MITSUBISHI ELECTRIC
Changes for the Better

Automating the World

AUTOMATION SOLUTIONS GUIDE

For a More Sustainable Future

AUTOMATING THE WORLD

Our planet is in a precarious position. It's not something that one person, one company or one country can fix. We must all do our part to enable a sustainable future.

For us, that means sharing know-how and actively collaborating to find new ways of using automation—not just to address supply chain and labor challenges, but also the world's climate problems.

We believe we can create a sustainable future through continuous technological innovation, rapid adoption of digitalization and aggressive decarbonization.

Mitsubishi Electric Automation is committed to making the world a better place. We are helping organizations accelerate digital transformation and achieve energy efficiency with intelligent automation solutions. Our solutions support everything from clean water and sanitation to affordable and clean energy to industry innovation and infrastructure.

MAKING CLIMATE ACTION THE CORNERSTONE OF OUR COMPANY

By creating and promoting automation solutions for the entire value chain, we will help the world achieve:

- **Carbon neutral** cities and communities by reducing CO_2 emissions in our company, our factory and our society

- A **circular economy** where resources are sustainably sourced, recovered and reused whenever possible

- A **resilient** society that can safely and securely cope with environmental changes and risks

- An **inclusive** society where everyone has meaningful work and enjoys economic growth

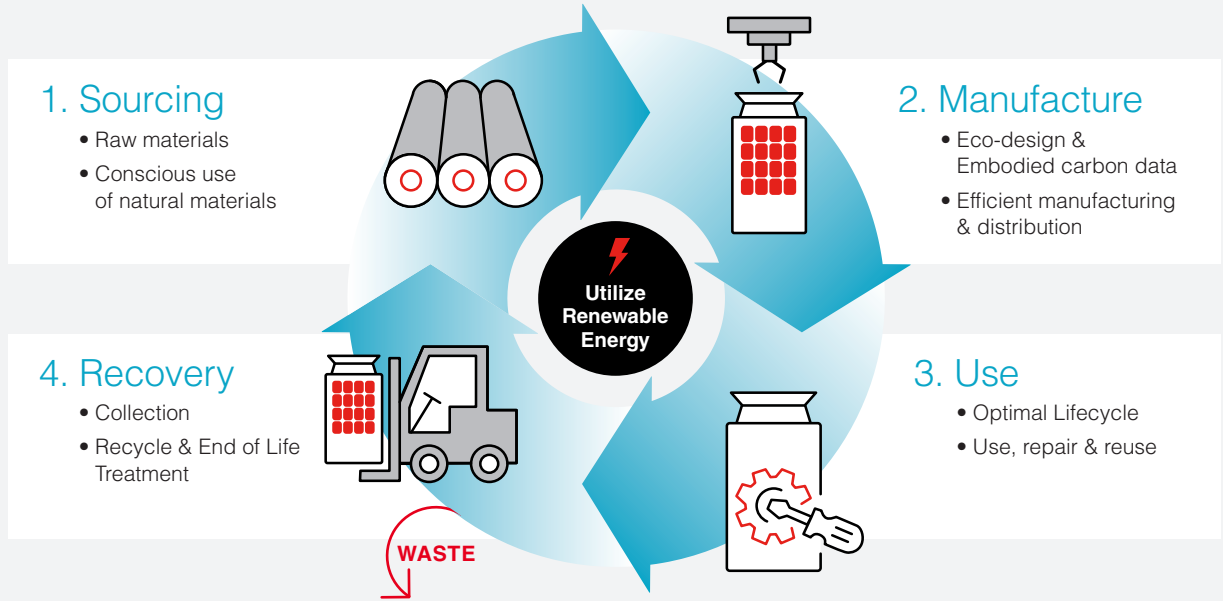- **Good health**, well-being and a better quality of life

Achieving Carbon Neutrality

Mitsubishi Electric Automation is committed to making our company's entire value chain carbon neutral by supporting a circular economy where resources are sustainably sourced, recovered, and reused whenever possible.

We are also helping our customers create or expand to achieve carbon neutrality with intelligent automation solutions. Our solutions support everything from clean water and sanitation to affordable and clean energy to industry innovation and infrastructure.

THE CIRCULAR ECONOMY

1. Sourcing
- Raw materials
- Conscious use of natural materials

2. Manufacture
- Eco-design & Embodied carbon data
- Efficient manufacturing & distribution

Utilize Renewable Energy

4. Recovery
- Collection
- Recycle & End of Life Treatment

3. Use
- Optimal Lifecycle
- Use, repair & reuse

WASTE

UNDERSTANDING LEADS
TO LONG-TERM SUCCESS

Decades of Expertise

Mitsubishi Electric Automation has a great depth of knowledge from working with a wide range of industries. We understand the challenges you face, and we are ready to help you overcome them. We can also help you position your organization for ongoing success, even as conditions and challenges evolve.

FOOD & BEVERAGE

Huge shifts in consumer demand. Rapidly escalating labor costs. Staff capacity shortages. Leading food and beverage companies are addressing these issues by using our automation solutions to:

- Provide advanced capabilities such as real-time supply chain visibility

- Reduce reliance on manual labor to mitigate labor shortage and retention challenges

- Ensure long-term resiliency and agility with solutions that can be quickly and easily reprogrammed and redeployed

LOGISTICS & ECOMMERCE

Persistent labor shortages. A sudden and dramatic shift from case-level to unit-level processing. Spiraling costs. Forward-looking logistics leaders are using our automation solutions to:

- Accelerate distribution and fulfillment

- Mitigate labor shortages and rising labor costs

- Eliminate waste and enable sustainable packaging

WATER & WASTEWATER

An aging workforce. An increase in cybercrime. New regulatory requirements. The need to conserve water. Leaders in water and wastewater are addressing these issues even as growth in suburbs overwhelms existing infrastructure. Our automation solutions are helping to:

- Generate operational efficiencies

- Prioritize investments to consider whole life costs of a project versus just assessing capital investments

- Improve the quality and speed of decision-making throughout the organization

AUTOMOTIVE

Unpredictable shifts in demand. Unreliable supply. Unanticipated megatrends. Innovators are racing to bring new electric vehicles to market and meeting demands for shorter charging times and reduced battery weight. Leading automotive manufacturers are addressing these issues by using our automation solutions to:

- Improve overall agility, quality, efficiency and resilience

- Lower the cost of operations

- Drive forward with smart factory implementation strategies

MANUFACTURING

Unpredictable shifts in demand. Unreliable supply. Unrelenting disruptions. To be future-ready, manufacturing leaders are using our automation solutions to:

- Increase digital fluency in production environments

- Enable Industry 4.0 capabilities

- Maintain or increase output levels with a reduced workforce and constrained environment

MATERIAL HANDLING

Massive supply chain disruptions. Rising labor costs. Serious labor shortages. Smart material handling companies are addressing these issues by using our automation solutions to:

- Benefit from emerging technologies such as artificial intelligence and the Industrial Internet of Things

- Build supply chain resilience and agility

- Enable faster response and recovery with cloud and edge computing

PACKAGING

Rising shipping rates. Labor shortages. Increased demands on production. Savvy packaging professionals are adapting successfully by using our automation solutions to:

• Increase innovation and operational efficiency

• Accelerate packaging lines

• Right-size packaging to reduce shipping costs

SEMICONDUCTOR

Shrinking profit margins. Fierce competition. A fast-changing and fragmented market. Future-looking semiconductor companies are reinventing themselves by using our automation solutions to:

• Redefine processes for operational efficiency

• Develop the ability to customize by industry need

• Increase access to information across the enterprise

MACHINE TOOL

Continued volatility in costs, labor, policies and tariffs. Leading machine tooling companies are overcoming these issues by using our automation solutions to:

• Increase operational resilience

• Improve organizational agility and visibility

• Maximize productivity and flexibility

OIL & GAS

Regulatory changes. Changes in customer preferences. Lower-cost modernization and sustainability imperatives. Proactive oil and gas companies are addressing these and other disruptive changes by using our automation solutions to:

• Increase efficiencies and cost savings

• Advance operational and technological capabilities

• Achieve net-zero initiatives

What People Are Saying About Mitsubishi Electric

"Every time we hit a roadblock or snag, [Mitsubishi Electric is] always **very responsive**. They're more than willing to get on the phone with us and work things through so that we can put out the highest quality product possible."

— BRIANNA MELLO
PRODUCT MANAGER, HUNTER FAN

"We're a small company, but Mitsubishi Electric really treated us like a big customer. I never got the sense that was out of the ordinary, just that providing **good service** was the way that they did business with everyone."

— JOHN KODZIS
PRESIDENT & CEO, IPSUMM

"We sell equipment all over the world. Because the machine's components are all manufactured by Mitsubishi Electric, they're available all around the world. We know this machine can be **supported everywhere** we are."

— PAUL SWANSON
SOFTWARE CONTROLS ENGINEER,
BW INTEGRATED SYSTEMS

"Mitsubishi Electric products have proven to be **extremely reliable** and help us ensure that our equipment will keep on working as intended– and that our customers will keep on getting trouble-free operation."

— KEVIN HASTINGS
ELECTRICAL ENGINEERING MANAGER
ROCHELEAU

"Mitsubishi Electric shares the same priorities as us; customer focus, flexibility and **continuous innovation** in products and services."

— RAUL ROMERO
GENERAL MANAGER,
NEXON AUTOMATION, MEXICO

"Unlike other companies, Mitsubishi Electric was **able to adapt** their system to fit the existing project design. This was the first and most important factor in choosing them."

— HIROMI SHODA
MARMARAY PROJECT MANAGER
TAISEI CORPORATION

"We found Mitsubishi Electric's cutting-edge technology and the result could not be better. **Less costs** in the manufacturing process and more performance and user satisfaction."

— CÉSAR DIAS
INDUSTRIAL AUTOMATION MANAGER
PERFOR

ADVANCING AUTOMATION TO ACCELERATE OUTCOMES

Our Solutions Deliver

Our strength comes from the fact that we're a large global company and a single-source provider of game-changing technologies. We design and manufacture every core automation technology and continuously set new standards for:

• **QUALITY** – Our solutions have fewer out-of-box failures and 10X lower repair rate than the industry leader.

• **PERFORMANCE** – Constant innovation and iterative improvements deliver industry-leading performance for the most demanding applications.

• **COMPATIBILITY** – We deliver unparalleled forward migrations and backward compatibility, so you can upgrade and deploy new products while protecting legacy equipment investments.

Join us. Let's change the future together.

PROGRAMMABLE LOGIC CONTROLLERS

Our lineup of fully scalable controllers is one of the most flexible in the industry. It supports a wide variety of networks including CC-Link IE TSN, Ethernet/IP, ProfiNet, Modbus, and more. Complex cybersecurity features and tight integration between systems help make Industry 4.0 a reality.

• Complete controller lineup supports any application

• Advanced range of special function modules optimizes application functionality

• Common programming software reduces development time and commissioning costs

• Complex cybersecurity Features

• Tight IT & MES integration for Industry 4.0 realization

HUMAN MACHINE INTERFACES

Our HMI platform is a family of high-performance operator terminals that combine the best in performance, graphics, and functionality in a unique, ultra-compact, and robust package.

• Powerful and brilliant graphics

• Intuitive multi-touch and gesture navigation

• Advanced data sharing and gateway function, including FTP, e-mail, VNC, and MES capabilities

• Flexibility of multi-vendor communications

• Remote connectivity through mobile devices such as cellular phones and tablets

• Improve productivity by monitoring the system status on the powerful maintenance platform

COMPUTERIZED NUMERICAL CONTROLLERS

We have produced high-performance CNC systems since 1973 and are one of the largest suppliers of customized CNC systems for machine tool builders worldwide. Choose from a complete lineup for machine tool, metal cutting, grinding, routing or forming applications.

• 3D graphic tracing for visual confirmation and program check

• High-speed, high-accuracy mode for complex and highly precise 3D mold work

• Icon based navigation and tablet gesturing for intuitive operation

• Nano control system for precise and accurate operation

• 5-axis simultaneous control for complex part programs

• Customizable controls to add end user screens

• Long term life cycle support

SERVO AND MOTION CONTROLLERS

Our standalone and PLC-based servo amplifiers and motion controllers set the standard for servo performance. Advanced servo features make it possible to unlock unused potential in machines and facilities. They also save energy and support CC-Link IE TSN connectivity.

• Full suite of autotune models including Quick Tuning, One Touch, and manual

• Real-time adaptive load control reduces wear and tear on mechanical components

• 26 bit high resolution encoder for accurate positioning and 3.5 kHz speed frequency response for faster throughput speeds and increased cycle times

• STO & SS1 as standard, with expanded safety functionality including SS2, SOS, SBC, SLS, SSM, SLI, & SLT Category 4, PL e, SIL 3 safety level

• Ethernet based connectivity using CC Link IE TSN

• Energy saving capabilities through regenerative power for overall energy-conservation

• Flagship Q172DS and Q173DS Motion CPUs, Simple Motion Modules, and Stand-Alone Motion Controllers

INDUSTRIAL/COLLABORATIVE ROBOTS

Our robotic line focuses on high-repeatability, high-speed applications with small to medium payloads, as well as specialized applications. Get seamless connectivity with our controllers to integrate and innovate more efficiently. Our robots are among the fastest and most accurate in their class.

- Open control architecture and multiple protection ratings to support every application

- Three year on-site parts and labor warranty including 5-year preventative maintenance program available

- Multiple CPU capability allows industry exclusive system performance and flexibility

- Advanced features such as force sensing, conveyor tracking, 2D and 3D vision

- Extremely reliable with an outstanding Mean Time Before Failure (MTBF)

- Fast and easy integration with Mitsubishi Electric automation products and extensive connectivity to third party devices

VARIABLE FREQUENCY DRIVES

Since starting inverter production in the early 1980s, we have evolved to offer a comprehensive line of drive products and solutions that deliver exceptional functionality year over year. Our VFDs deliver efficient performance, are highly reliable and virtually maintenance-free.

- Comprehensive lineup of capacities and voltage classes

- Numerous configurations from stand-alone to fully integrated

- Application specific functionality that includes fan and pumps, winders, cranes and conveyors

- Control modes covering the needs from V/F to vector, induction to permanent magnet motors

- Efficient performance, highly reliable and maintenance free
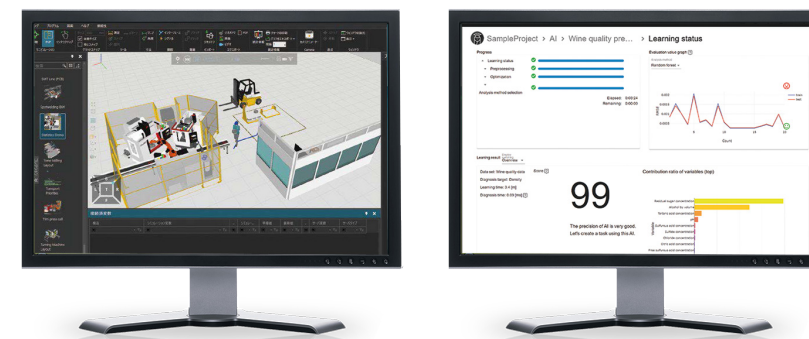
ICONICS SOLUTION SUITE

Turn on operational intelligence with this scalable suite of SCADA solutions. The software enables rapid connectivity of SCADA systems. Once connected, it unifies and increases the value derived from data.

- Deployed globally at 75% of the top 500 companies

- Direct connection to Mitsubishi hardware using FA Connector

- Enhanced visualization using 2D and 3D objects

- Powerful historian data collection for trend analysis and alarming

- Connectivity solutions to nearly all industrial automation components

- Highly scalable solution from small tag counts to millions of tags per application

DIGITAL TRANSFORMATION SOFTWARE & NETWORKING

Our software suite is easy to use and allows users to reduce total cost of ownership. It offers full functionality including programming, simulation, diagnostics, and maintenance tools.

- Solutions for both process and discrete machine control

- Flexibility allowing rapid network and module setup of any automated system

- Central "launch pad" for all project titles

- PLC programming compatibility with the IEC61131-3 standard and PLC Open

- Engineering support and full documentation access

- Advanced Gensis64 SCADA solutions, OPC communication with controllers

- 3D Simulation software MELSOFT GEMINI to accelerate designing and commissioning processes

CC-LINK IE TSN

CC-Link IE TSN combines industry leading gigabit bandwidth with Time-Sensitive Networking (TSN) in order to deliver open networking solutions for smart factory construction.

- Accurate time stamps across all devices provide enhanced troubleshooting

- One network for all controls: safety, motion, field devices, and peer-peer

- Flexible topology allows for Line, Star, or Mixed solutions

- TSN technology allows for deterministic motion control along with IoT traffic on the same wire

- Existing ethernet can co-exist on the same network allowing for easy migration

CC-Link IE TSN

INDUSTRIAL PCs

MELIPC industrial computers offer flexibility, which allows you to combine our eF@ctory software solutions with robust Mitsubishi Electric industrial computers. MELIPC allows for "Edge computing", which enables data collection/analysis in the middle level between the IT system and shop floor

A wide range of products, from a high-end model supporting CC-Link IE Networks capable of high performance processing and high-speed communications, to simple and compact range models, are available. MELIPC corresponds with requirements such as real-time control, preventive maintenance, and quality improvement on the shop floor, contributing to productivity enhancement through utilization of production data.

- MI5000 high end solutions allow for real-time control of equipment

- MI3000 brings visualization solutions in addition to the edge processing in 15" and 21" varieties

- MI2000 offers an affordable edge processing solution

- All solutions utilize embedded Windows which allows custom software applications in addition to the included Mitsubishi software

ENERGY MANAGEMENT PRODUCTS

Today with energy management becoming more critical than ever, we produce a suite of solutions that help you monitor and control your energy usage.

- PLC based energy meter

- Panel power meter with basic to advanced metering with multiple network options

- DIN rail power meter

- Plant layer energy kiosk with WAGES metering

- Easy configuration and web-based energy system

- Building block energy intelligence architecture

- Enterprise layer energy dashboard and reporting

LOW VOLTAGE SWITCHGEAR

We offer a complete range of switchgear products, including everything from air circuit breakers and compact molded case circuit breakers to magnetic contactors and thermal overload relays.

- Compliant with most global standards (IEC, UL, CSA, CCC)

- Full range of circuit protection ranging from fractional amps up to 6300 amps

- Magnetic contactors and (open type) motor starters up to 600 amps

- Manual motor starters up to 32 amps

Visit our website to learn more about how our automation solutions **accelerate digital transformation and achieve energy efficiency.**

SOLUTIONS AND SERVICES

Keeping your business producing is important to Mitsubishi Electric, our factory-trained technicians and engineers are available to assist with a multitude of services and provide expert service on-site at your facility anywhere in the U.S. In addition to offering world-class products and services, we provide the tools and know-how to maximize your uptime while delivering the lowest total cost of ownership.

Service Solutions

- Machine Down
- Start Up
- On-site Technical Support
- On-site Application Engineering
- Retrofits/Upgrades
- Extended Warranties
- Preventive Maintenance
- Robot Diamond Assurance

Project Solutions

- IoT Services
- Machine Upgrade
- Machine Conversion
- Turnkey
- Project Management

ENGINEERED SOLUTIONS

We offer a wide range of engineering services, including consultation, design and manufacturing. Whether you need configured drives, custom panels, configurable standalone robotic cells, or specialized software, we can meet your unique needs.

- Expertise to deliver anything from a simple stand-alone cabinet to a fully integrated turnkey motor control center

- Engineered and manufactured to your precise specification and budget requirements

- Consultation services to help define and interpret project specifications

- Certified to meet a wide array of standards including UL, cUL, CSA and CE

CONTINUED SUPPORT FOR CONTINUED SUCCESS

We're With You All the Way

SUPPORT

We pride ourselves in creating enduring trust-based relationships with our customers. Our goal is to deliver world-class products and tools, with the expertise to help you strengthen your profitability, optimize production uptime, and reduce total cost of ownership.

TRAINING

We want you to get the most out of your Mitsubishi Electric solutions. We offer comprehensive training that helps you maximize your investment, maintain equipment at peak operation levels and resolve many problems independently.

SUPPORT OFFERINGS

- **PRE AND POST-SALES SERVICE AND SUPPORT**
- **FIELD ENGINEERING SUPPORT GROUP FOR SALES TEAMS**
- **SPECIALISTS FOCUSED ON TECHNICAL APPLICATION OF EACH PRODUCT**
- **PROJECT GROUPS SUPPORTING OEM AND END-USER CONVERSIONS**
- **TECHNICAL SUPPORT CENTER WITH ULTRA-QUICK CALL RESPONSE TIME**
- **ON-SITE FIELD SERVICE CALLS**
- **ONLINE MANUALS**
- **EMAIL AND PHONE-BASED TECHNICAL SUPPORT**

TRAINING OPPORTUNITIES

- **IN-HOUSE, ON-SITE, AND ONLINE COURSES**
- **ELEARNING GROUP CLASSES**
- **QUICK-TIP VIDEOS**
- **CUSTOMIZED TRAINING**
- **HANDS-ON LEARNING WITH SIMULATION EQUIPMENT**
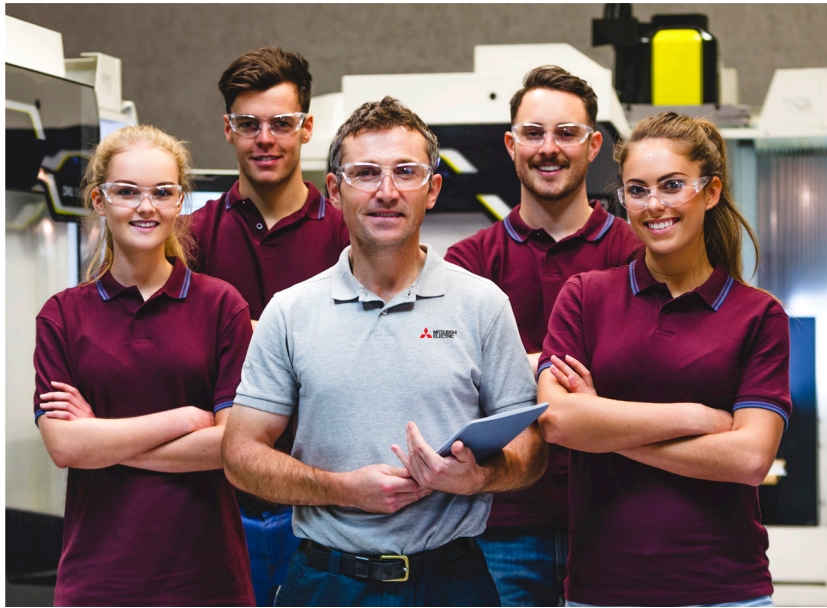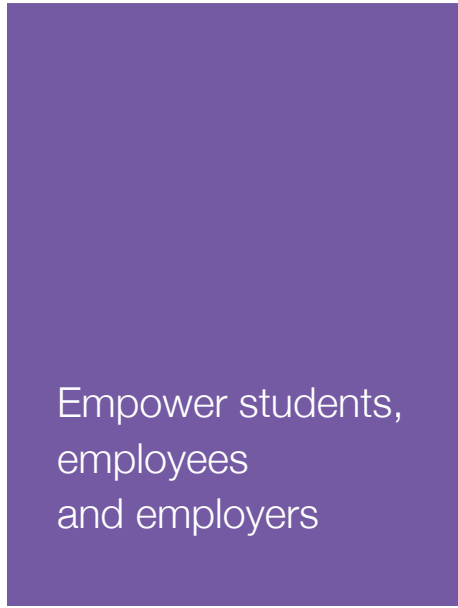- **ONE-ON-ONE CNC TRAINING CLASSES**

MAKING THE WORLD A BETTER PLACE

For Us, "Giving Back" Is Serious Business

WORKFORCE DEVELOPMENT

A big part of what we do is focused on developing manufacturing talent, building educational partnerships and reshaping educational facilities to help create the skilled workforce of tomorrow.

Through Diamondworks!, our workforce development program, we help empower students, employees and employers with cost-effective and tailored learning programs. We provide high schools, technical colleges, trade schools, universities, and industry organizations with educational resources, curriculum support and activities that support STEM learning in manufacturing.

Diamondworks!
Mitsubishi Electric's Workforce Development Program

Empower students, employees and employers

ENVIRONMENTAL SUSTAINABILITY VISION 2050

We care about the environment, and one of our top goals is to make lasting social contributions as a leading green company. We've been recognized by the US Environmental Protection Agency and the United Nations for our sustainable development practices and contributions to the global environment.

Our Environmental Sustainability Vision 2050 initiative positions environmental protection as a corporate priority. It defines our future course through three action guidelines.

1. Apply diverse technologies in wide-ranging business areas to solve environmental issues.

2. Challenge our company and our partners to develop business innovations for future generations.

3. Publicize and share new values and lifestyles.
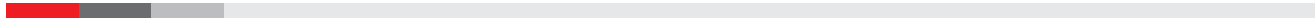
Environmental Sustainability Vision 2 0 5 0

SERVING OUR COMMUNITY

For almost 30 years, the VISION Committee has pursued philanthropic and volunteer opportunities within the local community and beyond. Working closely with the Mitsubishi Electric America Foundation (MEAF), VISION emphasizes the foundation's mission to help youth with disabilities maximize their potential and participation in society.

Embracing the Mitsubishi Electric belief in "Changes for the Better," we are dedicated to connecting the people of Mitsubishi Electric Automation with meaningful opportunities to contribute to a better world.

Americas Offices

US	Canada	Mexico
Mitsubishi Electric Automation, Inc.	Mitsubishi Electric Automation, Inc.	Blvd. Miguel de Cervantes Saavedra 301
500 Corporate Woods Parkway	4299 14th Avenue	Col. Ampliación Granada, Miguel Hidalgo
Vernon Hills, Illinois 60061	Markham, Ontario L3R 0J2	CDMX, 11520, México
847-478-2100	905-754-3805	

Mitsubishi Electric's e-F @ctory concept utilizes both FA and IT technologies, through collaboration with e-F@ctory Alliance Partners, to reduce the total cost of development, production, and maintenance, with the aim of achieving manufacturing that is a "step ahead of the times".