

THE ART OF MANUFACTURING

ものづくり

monozukuri



ISSUE 4

Mitsubishi Electric Factory Automation Customer Magazine



IS SUSTAINABILITY SUSTAINABLE?

Special Report into Sustainable
Development Goals

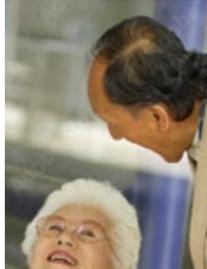
SÃO PAULO'S JAPAN HOUSE

Assessing the credentials of the
Japanese cultural center

PASSION ROAD

Behind the scenes with the
ASSISTA development team

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A shared responsibility

As environmental and social issues such as global warming, marine plastic issues, and human rights issues become more diverse, companies' attitudes toward solving these issues have come to be strongly questioned. All companies are increasingly being required to contribute to environmental and social sustainability Sustainable Development Goals (SDGs).

In its management policy announced in June 2021, Mitsubishi Electric declared that it would "contribute to the realization of sustainability through all its activities". My own department, The Sustainability Planning Division, was established in April 2021 to promote these activities. We will contribute to the SDGs through our core businesses and strive to increase social value even more than before in order to realize our corporate philosophy of "Realizing a Vibrant and Sustainable Society."

In this edition of Monozukuri we examine the various ways in which Mitsubishi Electric, Factory Automation is helping drive the sustainability agenda.



Asako Ueno,
 General Manager,
 Sustainability Planning Division

Is “Sustainability” Sustainable?

Sustainability needs to become sustainable, and that can only happen when people and companies step up and put this at the heart of their agenda. And that is just what Mitsubishi Electric has been quietly doing over many years, from its successful series of environmental activities to its efforts towards equal opportunities, and now as it helps others to do the same as it continues its own “journey” with the establishment of a new Sustainability Division.



The UN sustainable agenda is an independent activity to drive awareness, it does not exclusively endorse any single approach or company but aims to motivate “all” towards a more sustainable existence.

There is currently a lot of hype and discussion going on about SDGs (Sustainable Development Goals) and sustainability as objectives. In fact, the United Nations efforts to raise this agenda item have been phenomenally successful, those “colored wheels” are to be seen gracing the lapels of politicians to business leaders. Please don’t misunderstand, it truly is a great idea to try to make the “sustainability” topic accessible to everyone and to give easy ways to quantify what it means.

More than good intentions

But like so many ideas and good intentions, it needs to move past that stage and really become something that is actively being delivered.

Surprisingly, it is already more than six years since the SDG policy was unanimously endorsed by the UN under the mantle of “Transforming our world: the 2030 Agenda for Sustainable Development” (2015). Two thoughts occur,

- Let’s start delivering on these great initiatives
- There are only nine years left to run until 2030, but why should that be the end?

Where do you start?

A good place to begin is to make sure we all have a common understanding of what sustainability means and the UNs intentions behind this initiative, for example, it is not simply a euphemism for the “green agenda”. Yes, there are many aspects of the sustainability ethos that affect our “biological ecosphere”. And that’s important. But the UNs goals also embrace gender equality and inclusivity for all members of society, regardless of physical or mental capacities. They even extend to fundamental issues, like having enough food to eat and clean water to drink as well as considering key elements such as access to education and technology.

Continued on page 6...

Mitsubishi Electric’s Sustainability team!

When Mitsubishi Electric established its Sustainability Planning Division it did so by putting the full force of both senior management and its employees behind it.

The company’s corporate philosophy, which has been passed down since the company’s foundation, underlies the activities of each and every member of the Mitsubishi Electric Group as they contribute to a better society. If you do not believe that, take a look at some of the corporate slogans over the years, starting with today’s; “Changes for the better”, to “SOCIO-TECH” (Social technology) in the 1980’s and even back to the 1960’s when “With you today and tomorrow” was first used in Japan.



The Mitsubishi Electric Group’s materiality and SDG initiatives

In sustainability management, Mitsubishi Electric has classified issues that must address into two broad categories: “solving social issues through business activities” and “strengthening management foundations to support sustainable growth”. In interviews with employees, business partners, investors, and experts, the Mitsubishi Electric Group worked to identify what is expected of the Group and what is attracting attention, and finally identified five materiality(areas) to focus on.

In “Solving Social Issues through Business,” Mitsubishi Electric will focus on the following SDGs 3, 7, 9, 11, and 13, maximizing the strengths of the group targeting the realization of a sustainable global environment and a safe, secure, and comfortable society. As for the management foundation that supports sustainable growth, the focus will be to contribute to the achievement of the 17 goals of the SDGs by engaging in “respect for everyone,” “sustainable enhancement of corporate governance and compliance,” and “creation of a corporate culture oriented toward sustainability”.

We hope to create a culture where all employees recognize the connection between their work and society, where they can explain in their own words how they are contributing to the SDGs through their work, and where they can think on their own how to better achieve the goals. Making the SDGs a personal concern will help strengthen everyone’s motivation regarding their work, and will ultimately provide a large boost to the Group’s contribution to the SDGs.

Addressing the SDGs with our customers

Many people are probably familiar with the colorful icons that represent the 17 goals of the SDGs. Each of the goals has “targets,” which define specific numbers and how to achieve each goal. There are 169 targets in all. Taking a good look at these targets might provide ideas for new businesses.

An important aspect of the SDGs is that it advocates achieving a balance between social contribution and economic development. By assisting customers who have strong interest in contributing to the SDGs, we can work together to solve social issues and realize sustainable growth at the same time.

Please look forward to the Mitsubishi Electric Group’s continued contribution to the SDGs.

Visit https://www.mitsubishielectric.com/en/our-stories/article/xx_ww_x_sc2109_01.page to learn more



It's an attitude

Looking at the UN SDGs as a whole, they are somehow reminiscent of the Japanese Government's Society 5.0 approach, both are taking a holistic view of the interaction of the environment, society, education and inclusion. And fundamentally, both concepts are human-centric.

In fact, the Japanese Business Association, Keidanren, has released a paper titled "The Evolution of ESG Investment, Realization of Society 5.0, and Achievement of SDGs" which suggests that Society 5.0 is indeed a way to achieve the SDG goals. Furthermore, Professor Koji Nomura from Keio University, in his role as Project Leader, the 21st Century Public Policy Institute has tried to qualify this further in the research paper "Society 5.0 for SDGs - Creating Future Economic Assessments". Therefore, sustainability is not just a concept being pursued by free thinking, environmentalists, but is actually something that can be embraced by both legislative, economic and business communities alike. In short, it can actually make good business sense, as many companies across the world have already found.

Making good business sense

Who doesn't want to save costs and reduce waste, because these all can all directly hit the "bottom line". And, if in addition we can also find new labor resources, make ourselves a more attractive employer what's not to like about that? When discussed in those terms sustainability makes good business sense across the spectrum. So there are many reasons to get started and far less to dawdle in the execution of sustainable activities.

In fact at Mitsubishi Electric it is seen as such an important topic that a dedicated department has been set up to promote sustainability both internally and externally. What might surprise people is that often factory automation, products and know-how, are a key enabler to both Mitsubishi Electric's own activities and those of its customers.

Learn more:

The Evolution of ESG Investment, Realization of Society 5.0, and Achievement of SDGs

www.gpif.go.jp/en/investment/Report_Society_and_SDGs_en.pdf



What is the difference between carbon-neutral, net-zero and climate positive?

www.plana.earth/academy/what-is-difference-between-carbon-neutral-net-zero-climate-positive/

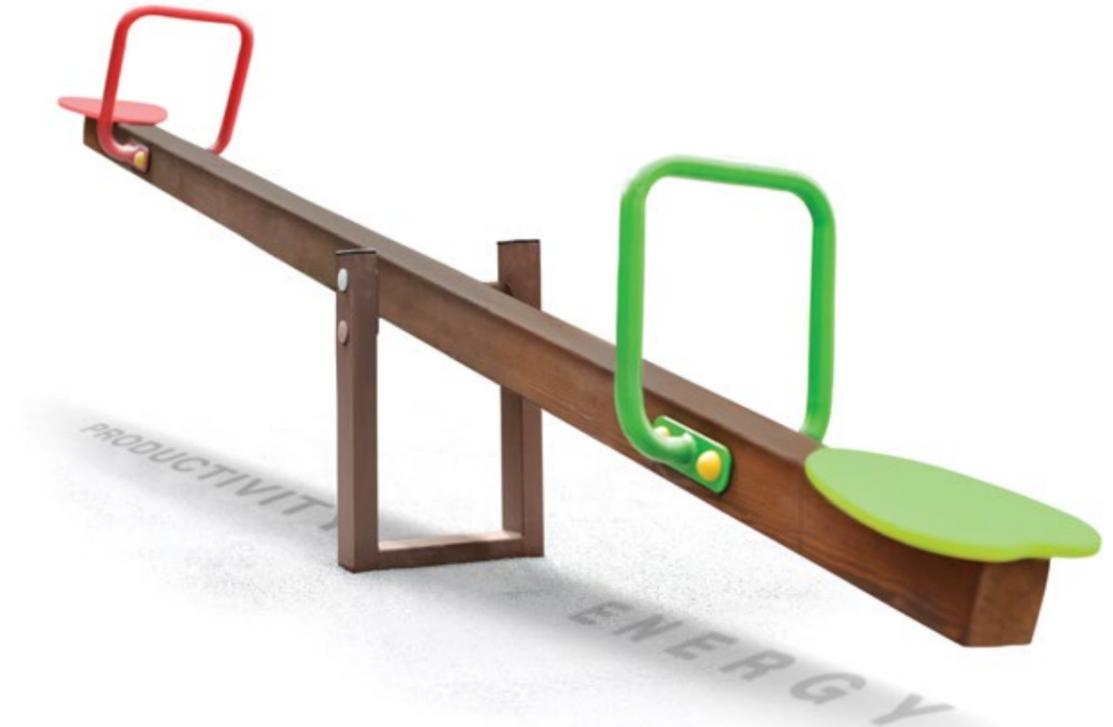


Toward the Realization of Society 5.0 for SDGs

www.keidanren.or.jp/en/speech/2019/0101.html



Enjoy both the ups and the downs



Lift productivity and lower energy waste

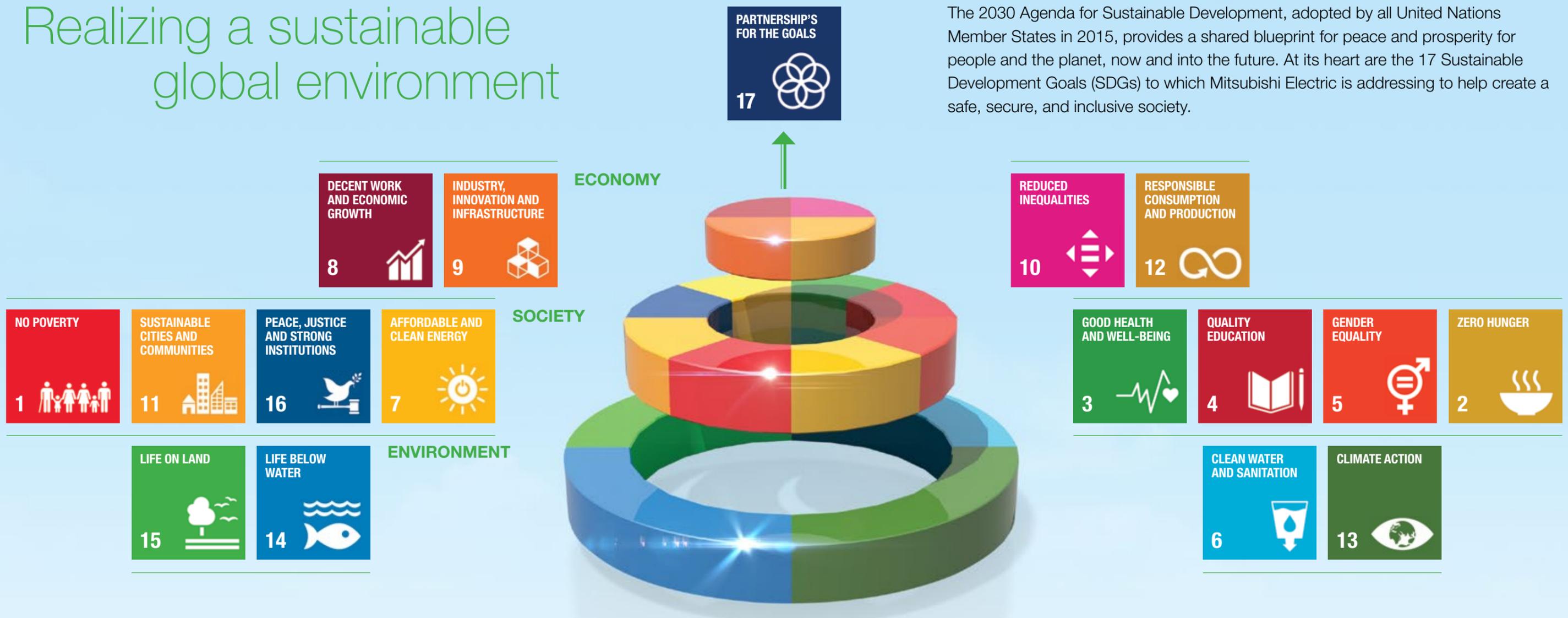
If you can't see it, you can't manage it. Eco-monitor exposes energy consumption as data that can guide your efforts to optimize energy efficiency, and also serves as an early warning system for preventative maintenance. It lets you monitor changes in energy consumption and identify potential problems long before they seriously impact performance. With Mitsubishi Electric's visualization technologies, your productivity can go up as your energy waste goes down.



www.mitsubishielectric.com/fa

Realizing a sustainable global environment

The 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015, provides a shared blueprint for peace and prosperity for people and the planet, now and into the future. At its heart are the 17 Sustainable Development Goals (SDGs) to which Mitsubishi Electric is addressing to help create a safe, secure, and inclusive society.



Highest 'A List' in CDP for climate-change activities

The top rating recognizes the environmental focus of Mitsubishi Electric's commercial activities and goals as well as the company's timely and appropriate information disclosure. Mitsubishi Electric has been named to the A List five different times in the climate-change category.



Learn more



Success at Forbes Japan Women Awards

Atsuko Onishi, FA factory manager, was presented with the Pioneer Award. "There is a lot of group thinking that goes on in product development, and I believe having more female engineers can help create an environment that is more conducive to new ideas." Atsuko Onishi said.



Learn more



GIFT smart water infrastructure project

From supplying citizens to the Gujarat International Finance Tec-City (GIFT) with purified drinking water sourced from the river, to treating everyday wastewater for its environmentally safe return to the river.



Learn more



Creating opportunities for engineers of the future

The joint "Automation Park" initiative, developed by the "Eastern Economic Corridor (EEC)" team and the Thai government, aims to develop future skills and understanding to support and strengthen Thailand's manufacturing sector.



Learn more



Empowering the workforce

Pokayoko or guided operator systems help workers at this automotive OEM increase the quality and efficiency of their production. It does not matter if they are fully able-bodied or physically/mentally challenged workers, everyone benefits.



Learn more



'Closed-loop' plastic recycling

With over 20 years of experience, Mitsubishi Electric has been a pioneer in plastics recycling having developed a "closed loop" recycling plant where up to 80% of the materials from its home appliances can be reclaimed.



Learn more

SDGs in action!

Award winning “national green factory”

Mitsubishi Electric Automation Manufacturing, a factory automation manufacturing plant based in Changshu China, has been certified by the Chinese government as a “national green factory” after extensive evaluation. The plant known as MEAMC, has achieved an overall 10% reduction in power consumption, which at a product level translates to 27% less energy being needed to manufacture each product. This has been achieved through the combined use of Mitsubishi Electric’s e-F@ctory intelligent manufacturing system and the use of E-JIT (environment & energy just in time) to simultaneously optimize environmental, energy and production efficiency.



A foundation that helps disabled youths join the workforce

The Mitsubishi Electric America Foundation (MEAF) was established in 1991 by Mitsubishi Electric Corporation Japan and the Mitsubishi Electric US group companies with an endowment of \$15 million. Its mission is to help disabled youngsters to actively participate in society through maximizing their own potential. Since 2011 the Foundation’s vision has been to empower those affected through increased employment. According to the US CDC one in four Americans have some form of disability which for many prevents them from gaining employment opportunities. Of those that can work, often they are unable to find work, so to help address this issue the Mitsubishi Electric America Foundation launched its national M>PWR initiative in 2011. By investing its philanthropic resources in innovative approaches to prepare youths with disabilities for employment the foundation aims to plant the seeds of change and to identify strategies that are effective at scale in helping disabled youths transition into the competitive workforce.



A building that produces more energy than it consumes

SUSTIE - a building where not only the words “sustainability” and “energy” merge but also the implementation of those disciplines. As part of its efforts to fully understand and resolve issues around meeting its Sustainable Development Goals (SDGs) Mitsubishi Electric has set about creating a test facility which is actually a complete office block! The SUSTIE facility, located in Kamakura Japan, has set its goal to be both a Zero Energy Building (ZEB) and to prioritize the “wellness” of the workers within through improved health and comfort. In-fact through the use of creative design, maximizing natural light, thermal air flows and innovative elevator, lighting and control technology Mitsubishi Electric has created a building which generates more energy than it consumes as well as achieving a five-star rating for occupancy wellness. What is even more remarkable as it is achieved only within the footprint of the building itself.



SDG product contribution

Ingenuity: Material processing

Industries such as automotive and aerospace are seeking to utilize new materials like CFRP (Carbon-fiber-reinforced polymers) to reduce weight without impacting strength as a way to reduce environmental impact. However, new technologies are required to be able to process those materials, at scale. Mitsubishi Electric’s CV Series of Laser processing machines used ingenuity to do just that.



Experience: Inverters

It’s well know that in general using inverters can help motors reduce energy consumption. However, additional functions such as multi-pump control, power regeneration or harmonic management are a few of the many techniques that enable users to achieve their sustainability goals when using Mitsubishi Electric s inverters such as FR-F and FR-E800.



Smart design: Human sensitivity

Poorly lit factories place high demands on bright LCD displays, but if those displays are always on several problems can occur; screen burn in (making the screen unreadable), early screen failure and maintenance due to continuous use, unnecessary energy consumption. Taken together, that is not so sustainability. One smart countermeasure on some Mitsubishi Electric HMI’s is a “human sensor”, only turning on the screen when it is needed, i.e. a person is stood in front of it.



Enabling: Guided Operation

All of us need a helping hand at sometime. Digitalized Poka Yoke allows operators to be guided to the next correct actions. But for some users who may have learning disabilities, dyslexia or other challenges, being guided by pictures and video’s can make some jobs more accessible and therefore more successful and rewarding. Mitsubishi Electric’s Poka Yoke solutions can help in surprising ways.



Chris Hazlewood, Monozukuri editor in chief



Mitsubishi Electric’s deserved reputation for innovative excellence is very much reflected in the work our Stainability Promotion Department is doing to deliver on the UN’s Sustainable Development Goals. All the initiatives Mitsubishi Electric have developed are about translating worthy ideals and intentions into concrete action that stands to make a significant and lasting difference to all our lives. There could be no more important work than this, and I am immensely proud to be involved in it. ■

São Paulo's Japan House wins highest level environmental award

In April 2020, Mitsubishi Electric helped São Paulo's Japanese cultural center Japan House to its prestigious LEED Platinum building certification. Used to assess buildings and cities in more than 160 countries, LEED is also used by Green Business Certification Inc. to encourage developers to reduce the environmental burden of their projects by cutting the use of construction materials and energy, and employing reusable energy sources.



LEED (Leadership in Energy and Environmental Design) operates a rating system to grade a building or city on its environmental impact. It is designed for all building types and all building phases including new construction, interior fit outs, operations and maintenance, core and shell.

Such 'green building' initiatives are a reflection of the growing reality that sustainability is now, quite rightly, one of the world's most pressing issues. It is now no longer viable to work on the assumption that a property's value should be limited to such factors as functionality, amenities and design. In today's world, energy efficiency and impact on the surrounding environment have gained at least equal importance in determining worth of properties. Ultimately, these are choices which will also make the buildings more comfortable for both the people who work in them and those who visit them. And in all of this, LEED has been one of the major drivers.





Presenting the face of modern Japanese culture

Built in 2017, Japan House was launched by the Japanese government to promote and export the traditions and innovations that have come to define contemporary Japanese culture, reaching out to cities as diverse as São Paulo, Los Angeles and London. It has been a global launchpad across a wide range of fields including art and design, craft, architecture, food and entertainment, with its certification being recognized as a symbol of Japan's commitment to sustainability achievement and leadership.

Japan House São Paulo stands along Paulista Avenue, a major city thoroughfare. This is a fully renovated 2,500-square-meter building featuring a striking and eye-catching wood lattice façade constructed with Japanese cypress which is more than 70 years old. It was designed by renowned architect Kengo Kuma and the building's interior space has been curated to enable visitors to fully immerse themselves in disparate aspects of the contemporary Japanese lifestyle. As an indicator of its success as a cultural center, Japan House São Paulo has already received more than 2 million visitors from around the globe.

Achieving LEED's highest award – Platinum level – was an exacting process and far from straightforward. Because to be successful, Japan House needed to score 80 out of a possible 100 points across criteria in seven specific categories. These were Sustainable Sites, Water Efficiency, Energy & Atmosphere, Materials & Resources, Indoor Environmental Quality, Innovation, and Location & Transportation.

The four possible levels of LEED Certification are: Certified (40-49 points), Silver (50-59 points), Gold (60-79 points), and Platinum (80+ points). Japan House São Paulo amassed a score of 80 points in the LEED for Existing Buildings: Operations and Maintenance – enabling it to achieve Platinum certification.

BMS: a solution for sustainability success

One extremely valuable tool to help Japan House São Paulo earn its LEED Platinum status was Mitsubishi Electric's custom engineered Building Management System, incorporating its own MC Works64 SCADA software.

A key feature of the the Building Management System (BMS) is its facility to give direct control over buildings, wherever these are located in the world. Through one single interface, building owners and facilities managers have the ability to monitor entire control systems – including those from other manufacturers. Taming complexity by optimizing the management of many diverse systems, from air conditioning, chillers, ventilation, lighting, elevators, security and fire alarms, the Mitsubishi Electric BMS delivers increased energy savings and also contributes to the liveability and comfort of users.

Simply explained, the BMS lets building management teams collate information about the amount of energy (including electricity and gas) and water that has been used, not only by the building as a whole but also by each facility and by each piece of equipment. Once all of this data has been gathered, it is then analyzed for results, which are presented in a user-friendly, visually intuitive format. This provides a very clear and easy way to pinpoint particular areas where it will be possible to reduce energy.

With heating, ventilation and air conditioning (HVAC) contributing on average, close to 40% of a building's energy consumption, a high quality solution is bound to make a significant addition to improving a building's energy efficiency.

An effective BMS is an absolutely essential criterion for any building's LEED certification process. Mitsubishi Electric's BMS helped Japan House São Paulo also perform very well in two further areas; Energy & Atmosphere and Environmental Quality.

The Mitsubishi Electric BMS solution features a technology called EcoMonitor which not only deploys energy measuring units and monitoring inverters for efficient energy use management but also provides preventive maintenance for building equipment, supported by trend reports and analysis functions to help owners form insights on the dynamics, efficiency, and conditions of the building's operations.

A particularly outstanding contribution to the overall Japan House São Paulo point score was Mitsubishi Electric's Air Control System. With heating, ventilation and air conditioning (HVAC) contributing on average, close to 40% of a building's energy consumption, a high quality solution is bound to make a significant addition to improving a building's energy efficiency.

Expertise to green more of the world's buildings

The word 'sustainability' has been present in our combined vocabulary for many years now, and not always with much meaning behind it. Not too many years ago, it was still being seen as a vacuous marketing term that was thrown about just to make a project sound viable and compliant. But such is certainly not the case any more. Today it is a demand that must be met. It is widely recognized in both the public and the private sector that buildings which can prove they represent a firm commitment to protection of the environment can and do produce demonstrable results.

How a building's environment is controlled can impact our entire planet. Green control systems lead to greener buildings because users can reduce their energy consumption and control the extent to which they are using valuable resources. Mitsubishi Electric aims to become a world-leading green company, using its technologies to create a society that is more sustainable than ever.

Our contribution to the successful accreditation of Japan House São Paulo highlights, among other things, the sustainable design expertise that is being continuously developed. Through this and other projects, Mitsubishi Electric has amassed a substantial base of knowledge, experience and expertise to help other clients attain LEED certification. In the process, ensuring that many more green buildings will appear soon throughout the world's cities. ■



Precision control of heating, ventilation and air-conditioning.



Single-interface control of the entire building through BMS.



Showcasing the very finest of traditional Japanese crafts and culture.



The eye-catching architectural beauty of Japan House.

News from around the world

MALAYSIA

New FA Center in Malaysia
Service center

Opened in March 2021, the new Malaysia Factory Automation (FA) Center is now firmly established as a key facility to strengthen servicing and support for Mitsubishi Electric factory automation products in Malaysia.

The new Center employs 21 engineers who provide technical consultation, system proposals and product training. They also offer repairs for PLCs, inverters, servos, graphic operation terminals and robots, with service available in English, Malay and Japanese.



GLOBAL

Ensuring safety and security for customers

Cyber-security

While it is exciting to see manufacturing making increased use of IoT technologies, there will always be associated cybersecurity risks. As a provider of products and services, it is the duty of Mitsubishi Electric to do everything necessary to ensure it is never the cause of any negative impact on customers.

To maintain and improve the security of our FA products, we have issued our FA product security policy and guidelines in full. These explain everything we are doing to comply with domestic and foreign standards and specifications.



USA

ICONICS Connect 2021 meets with success

Event

The ICONICS Connect 2021 event, organized to connect people with the latest digital transformation technologies, was presented in-person and streamed live from ICONICS' base in Foxborough Massachusetts. Speakers from around the world presented keynotes and breakout sessions on emerging automation technologies to help businesses stay up to date and profitable.

With more than 375,000 installations in more than 100 countries, ICONICS is a leader in automation software and well positioned to be Mitsubishi Electric's "software center of excellence."



TURKEY

Supporting education

Local support

Mr Tolga Bizel, a senior manager at Mitsubishi Electric in Turkey, has a passion for automation which recently shared with groups of local school students. His a keen appreciation of the importance and value of enabling young people to grow their natural curiosity and develop their interest in engineering was in full view as he demonstrated how collaborative robots can work along side people.

THAILAND

Accelerating smart manufacturing in Thailand

National initiative

Recently Mr. Supattanapong Panmeechaow, Deputy Prime Minister and Minister of Energy in Thailand visited Thailand's EEC Automation Park to discuss how industrial automation and robotics are able to help accelerate Thailand's manufacturing sector.

Mitsubishi Electric, through our team in Thailand, are honored to have attended the event and privileged to have been able to support Thailand's EEC (Eastern Economic Corridor) and their EEC AutomationPark initiative to develop and train human resources to support the development of the Thai manufacturing industry.

Learn more about the event at the EEC website (in Thai only)

<https://okt.to/kSmhMI>



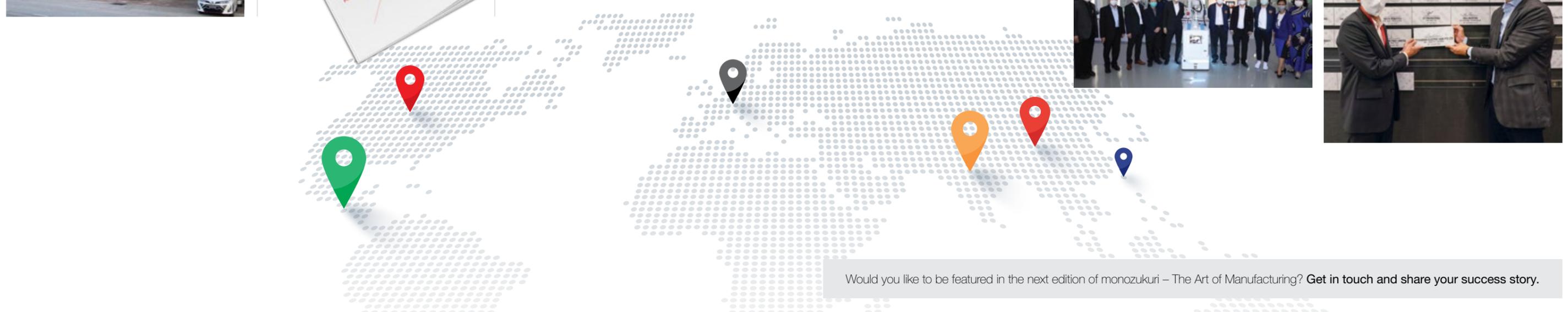
SINGAPORE

Mitsubishi Electric joins Singapore's ARTC

National initiative

Mitsubishi Electric Asia, a subsidiary of Mitsubishi Electric Corporation, a recognised world leader in manufacturing and sales of electric and electronic equipment, announced its participation as a Tier 2 member of the Advanced Remanufacturing and Technology Centre (ARTC), a unit of Singapore's Agency for Science, Technology and Research (A*STAR).

As a Tier 2 member of ARTC, Mitsubishi Electric Asia's Factory Automation & Industrial Division will share its know-how regarding e-F@ctory, an integrated factory automation solution that offers value added IoT-based services and solutions for manufacturing and process industry sectors to achieve high productivity and quality improvements.



Would you like to be featured in the next edition of monozukuri – The Art of Manufacturing? **Get in touch and share your success story.**

case study

Power Shift



When a Malaysian manufacturing company selected Mitsubishi Electric's EcoWebServer III to manage and visualize its electricity consumption, it succeeded in cutting its electricity costs by a full 15%.

Aida Engineering Malaysia needed to measure the electricity consumption every 30 minutes for 24 hours/ seven days a week.

Aida Engineering Malaysia, established in 1995 as a subsidiary of Japan-based Aida Engineering Co Ltd, plays an important role as one of Aida Engineering's five manufacturing bases situated outside Japan. The company's core activity is manufacturing 80-300 tonne press machines for markets right around the world, with a total production capacity of more than 500 units annually.

An initial challenge was identified when a local power company approached Aida Engineering Malaysia and pointed out that its six-month energy consumption was in excess of 3 million kWh in total. Which meant that it was obliged to hire a dedicated energy manager to assume responsibility for checking monthly electricity consumption and providing a report each half-year

.The company's first response had been to find out ways to visualize its power consumption. If it could identify peaks, it could also seek to cut its excessive electricity bills. Malaysia has two separate electricity rates, depending on the time of day that power is consumed. So if the peak in the factory's power consumption coincides with the time that the higher price rate prevails, it would make sense to shift that demand to a time of day when electricity costs are lower. This so-called 'peak shift' would then help to lower the electricity bills overall.

With all of this in mind, energy managers at Aida Engineering Malaysia began to make monthly tours of the factory, to check the power meters and gather data about power consumption. It was soon established however, that this particular method of recording data was of little use in identifying the peak, as they could only really see monthly consumption.

It became clear that in order to obtain a clearer understanding of the peak levels, the company would need to engage in continual measurement of electricity consumption, perhaps every 30 minutes – 24 hours a day, 7 days a week. A more effective visualization method was required, so the company turned to Mitsubishi Electric, which proposed the adoption of the energy-saving data collection server 'EcoWebServer III'.



Payback period shorter than a year

As it collects power consumption data from facilities and equipment via LAN, EcoWebServer III can form part of a demand management system – enabling remote monitoring from the operator's PC and sending out email alerts in the event of any rapid increase in consumption. A key feature of the solution is its ability to provide constant measurement of real time power consumption, visualizing collected data as a graph so that the company can compare this with its own target figures. These graphs provide easy understanding not only of peak times, but also of various improvement measures and how effective they have been and are continuing to be.

Along with the introduction of the EcoWebServer III, AIDA Engineering Malaysia installed Mitsubishi Electric's 'EcoMonitor Series' allowing it to measure the energy use of equipment and individual production machines. Comparing and analyzing each of these data sets would further assist in identifying and promoting peak-shift initiatives.

Commenting the choice of EcoWebServer III and its benefits, Hideki Mawatari, Maintenance Manager of Aida Engineering Malaysia said:

"The EcoWebServer III was very easy to install. We had considered other choices, but what attracted us about Mitsubishi Electric's solution was the fact that the EcoWebServer III can be easily connected with existing equipment. It is also scalable so we can add up as we go along."

"By shifting the peak demand to the time of day when the energy price was low, we were able to reduce our six-monthly electricity bills by 15%. The effect has been immediate, and immense. We have been able to collect all the data we needed, and furthermore, the payback period has been shorter than one year."

Promoting energy-saving awareness

Having succeeded in shifting the peak energy demand, Aida Engineering Malaysia's next challenge is to reduce the total amount of that it consumes while making sure that the quality of its output remains constant. For example, one peak-shift initiative has been to shift operation of high-consumption machines to evening times, when the demand for air-conditioning would be significantly lower. But still, the challenge remains to maintain the balance between energy savings and product quality. Turning off machinery might deliver energy savings, but halting production also reduces income. In the same vein, air conditioning is installed to maintain quality of products, which means a long downtime could negatively impact production quality.

Expanding on this point, Mitsuru Hirasawa, managing Director of Aida Engineering Malaysia said:

"Our focus now is to maintain product quality and reduce energy consumption at the same time. We will increase the number of items we collect data from and will utilize EcoWebServer III to determine the energy per unit produced (EPU). We have also established plans to introduce preventive maintenance and integrated management of energy and production data which we will eventually make accessible from the factory floor."

EcoWebServer III can be connected to PLCs to collect production data in real time, making it easier to visualize power consumption on a per unit basis. Making such data accessible on the factory floor will also encourage factory workers to promote energy-saving initiatives. As a result, power consumption should start decreasing on a per-unit basis, eventually leading to appreciable savings in total energy demand. ■



EcoWebServer III was introduced to visualize electricity consumption in the factories.



Mitsuru Hirasawa, Managing Director of AIDA ENGINEERING (M) SDN. BHD

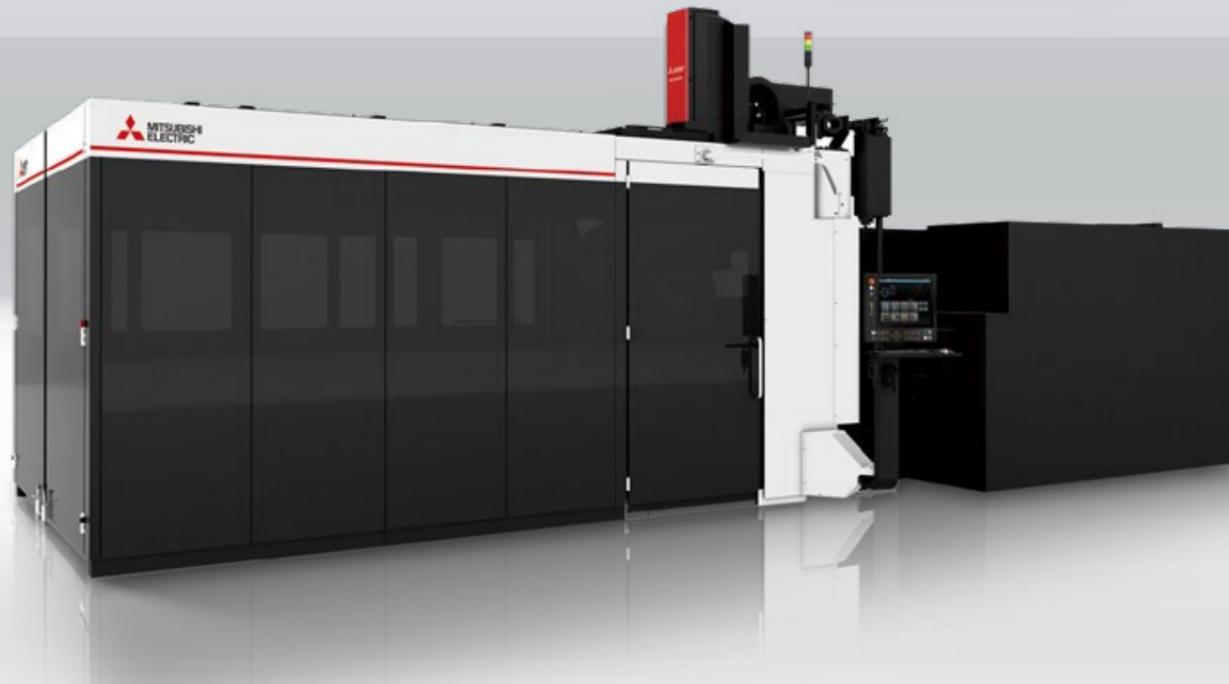
“By shifting the peak demand to the time of day when the energy price is low, we were able to reduce our electricity bills by 15%.”

Hideki Mawatari, Maintenance Manager of Aida Engineering Malaysia

AIDA ENGINEERING (M) SDN. BHD.

Aida Engineering Malaysia SDN. BHD., a Malaysian subsidiary of Japan-based Aida Engineering Co., Ltd., develops, manufactures and sells press machines ranging from 80 to 300 tons.

www.aida.com.sg/aida-engineering-malaysia



Laser Machines CV series

Underlying everything we do as a company is a quest to help make our society more sustainable. A striking example of this is Mitsubishi Electric's new CV laser cutting series – which is now enabling the automobile industry to take significant steps towards greater sustainability.

Increasing calls for reductions in CO₂ emissions, improvements in fuel efficiency, and the use of more lightweight materials has long driven the increasing demand for CFRP (Carbon Fibre Reinforced Plastics). This is a light, strong but relatively new material whose processing using existing technology still involved high operating costs, low productivity and issues around waste treatment. A new CFRP processing method had long been seen as necessary and this is precisely what Mitsubishi Electric's new CV laser cutting range – in a world first – has been able to deliver.

Mitsubishi Electric's CV Series overcomes all of these challenges through the development of innovative technology. A unique processing head and CO₂ laser oscillators (which integrate oscillator and amplifier into the same enclosure) deliver higher productivity and processing quality that is far superior to anything that has been possible previously.

Achieving the steep pulse waveforms and the high beam power required for CFRP cutting has achieved exceptional, class-leading processing speeds which are six times faster than existing processing methods.

It is also possible to perform remote diagnosis of customers' laser processing machines directly from terminals installed in Mitsubishi Electric's service center. Thus, even if a processing machine fails, prompt response is guaranteed by means of remote operation. Preventive maintenance information, software version updates and the processing of condition changes are also provided.

Enabling the mass production of CFRP has helped reduce the environmental burden through reduced waste, contributing to the realization of a more sustainable society in the process.



Scan or click here to learn more.

M800V / M80V Series CNC Computerized Numerical Controllers

Seven years on and the M800/M80 Series ushers in a variety of new innovative control functions help you to machine workpieces with high speed and accuracy. Industry-first built-in wireless LAN, which allows an operator to manage machining at a distance, high-definition 3D machining simulation to minimize trial cutting, and advanced user-friendly and intuitive operation help to streamline overall manufacturing processes and unlock 'time' that has so far gone unnoticed.

This new CNC optimizes manufacturing with a smarter approach to different workpieces and to time.

- New control functions**
 OMR-CC (Optimum machine response-contour control).
 Cutting load control.
 Tool cutting point control.
- Built-in wireless LAN**
 Industry-first wireless LAN functionality has been implemented. In addition, this allows machine tools to be remotely operated and monitored via connected tablet devices, resulting in improved work efficiency and smarter manufacturing.
- Two-dimensional barcode engraving cycle**
 The two-dimensional barcode engraved directly on the workpiece enables automatic selection of programs and tools as well as easy traceability.
- Intuitive operation**
 Multi-touch operation.
 Parameter adjustment screen for high-accuracy control.
- Support for sustainability**
 Contributes to sustainability by reducing waste caused by trial and defective machining.



Scan or click here to learn more.

Mitsubishi Electric Renews SCADA Lineup Complete SCADA solutions

Supporting the increasing focus on digital manufacturing and IoT, Mitsubishi Electric has renewed its SCADA lineup, now offering two types of software for system monitoring and process control under the series name "GENESIS64", replacing the existing "MC Works64" SCADA software. The new lineup will meet the diversifying IoT needs, covering a wide variety of purposes from small production line monitoring and control to multi-site monitoring and business intelligence (BI) of plant-wide systems, process automation as well as utility and building automation. The "GENESIS64 Basic SCADA" is an entry-level software with essential functions for small production lines, and the "GENESIS64 Advanced Application Server" is a full SCADA suite for large-scale monitoring of factories, buildings and utilities.

GENESIS64 Basic SCADA

The "GENESIS64 Basic SCADA" facilitates the visualization of data in small applications but can also be scaled up to medium applications with optional add-ons depending on requirements of the customer.

GENESIS64 Advanced Application Server

For customers with bigger system needs, "GENESIS64 Advanced Application Server" will help to create a serverless system using cloud computing, which will facilitate the construction of redundant, multi-location or other highly secure, large-scale systems. This "top end" software can also connect to wearable devices such as smart glasses and smart watches, supporting customers interested in introducing remote monitoring or giving work instructions remotely. Furthermore, the software can be operated by voice commands with the use of AI smart assistant speakers, which helps operators avoid touching the monitoring screen - another function that supports the 'new normal' in the manufacturing world.



Scan or click here to learn more.

Passion Road.

How Mitsubishi Electric successfully adapted their new range collaborative robots to the challenges of the Asian market

When research suggested to us that collaborative robots, originally designed for manufacturers in Asia and Japan, had been more of a hit in the mature European market, but had struggled to gain adoption in the Asia/Japan market, it was time to address some key issues that had been thrown up. The study showed clear differences between the markets, as outlined in the table below.



	Europe	Asia including Japan
Differences in human cost	Higher employment costs make management reluctant to hire more people and more willing to introduce collaborative robots.	Lower employment costs make management reluctant to utilize collaborative robots over people.
Differences in robotics know-how	Long-term interest in robotics has helped to embed robotics utilization know-how in many European companies.	Robotics utilization in Japan has been limited to large enterprises with sufficient engineering expertise. Robotics has been difficult to establish in SMEs with comparatively few specialist robotics engineers.
Differences in thinking	While collaborative robots have not been cheap they were introduced at a range of manufacturing sites for customers who would otherwise lack full-time engineering expertise.	In mid-sized companies that lacked robot engineers, barriers such as system design and start-up and costs became a bottleneck, making introduction limited.

"We concluded that with different market backgrounds and conditions, we simply won't qualify for the European method," said Keiichi Sato, Robot Technical Center, Robot Manufacturing Dept., Nagoya Works, Mitsubishi Electric.

We also had to address these further challenges emerging from the survey:

- How can robots replace people in the Asia region, where labor costs are relatively low?
- How can robots be introduced to Japanese SMEs, where there are relatively few specialized robotics engineers?
- How can introduction costs be kept low for SMEs vulnerable to labor shortages?
- How can we use the reliability of our collaborative robots to differentiate ourselves in Europe?



“

"We concluded that with different market backgrounds and conditions, we simply wouldn't qualify for the European method."

”

Keiichi Sato, Robot Technical Center, Robot Manufacturing Dept., Nagoya Works, Mitsubishi Electric

Collaborative robots are not just an extension of industrial robots

At our Policy Meeting of June 2017, it was broadly agreed that collaborative robots were actually much more than just an extension of industrial robots. At this point, we decided to embark on development of a prototype for the International Robotics Exhibition in Tokyo – happening in just three months' time.

Safety at all costs

Safety is a huge consideration – and one that makes collaborative robots significantly different from conventional industrial robots. With robots operating within the operating sphere of workers, we considered it essential that we develop a mechanism based around international standard ISO/TS15066, ensuring conflict with people could never occur. Key to this challenge was to develop a sound understanding of potential risks between 'moving people' and 'robotics'.

User-friendly programming tools

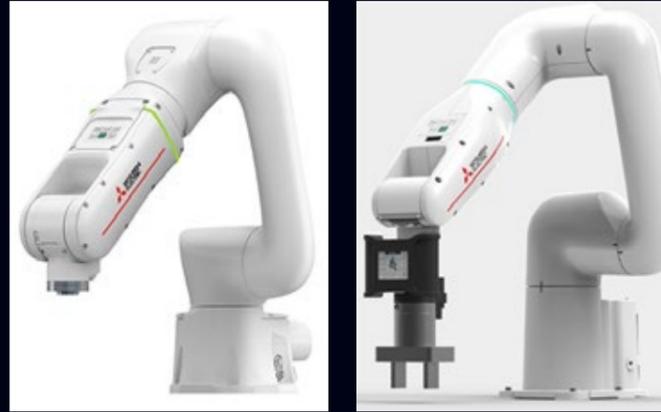
We also saw it as essential that anyone should find it easy to learn to control the robots – via programming tools which are conscious of consumer design and which can be accessed via touchscreen or operated via voice-recognition.

Teaching attachment

Much thought was needed on the area of teaching. Although this could be offered via button operation at a terminal, it could never be as satisfactory as giving people the ability to move the arm of the robot by hand. Our eventual answer was to develop a removable 'teaching attachment' sandwiched between the robot arm and the hand – which would then have both functions.

International Robotics Exhibition, November 2017

"As a developer, I want to listen to customers' voices and directly feel their evaluation of the products we made." said Daisuke Terada, MELFA ASSIST Team Leader. However, at the International Robotics Exhibition, our prototype received a mixed response. While the programming tool RT Visual Box was very well received, the same could not be said of



MELFA ASSISTA (left) and prototypes with teaching attachment in 2017 (right).

teaching attachment. It was pointed out by many interacting with the robot that it stopped the folding arms moving freely and also that when the arms moved up, the screen could become difficult to read. We therefore made the decision to discontinue the attachment's development. And so, at last, in October 2018, specifications of the co-operative robots were finalized.

Overcoming a weight issue

The engineering sample for was completed in June 2019. Objective evaluations by distributors and users made one point very clear to us, however. Everyone said it felt heavy when they moved the robot arm during direct teaching. Riku Sugawara, from Nagoya Works Robot Section undertook further face-to-face research and commented "We had to understand the situation from the customer's point of view. And you cannot do this without asking people."

"The problem was the theoretical value calculated on the desk did not match the measured value of the robot." said Rintaro Haraguchi, of the Robot System Group. The reason for this became obvious – we had not made enough use of torque sensors which could accurately calculate the force needed to assist without being affected by friction. Eventually, the problem of weight was solved by calculating the load from the current value of the motor.

MELFA ASSISTA: The official launch

In May 2020, MELFA ASSISTA was officially launched in Japan, against a strong prevailing headwind which was at that time affecting all industries, not just the manufacturing industry – the Covid-19 pandemic disaster. Even with all of the issues surrounding that, we had made a very good beginning indeed.



"As a developer, I want to listen to customers' voices and directly feel their evaluation of the products we made."

*Daisuke Terada,
Team Leader of TEAM MELFA ASSISTA.*



"The problem was the theoretical value calculated on the desk did not match the measured value of the robot."

*Rintaro Haraguchi,
Engineer, Robot System Group.*



"We had to understand the situation from the customer's point of view. And you cannot do this without asking people."

*Riku Sugawara,
Sales Department, Robot Section, Nagoya Works.*

Since the time of launch, the easy-to-use functions of MELFA ASSISTA have begun to attract many companies in the Japanese small and medium-sized manufacturing industry – enabling them to overcome many of the market issues mentioned at the outset.

The passionate developers of Team MELFA ASSISTA continue to drive towards an ever-developing future of human-robot collaboration. ■



MELFA ASSISTA "Direct Teaching" instructions can be easily entered using the key pad at the top of the arm.

Taste_{of} Japan

The all-encompassing Mitsubishi Electric family includes those who know quite a bit about Japan, and those whose knowledge is possibly limited to geisha, samurai and Mt Fuji. So here, for the education and enjoyment of all, are some examples of the culture and art of Japan.



Omotenashi: Elevator for disabled

Japan's unique and world-famous spirit of hospitality, summed up in the word 'omotenashi' – translates as 'the art of hospitality' and refers to a selfless spirit of service. The spirit of omotenashi runs through Japanese society and Mitsubishi Electric is no exception. Its new authentication device for elevators has been conceived to provide maximum levels of service to people who require a hands-free capability.

This technology provides unlocking authentication for anyone approaching the elevator door and carrying a special tag. As soon as they arrive, a transmitting antenna sends to a receiver which then activates the elevator with no need for hand contact.



The gentle power of paper

The term 'washi' describes traditional Japanese paper, processed by hand and used in a vast variety of ways. Mitsubishi Electric's heat exchange technology for refreshing the air in a room without affecting the inside temperature or humidity also owes its roots to washi.

The Mitsubishi Electric Lossnay Energy Recovery Ventilator allows transmission of temperature and humidity while stopping the passage of air itself. As exiting room air and the fresh outside air pass through the Lossnay Core, they are separated by partition plates of specially processed paper, resulting in fresh air that is still cool and dry. This prevents energy loss during ventilation, while helping to reduce electricity usage.



Regenerative Braking Technology

Japan was the first country to build dedicated train lines for high speed travel; its renowned high speed network of 'bullet' trains linking all of Japan's major cities is referred to as Shinkansen. Travelling at speeds close to 300 kmh, typical trains, made of 16 cars and with a combined weight of 700 metric tonnes, produce vast amounts of kinetic energy. This is energy which used to be wasted but which is now saved – through a technology called 'regenerative braking.'

In simple terms when the train drives forward it is motor driven but when it brakes, it effectively becomes a dynamo/generator, converting the rotary motion at the wheels into electrical energy which is then fed back on the power lines for use by subsequent trains as they drive forward.

While regenerative braking is not a new technology, using it on high speed trains like the Shinkansen was initially thought to be too difficult. But in 1992, the 200 series became the first Shinkansen to successfully utilize AC regenerative braking. The energy that this technology saves helps to reduce the railway's environmental footprint. Meaning in effect, that every time the train brakes, its technology is helping to protect the environment.

As the technology has become more mainstream it is being applied in many different applications such as elevators/lifts and even some hybrid car owners may even recognize the process as well!

Did you know?

Manufacturing with extreme precision, speed, design, and high definition. The evolution of the Manufacturing IT society cannot be talked about without processing machines. Let's look at why:

Ultra-successful

if Design Award

EDM (Electric Discharge Machines) that erode materials with cutting wire not much thicker than a human hair, play an active role in the processing of molds and sheet metal for automobiles, mobile phones and so on. Your favorite beautiful and cool smartphone with its gentle curves and sharp appearance wouldn't have been possible without the evolution of this machine.



Ultra-precision

50 nanometers

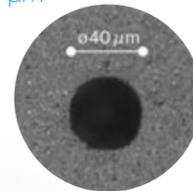


An error of 50 nanometers

The Subaru Telescope in Hawaii is one of the world's largest optical infrared telescopes with a diameter of 8.2 meters. Its "Schmidt lens" was ground using Mitsubishi Electric CNC to create the ultimate ultra-high precision machine tool with an error of nanometers (1 billionth of a meter).

Ultra-fine

40 μm



Less than 40μm hole

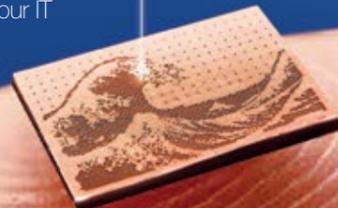
The demand for high-density printed circuit boards (PCBs) continues to grow due to advances in automobile IT, mobile devices and 5G communication. Mitsubishi Electric's original optical technology allows the laser to drill holes less than 40μm in diameter to do this. Can you imagine 40μm? For comparison a single red blood cell is estimated to be between 5-10μm in size.

Ultra-high speed

6,000 holes per second

Of course, it's not just "fine". A miniature of the world famous Hokusai painting was completed in just 0.6 seconds with 4,091 holes. Wow. The same ultra-precision, ultra-high-speed technology is used in the production of many of the miniaturized electronics devices we rely on in our IT enabled society.

6000 holes per sec.



For full details visit www.mitsubishielectric.com

Smart factories bring big advantages in this highly competitive industry



“ I believe customers will turn to Taiyo Nippon Sanso for an innovative approach to do something new. ”

Akiyuki Noguch (left) & Kenichiro Inaba (right) manager of the Electronics Supply Equipment Engineering Department at Taiyo Nippon Sanso.

Taiyo Nippon Sanso chose GENESIS64™ SCADA software as the basis for its monitoring solution

Let me tell you my story: Taiyo Nippon Sanso Co., Ltd., an industrial gas manufacturer, offers a solution called "Intelligent Gas Supplying System" (IGSS) to enhance gas supply operations at our customers' plants. The system utilizes digital technology to automatically transport gas containers and improve the efficiency of facility inspections. IGSS also helps to make these operations visible. As our customers' factories become larger and the data managed becomes more diverse, We chose Mitsubishi Electric's GENESIS64 SCADA software as the basis for the upgrade of its monitoring solution. Thank you, Mitsubishi Electric.

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www.tn-sanso.co.jp

Global Partner. Local Friend.



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