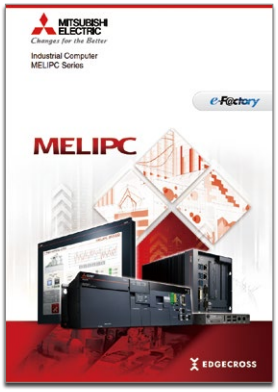

•MELIPC catalog

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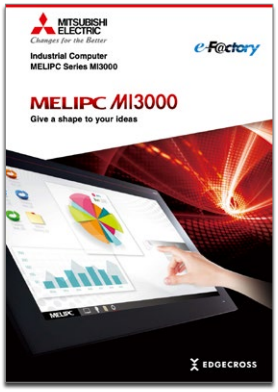

•MELIPC MI3000 catalog

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Mitsubishi Electric's product lineup, from various controllers and drives to energy-saving devices and processing machines, all help you to automate your world. They are underpinned by software, innovative data monitoring, and modelling systems supported by advanced industrial networking and Edgecross IT/OT connectivity. Together with a worldwide partner ecosystem, Mitsubishi Electric factory automation (FA) has everything to make IoT and Digital Manufacturing a reality.

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Note: not all products are available in all countries

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