

Automating the World

FACTORY AUTOMATION

FA-IT Integrated Solution e-F@ctory



Connect everything











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.



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. 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.

OVERVIEW

e-F@ctory	4
e-F@ctory Overview	6
Edge Computing	8
Solutions	10
Cases of Solutions Introduced	12
Industries	14
Competencies	23
Cases of e-F@ctory Use by Mitsubishi Electric	28
Cases of e-F@ctory Use by Customers	32
Cases of Edgecross	33
Core Products/Technologies	34
Edge Computing/Products	36
Shop Floor/Solution	38
IT Systems/Software	40
e-F@ctory Alliance	44

3

Connect everything

The industrial world has come to a major turning point with the introduction of the Internet of Things (IoT). The key to surviving today's severe market competition is the prompt and timely implementation of IoT/optimization; not only on the production shop floor, but also throughout the monozukuri field.

In response to this need, we developed the "e-F@ctory" FA-IT integration solution. At its core is "edge computing," advanced technologies that utilize AI to collect data from the production shop floor and analyze it in real-time, thereby improving monozukuri. Utilizing wide-ranging knowledge and technologies, as a comprehensive FA manufacturer cooperating with more than 1,000 partner companies,* we are disseminating e-F@ctory around the world. With us, you can implement "one-stop" operations using optimum IoT proposals for the shop floor, and realize the digital shift throughout monozukuri.

In Japan, and around the world, e-F@actory innovation connecting all things and optimizing all areas of monozukuri has already started.



We aim to connect the entire manufacturing lifecycle by linking "real, virtual, and data" to achieve optimal and flexible manufacturing and ultimately ride out these uncertain times.

Toward the Realization of Digital Manufacturing

Manufacturing of the future will require the realization of "digital manufacturing" that utilizes the latest technologies in software, AI, and networks to connect the entire manufacturing lifecycle from planning and manufacturing to post-delivery recycling.

Mitsubishi Electric optimizes the entire manufacturing lifecycle, from design to maintenance, through synergy of control equipment, which is a core component, digital technologies such as 3D simulators and visualization tools, and services leveraging on-site knowledge.

Our integrated FA-IT solution, e-F@ctory, plays a central role in this process.



This solution solves customers' issues and concerns by enabling visualization and analysis that lead to improvements and increase availability at production sites.

By utilizing FA and IT technologies, we reduce total costs throughout all phases of development, production, and maintenance, continuously support our customers' improvement activities, and propose solutions oriented toward 'one-step-ahead' manufacturing.

*1 Visualize, analyze, and improve





Realizing a Smart Factory

Nagoya Works and Industrial Mechatronics Systems Works use SMKL^{*2} to evaluate the level of e-F@ctory promotion at manufacturing sites and formulate improvement plans.

*2 SMKL (Smart Manufacturing Kaizen Level) is a measure that evaluates the level of IoT implementation at manufacturing sites using 16 cells to determine the current level.



What SMKL Achieves

By utilizing SMKL, the current "visualization level" can be evaluated for the particular equipment, operator, line, plant, and supply chain respectively, and improvements can be made toward the next step.

It also enables planned investment decisions to be made between management and those in charge of equipment.

*SMKL has been opened by IAF (Industrial Automation Forum)/SMKL project, and a white paper is available.



The key to creating a smart factory is edge computing.

For a smart factory to be achievable, the real-time utilization of production shop floor data and efficient connectivity with IT systems are essential. With e-F@ctory, by utilizing "edge computing," a technological concept for information processing between the shop floor and IT systems, it is possible to achieve data connectivity with optimal efficiency.





An Environment Where Manufacturers Participate Freely

Edgecross is an open software platform operating in edge computing environments built in collaboration with members of the Edgecross Consortium* to enable FA and IT collaboration. It is possible to build a free and flexible edge computing environment independent of application vendors and device manufacturers.



*Edgecross Consortium is an organization for formulating Edgecross specifications and promoting dissemination. https://www.edgecross.org



Logistics

Lithium-ion Batteries

4.0

Data Ce<u>nter</u>

Electronics

Food/ Beverage







ŀ

CASES

Introduction of Solutions

Solutions Introduced

e-F@ctory leverages knowledge accumulated to date to find the optimal solution for each industry type and process.

e-F@ctory was launched in 2003 and has helped many companies solve various issues. From the knowledge accumulated down through the years, e-F@ctory proposes optimal solutions for each industry type and process to achieve productivity and quality improvements, cycle-time reductions, preventive maintenance, "visualization" of energy, energy savings and so on.







In vehicle manufacturing plants that handle a vast number of parts and wide variety of processes, there is a need to solve various issues such as responding to mixed production of many different car models, improving production speed and quality, considering worker safety and engaging in environment-oriented initiatives.

e-F@ctory helps provide solutions to the issues customers face by offering optimal solutions through forming common platforms and alliances with many different partners.





Constantly monitor everything such as assembly precision, adhesive application, and QR code reading with MELSENSOR.

Visualize the entire network with CC-Link IE.

Collect noise during fitting with a high-speed analog

Visualize the operational status of robots

with e-F@ctory starter package

input module and perform FFT analysis with a PLC.







Electricity and electronic fields require elaborate and complex work, yet a high percentage of tasks are still performed manually. A major issue faced is how to automate the processes of part loading, surface implementation, PCB assembly, unit assembly and shipment in order to reduce human error. e-F@ctory helps provide a solution to this issue by providing robots equipped with force sensors and work support systems.





sharing of information between workers

Lithium-ion battery



Lithium-ion battery lines are large production lines consisting of electrode forming, lamination, inspection, packaging and shipping processes. By utilizing various technologies such as tension control, drive control, synchronous control, robots, and IT cooperation of Mitsubishi Electric FA equipment for the equipment of each process, lithium-ion batteries can be produced efficiently and with high quality.







Scan here for details



The importance of "logistics reforms" as supply chain management is attracting attention. Mitsubishi Electric is building smart, efficient and safe logistics systems to meet issues such as reducing inbound and outbound times, improving cargo handling efficiency, and reducing overall equipment costs. We contribute to the optimization of supply chain management.











From SCADA to controllers and drive-anddistribute equipment, Mitsubishi Electric helps you build data center systems.







In food (instant noodles) manufacturing that involves a diverse range of processes, Mitsubishi Electric's solutions contribute to building the ideal manufacturing environment throughout all processes.





19

Cases



In plastic bottle beverage (tea) manufacturing that involves a diverse range of processes, Mitsubishi Electric's solutions contribute to building the ideal manufacturing environment throughout all processes.











In beer manufacturing that involves a diverse range of processes, Mitsubishi Electric's solutions contribute to building the ideal manufacturing environment throughout all processes.







Food/Beverage

(Packaging machine)

Due to the diversification and complexity of needs, the packaging form of food and beverage products is constantly changing. In addition, machinery that performs packaging and packaging itself requires greater reliability and functionality than ever before. Mitsubishi Electric's packaging equipment system facilitates the construction of systems according to each customer's purpose and scale.



Horizontal pillow device

The film roll for packaging is sent out horizontally, and both ends are sealed and cut while wrapping food sent from the conveyor in pillow shape.

Vertical pillow device

The film roll for packaging is sent out vertically and molded into a bag. After putting food in the bag, the top of the bag is sealed and cut.

Filling equipment

Fill solids and liquids to the optimum amount.





Carbon neutral solutions



Mitsubishi Electric provides carbon neutral solutions by not only offering equipment that efficiently uses energy (our high-efficiency equipment product lineup), but also by supporting continuous improvement activities through data management (data collection, visualization, analysis, and diagnosis).



Data Management is indispensable for continuous reduction of CO₂ emissions.

Operational improvements through data management contribute to the continuous reduction of CO₂ emissions.

Mitsubishi Electric provides a platform to collect and analyze all information related to energy and production. Through the visualization, analysis, and diagnosis of the collected data, we support further operational improvements on our customers' production shop floors.



FA remote solutions

Technological innovation is accelerating the diversification of work styles and the manufacturing industry is no exception. As it becomes standard practice to perform monitoring, maintenance, service, development and many other production operations regardless of time or place, concrete benefits such as reducing downtime and minimizing travel costs can be anticipated.

Mitsubishi Electric's FA remote solutions promote the diversification of work styles and help improve the competitive edge of all manufacturing-related companies.



Build a safer and more reliable security environment

Promotion of defense-in-depth

We recommend implementing security measures at each layer (human layer, physical layer, network layer, and device layer) in accordance with Mitsubishi Electric's FA security guidelines, and introducing defense-in-depth to FA systems to realize manufacturing in factories with a safe and reliable security environment.







Improving productivity, quality, and energy efficiency by utilizing shop floor data to find the key to solving production issues and promoting improvements.

The Cycle for shop floor Improvement With Data Utilization



Total Maintenance solutions



Total Maintenance Solutions comprise "Predictive Maintenance", which prevents problems before they arise by detecting signs of abnormalities based on data collected, "Preventive Maintenance", which enables planned maintenance by managing data regarding operating time and frequency, as well as "Corrective Maintenance", which shortens the cause investigation time to achieve early recovery of equipment by utilizing historical data. These are solutions supporting our customers' maintenance activities in all phases and scales, whether it be line, device, or equipment.



What is Total Maintenance Solution?

Predictive Maintenance

Prevents trouble by detecting signs of abnormality by analyzing operation data





Preventive Maintenance

Operating time and frequency data management utilized to prevent the generation of problems



A Maintenance carried out



Corrective Maintenance

Historical data utilized for detailed cause investigation and rapid recovery





IoT solutions for machining lines



Mitsubishi Electric promotes the digitalization of our customers' operations by collecting data from various machine tools and peripheral equipment, Al-based data analysis, streamlining equipment design through simulation, and achieving overall optimization by cloud integration.



Mitsubishi Electric proposes an IoT solution

to suit our customers' requests.



Mitsubishi Electric realizes significant improvement in productivity, quality, energy-efficiency, safety, and security through the introduction of e-F@ctory.



Improvement of work through work data collection and analysis, and improvement of design Industrial Mechatronics Systems Works E7 Factory: Electrical Discharge Machine manufacturing factory



Solutions



• Significant reduction of cycle time through the abolishment of the shaft rotor grinding process



Benefits







Cases

Mitsubishi Electric's Fukuyama Works introduced e-F@ctory and, as a result, has benefited from productivity improvements and innovative energy-savings thanks to management of short stoppages.





lida Factory of Mitsubishi Electric's Nakatsugawa Works introduced e-F@ctory and, as a result, reduced equipment downtime at low cost.





Cases of **X** EDGECROSS





X RDY WIN RDY MAINERR IN RUN STORAGE FAN INFO RS SDIRD RATTERY

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SO BONE 139VA



Am

COMPONENTS

Introduction of Core Products/ Technologies



Introduction of Core Products/Technologies

The Advanced Products, Software and Networks **Behind e-F@ctory**

The new e-F@ctory enables connectivity with an even higher number of devices and networks. e-F@ctory goes beyond the barriers of companies and standards to connect a wide variety of devices and equipment to each other to make innovative monozukuri possible.



e-F@ctory starter package





FA application package





CC-Línk IE TSN

Network

35

Industrial PC MELIPC Series MELIPC



Preinstallation of Edgecross data collector

Suited to the two applications of "real-time control" for control of devices, and "edge computing" to collect and analyze data in the edge layer. The extensive lineup features everything from high-end to low-range models, and contributes to improvements on the production shop floor through data utilization.

MI5000

Data science tool

3D simulator

through Edgecross

GENESIS64™

EcoAdviser

and web browser/mobile devices

MELSOFT MaiLab

GT SoftGOT2000

MELSOFT Gemini

for specialized knowledge.

- Equipped with Windows® and VxWorks®, integrates device control and information processing into one module
- High-accuracy device control with CC-Link IE Field Network



MI3000/MI2000



*Abbreviation of Mitsubishi Electric's AI creates the State-of-the-ART in technology

MES Interface Products - Use databases without computers or programs

MELSEC iQ-R/MELSEC-Q Series **PLC MES Interface Module**



Directly connects PLCs and databases without using gateway computer or communication program.



- Directly transmits information collected from the production shop floor to a database.
- High-speed transmission of manufacturing results and receipt of recipe information.
- Optimal for building traceability systems.

GOT2000 HMI MES Interface Function GOT2000 **Graphic Operation Terminal**

The GOT2000 HMI collects and sends data to the MES from FA products connected to it.



- Collects data from existing equipment and other equipment that utilize third-party PLCs.
- Supports operators' tasks by providing access to a barcode reader, document viewer, or other such tools.
- Equipped with substantial information management functions characteristic of a display unit (HMI).

High-Speed Logging of Shop Floor Information

MELSEC iQ-R/MELSEC-Q Series **High-speed Data Logger Module**

- Data logging synchronized with PLC scans.
- Swift problem-solving when trouble arises.
- Contributes to operational analysis, trend analysis and preventive maintenance of devices.



MELSEC iQ R

MELSEC Q series

Computerized Numerical Controller (CNC) M800/M80 Series MES Interface Function

CNC sends machining information and operation status of machine tools to MES.



- Enhances traceability and supports visualization of the entire factory.
- When machining is complete, etc., the information collected by the CNC is sent from the built-in MES interface to the database.
- Achieves visualization of operation status, as well as the visualization of machining results and alarm occurrence status.

OPC UA Built-in Servers Building secure systems

MELSEC iQ-R/iQ-F Series **OPC UA Server Module**

MELSEC iQ R

Simply setup using OPC UA communications.

- When designing manufacturing devices, it is possible to internally store and manage the data that is to be released using tag names and lavered structures.
- OPC UA security functions can be set optionally on an as needed basis.
- Intuitive operation possible using a Wizard format and setup screen selection format.

Information processing utilizing Windows®

MELSEC iQ-R Series WinCPU Module

MELSEC iQ R

MELSEC iQ-R

- Easily build an IT system utilizing Windows[®].
- Enables stable operation even in harsh production shop floors due to having robustness equivalent to a programmable controller.

Can be developed on the shop floor,

leakage.



Performing Control, Information Processing and Host Communication Process with a C/C++ Programs

MELSEC iQ-R/MELSEC-Q Series **C** Controller Module

MELSEC iQ R MELSEG Q series

Easy programming independent of

- the microprocessor. Parameter settings, diagnosis
- and monitoring with CW Configurator.
- Easy application development.



MELSEC iQ-R Series C Intelligent Function Module

- C/C++ supports complicated computation processing.
- Easy application development.
- Optimal for usage even in clean rooms which must be kept dust-free.



CC-Link IE TSN

CC-Línk**IE TSN**

Open integrated network connecting the production shop floor and IT systems

CC-Link IE TSN is a network achieving seamless communication using TSN technology and innovative communication protocols to collect data from various devices on the shop floor in real time and transmit it to IT systems, thereby creating new added value.

Achieves an IIoT network through seamless communication between the shop floor and IT systems An open integrated network achieving high-speed cyclic

achieving high-speed cyclic communication and information communication including general-purpose Ethernet devices in a single trunk line

High-accuracy motion control, real-time, high-accuracy synchronized communication enabling synchronization with process events

Performance

In today's production shop floor environments, there is a need to improve productivity and quality. As such, it is essential to have a network that can utilize AI and preventive maintenance to transmit high volumes of data to IT systems while performing high-speed, stable control.

CC-Link IE TSN uses an updated communication method to achieve significantly improved communication performance, therefore enabling high-accuracy motion control in addition to high-speed I/O control.

Intelligence

In industrial communications, to reduce overall cost, there is a need for intelligent networks that contribute to easy system construction and maintenance.

CC-Link IE TSN supports various convenient functions such as automatic generation of system configuration diagrams and batch distribution of network parameters, thereby significantly reducing system development costs and maintenance costs.

Connectivity

TSN

Performance

In Integrated Netv

CC-Link IE TSN

Intelli Bo

In order to achieve monozukuri at a more advanced level, there is a need for networks that can connect to various devices at the same time as securing real-time performance. CC-Link IE TSN makes it possible to combine general-purpose Ethernet communication and control communication, and connect to general-purpose Ethernet devices without impacting control communication. Furthermore, it is possible to build a network compatible with various topologies; therefore, flexible IIoT systems can be built.

e-F@ctory Starter Package

The e-F@ctory Starter Package is a sample project for MELSEC iQ-R Series PLCs and GOT2000 Series HMIs. It shows how easy it is to achieve the low-cost implementation of IoT (easy data analysis, visualization, etc.) at the production shop floor level.

Utilization of IoT on the Shop Floor

Applying IoT technologies to the manufacturing industry, production equipment status, product manufacturing status and product quality status can all be understood in real-time, thus making it easy to provide feedback to equipment and workers, and achieve ongoing cost reduction throughout the entire production shop floor.

Supporting Implementation of IoT at the Production Shop Floor Level

Because programs for visualization, easy analysis, and other functions are provided in a sample project format, implementing IoT at the production shop floor level can be accomplished using only basic configurations such as device allocation and parameter settings.

Various Functions Incorporated

The e-F@ctory Starter Package incorporates various functions to implement IoT for production shop floor data through visualization, easy analysis, and other means, and can be easily matched for use with customers' applications.

Achieving IoT with Minimal Impact on Existing Equipment

By adding a PLC and HMI embedded with the e-F@ctory Starter Package, it is easy to implement IoT on the production shop floor with minimal impact on existing equipment.



e-F@ctory Starter Package GOT HMI example

							10
-	100	1010	1010	00		10	24
-	-	11	1000	-	 	 	
	1						









MT method



iQ Monozukuri is a step towards realizing e-F@actory by merging production shop floors and IT systems via open integrated networks.



iQSS (iQ Sensor Solution)



Set sensors, perform maintenance, etc. using a single tool. iQSS helps customers reduce total cost of operation through connectivity between sensors, PLCs, HMIs and engineering environments.





Reducing Overall Cost of Sensor Systems

MELSENSOR

MELSENSOR makes it possible to reduce the overall cost of sensor systems, including costs related to design, start-up, operation and maintenance, utilizing automatic sensor detection, address change and tool connectivity functions.



Pre-verification is performed in the digital space of a virtual factory or equipment line.

This significantly reduces cost and time during the design phase.

🔯 MELSOFT Gemini





MELSOFT Mirror*1

MELSOFT Mirror

This software simulates an overall control system at the production site. Connected to an engineering tool (GX Works3), SCADA (GENESIS64[™])^{*2}, or a customer's in-house software, it enables you to verify equipment operations on a PC without an actual device. This allows front-loading of development processes,

accelerating development speed.

*1 : Currently available in Japan *2 : Future support planned for SCADA (GENESIS64TM)

> Process A Process B Process C Process D Simulates the control devices and control network. Up to 50 devices can be simulated (CPU module: Up to 30) Process A Process B Process C Proces D Process A Process B Process C Proces D

Server PC: virtual environment



(i/O, Sensors, and machine response)



iQ Care Remote4U



This service utilizes IoT to collect and accumulate various information from laser processing and electrical-discharge machines, thereby enabling real-time confirmation and diagnosis from a remote location. It is possible to confirm system faults, or signs thereof, and estimate machining time in real-time using a mobile terminal such as a computer, smartphone, etc.

Remote Diagnosis Function

Connects directly from a terminal installed in a service center to customers' processing machines for rapid support through remote diagnosis.

Supports changes to machining conditions, analysis of alarm content, and provision of preventive maintenance information.



Dashboard Function

Enables confirmation of processing machine operating information in real-time via a computer or smartphone. Collects, accumulates, and performs central management of operating/cost information from multiple units. Contributes to production process improvement and operating cost reduction through visualization-based analysis.



GENESIS64[™]

GENESIS64

GENESIS64™ is a visualization tool that centrally manages FA and IT data for monitoring and analyzing various types of data.

Through the utilization of this tool, we provide monitoring and integration solutions optimal for our customer's needs, such as factory automation, smart building construction, and social infrastructure system establishment.



IT (MES, ERP, etc.)



(production shop floor)

VISUALIZE (1)

Secure, real-time visualization on any device is critical to keeping operations running smoothly. GENESIS64™ scales from desktops to browsers, tablets, smartphones, and wearable devices.

DATA UTILIZATION (2

Improve operational productivity and quality with interactive analytics. Industry applications include OEE*1, SPC*2, energy, and fault detection to provide insight from edge to cloud.

*1 : OEE: Overall Equipment Effectiveness

*2 : SPC: Statistical Process Control

CONNECT (3)

GENESIS64™ universal connectivity platform supports industry standard open protocol, accelerating integration of all kinds of devices, equipment, and systems, resulting in convergence of IT and OT*3. *3 : OT: Operational Technology

CONTEXTUALIZE (4

Asset-based organization and navigation facilitates data normalization, comparisons, and situational awareness to get to the root cause quicker through contextualized and actionable information.

Strengthen linkage with Mitsubishi Electric's FA equipment (5)

Excellent connectivity allows connection, data sharing, and system integration with various equipment. It is also possible to build a wide-area monitoring system using the cloud.



PARTNERS

Partners



Broad knowledge and skill as a comprehensive FA manufacturer e F@ctory Alliance



Know-how of all fields relating to monozukuri

Co-creation

Customer



Giving customers back the values born from co-creation

e-F@ctory Alliance

e-F@ctory Ecosystem – Co-creation with over 1100 Partners*

As a solutions provider, we collaborate with many partners across all monozukuri fields. This ecosystem provides optimal solutions in various regions and fields in response to the issues experienced by our customers.

*As of May 2024





Producing entire production systems Achieving advanced systems integration







Production shop floor



Robots



Development of application software strengthening connection affinity with Mitsubishi Electric FA devices



ERP/MES/SCADA



CAD/CAM/3D simulator







Provide device compatibility with Mitsubishi Electric FA equipment Achieve improved system builds and maintainability







RFID



Related network devices

45

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

Online e-learning

An extensive library of e-learning courses covering the factory automation product range has been prepared. Courses from beginner to advanced levels of difficulty are available in various languages.



Beginner level

Designed for newcomers to Mitsubishi Electric Factory Automation products gaining a background of the fundamentals and an overview of various products related to the course.

Basic to Advanced levels These courses are designed to provide education at all levels. Various different features are explained with application examples providing an easy and informative resource for in-house company training.

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🛕 For safe use

- To use the products given in this publication properly, always read the relevant manuals before beginning operation.
- The products have been manufactured as general-purpose parts for general industries, and are not designed or manufactured to be incorporated in a device or system used in purposes related to human life.
- Before using the products for special purposes such as nuclear power, electric power, aerospace, medicine or passenger-carrying vehicles, consult with Mitsubishi Electric.
- The products have been manufactured under strict quality control. However, when
 installing the products where major accidents or losses could occur if the products
 fail, install appropriate backup or fail-safe functions in the system.

Automating the World

Creating Solutions Together.





Low-voltage Power Distribution Products



Compact and Modular Controllers



Numerical Control (NC)





Servos, Motors and Inverters







Processing machines: EDM, Lasers

Power Monitoring and Energy Saving

Products



Power (UPS) and Environmental Products



Edge Computing Products



SCADA, analytics and simulation software

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.

With a complete portfolio and comprehensive capabilities that combine synergies with diverse business units, Mitsubishi Electric provides a one-stop approach to how companies can tackle the shift to clean energy and energy conservation, carbon neutrality and sustainability, which are now a universal requirement of factories, buildings, and social infrastructure.

We at Mitsubishi Electric FA are your solution partners waiting to work with you as you take a step toward the realization of sustainable manufacturing and society through the application of automation. Let's automate the world together!







Mitsubishi Electric's e-F@ctory concept utilizes both FA and IT technologies, to reduce the total cost of development, production and maintenance, with the aim of achieving manufacturing that is a "step ahead of the times". It is supported by the e-F@ctory Alliance Partners covering software, devices, and system integration, creating the optimal e-F@ctory architecture to meet the end users needs and investment plans.



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