History of Automation and Asian Market of Today

Factory Automation (FA) Growing Together with People’s Lives

Evolution of Automation at Production Sites

By supporting factories, Omron has continued to contribute to the daily development of a more fulfilling and convenient society.

As the focus of production activities changed from people to machines, we have continued to advance technological innovation in the field of FA.

In the mid-20th century, automation was advancing in strides in developing nations. Omron declared 1955 as “Year One of Automation.” It was one of the first companies in Japan to begin developing and promoting the spread of relays, timers, and switches, all items that are indispensable in automating the movement of machines. Through those efforts, Omron helped drive the shift from people to machines as agents of production, thereby reducing human error brought about by extended work periods and subsequently improving production efficiency and making workplaces safer for people.

At the same time, we developed the base for mono zukuri (manufacturing) technology, which encompasses all aspects of product creation, including production and other processes, management systems, and quality management techniques. Omron created the world’s first contactless switch, which contributed to the development of machines that could conduct mass production without wear or malfunction. The realization of mass production resulted in an ample supply of products being put on the market, helping consumers acquire the items they need with greater ease.

In 1972, Omron successfully developed its Sysmac programmable controller and continued to lead the advance of automation by proposing new value using its revolutionary technologies, such as its ultra-high-speed fuzzy logic controller and visual sensors that can play the part of human eyes, both world firsts. The advance of automation drove growth in the economy, which in turn made people’s lives more comfortable and convenient. We believe that such automation advancements made substantial contributions to Japan’s period of strong economic growth.

Development of Safer Workplaces

The advance of automation led to a decline in the need for humans to conduct dangerous tasks. However, as machines became more powerful, they eventually came to pose risks to people.

Omron identified that guaranteeing the safety of machines toward humans is an important theme and developed safety sensors, which automatically halt dangerous machines should a worker approach them, and safety door switches that prevent workers from approaching dangerous machines in the first place. At the same time, Omron actively promoted the standardization of automation safety regulations and transmitted information to educate the market with regard to safety, working to create safer production sites around the world.
Preservation of Natural Resources

When considering natural resources, it is clear that the energy used by machinery and the impure substances they emit represent serious environmental issues.

Omron has been proactive in making the automation equipment it produces lead-free and therefore more eco-friendly. In addition, we have developed more precise control technologies to prevent materials from going to waste due to the production of defective products.

To lower energy consumption, which is particularly high in the manufacturing industry, we have developed an array of sensing, display, and control equipment that contributes to energy savings. Further, we have created means of applying “Sensing and Control” technologies to energy to reduce consumption, and these technologies have been introduced into Omron’s own production sites.

Future Potential of Automation
FA around the World

Automation has undergone a startling evolution in Japan over the years. Today, the contributions of automation’s evolution are everywhere and automation technologies have spread throughout the lives of countless people.
Operations Well Established in Each Country

Industrial Automation Business (IAB) currently operates out of more than 160 bases in more than 40 countries.

IAB was quick to expand operations into Asia, a move that was partially based on geographic considerations. Over half of the world’s population is concentrated in this region, as emphasized by the presence of such “populous giants” as China and India, which boast the world’s first and second largest populations respectively, as well as by the ASEAN countries, which collectively represent the third largest population. Realizing the great potential for automation to contribute to the development of Asia, we were not hesitant in firmly establishing operations in this region, which we then utilized to continue our ongoing pursuit to further the advance of automation.

We began developing operations in China immediately after Sino-Japan trade relations were restored in 1972, and Omron founder Kazuma Tateishi proceeded to deepen relationships with this country thereafter. In the 1980s, we began outsourcing production to China, helping introduce our accumulated Japanese production technologies into this country. At the same time, we established sales outlets in major operating bases, enabling us to support the development of the Chinese economy with our state-of-the-art automation equipment. In the 1990s, we continued to develop production and sales bases while working to make these bases more locally operated. Later, in 2005, we consolidated three factories in China to make a facility that would become the core production and development base for the global development of IAB. This was the birth of Omron (Shanghai) Co., Ltd. (OMS). Today, we have a comprehensive range of business functions well-established in China, including production, sales, development, planning, services, support, and research functions.

In addition, IAB has 98 sales bases in 11 countries throughout Asia, including Japan.

The development of operations in the Asia Pacific region began with the establishment of the OMRON Singapore PTE LTD. in 1972. Later, we established our first production base in Malaysia. Since, we have continued to be a leader in Asia, quickly developing operations that are firmly established in Hong Kong, Taiwan, China, Indonesia, Thailand, Vietnam, India, and other areas.

Connection of Customer Feedback to All Areas of Operation

Today, it is more important than ever for us to position ourselves closer to customers so that we can quickly recognize their needs and use these to drive change. It is important to reflect market needs and changes as well as customer feedback into our products and services. Further, the feedback gained from customers who use the products and services created through this process must once again be incorporated into products and services to spur us forward on the path of constant evolution. Through the ever revolving cycle of incorporating customer feedback into products and services, we are actively adapting our operations to the characteristics of individual regions.

This cycle has led to the development of a rich lineup of services and support. For example, our free e-learning courses are a form of service and support born out of the demand for ways to quickly and easily learn about the latest products and technologies. These courses provide comprehensive explana-
and medicine bottles in India was often poor, and bottles with chipped or warped mouths were frequently shipped and sold at stores. However, consumers became more sensitive toward the quality and safety of the products they purchased, and this resulted in a movement devoted to preventing manufacturers from placing bottles with quality issues on the market. To support this movement, IAB supplied visual sensing equipment that was able to analyze the condition of bottle mouths from recorded images. This enabled all bottles to be quickly and automatically inspected, thereby preventing the shipment of low-quality bottles.

Metal Processing Equipment
Company C is a manufacturer of metal processing equipment. This company recognized the need to ensure worker safety, but at the same time it wanted to avoid declines in production volumes or productivity that would have resulted from excessive safety measures, such as fencing off all machines. IAB helped this company realize a workplace that is both safe and productive by utilizing the safety sensors that are standard equipment on machinery in developed nations. These sensors were placed in optimal positions around areas where danger was present.

2. Automation Example (Indonesia)
Food Production Equipment
Company D is a sugar manufacturer. At the company, employees previously had to directly confirm temperature, humidity, and other variables related to the sugar refining processes and then record this information in production logs by hand. For this reason, employees were unable to leave refining equipment unattended, and they often spent eight
hours a day doing nothing but confirming variables. By introducing computers equipped with data logging software along with controllers, IAB helped create a system in which all this numeric data is recorded automatically by computers. This system successfully reduced the amount of time employees devoted to these monitoring tasks to one hour a day. Workers were thus freed from the task of confirming variables all day long, which in turn allowed them to use this time to revise production processes and implement other improvement activities.

3. Automation Example (Thailand) Electricity-Saving Initiatives
Rising costs in Thailand have resulted in a shift toward less-wasteful activities at production sites. Efficient electricity use is being considered as one way of realizing such activities. As such, factories are increasingly introducing electricity monitoring equipment, which can be used to track how much electricity is being used in specific parts of a facility.

In order to respond to such global issues related to safety and the environment as well as the need for high-speed, high-precision control, IAB accumulates cutting-edge technical expertise within its Automation Centers so that it may transmit unique technological applications throughout the world.

* Automation Centers provide support services to help people make machines move as they please. The support services provided by these centers include easing the connection of equipment from different manufacturers, a task that previously required substantial time investments, and assistance in realizing high-speed, high-precision control for demanding pieces of machinery. Also, the centers help customers quickly install machinery with ease. In these ways, the centers aid our customers in developing competitive machinery setups.

Evolution Driven by Customer Needs
We work to address the various issues faced by specific regions by developing solutions from the perspective of local customers in these regions. The number of products with different specifications produced by OMS has grown 2.5 times over the past three years. When looking at the average employee turnover rate in China, OMS has employee retention rates that are 3 to 5 times better than the average. Nonetheless, its operations are impacted by the rising labor costs and labor shortfalls in coastal areas. For this reason, OMS is employing Low Cost Intelligent Automation (LCIA) to make its production operations in this country more flexible. Such flexible production operations are supported by small robots, a culmination of our accumulated knowledge and expertise, and the skills of employees are used to backup this system while eliminating wastes.

Also, OMS is currently holding tours of its factories for a wide range of visitors. We hope that these tours will provide customers with a model example to be considered in solving their automation issues while at the same time offering an opportunity for local companies to learn from our production expertise.
Collaboration between Industry, Government, and Academia to Invigorate Local Societies

As one way of rooting our operations to the regions in which we work, we are placing an emphasis on education, not only of our employees but also of the students that will support the future of these regions.

Omron is working to share its corporate philosophy with educators in Asia while also providing opportunities for students to learn about environmental issues and the latest technologies. At Chinese vocational and technical colleges*, we help teach students about manufacturing while they are in school and hold Omron Classes, which attract vast quality human resources. In addition, we hold the Omron Cup Sterling Engine CAR Contest and design contests, which are based on the themes of environmental preservation and recycled resources. We also hold the National University Student Photoelectric Design Contest to help foster the development of prospective automation engineers and provide education regarding state-of-the-art technologies.

* Equivalent to technical colleges in Japan

Optimal Relationship between People and Machines

Out of our development bases in Japan, Europe, and the United States, we are able to develop an understanding of the latest trends related to technologies and international standards. By leveraging this advantage of our global operations, we hold seminars and otherwise provide information to help spread knowledge.

We also participate in committees for developing safety standards. In such ways, we are working to develop social foundations that enable a safe and optimal relationship to be developed between people and machines.

Pursuit of Further Evolution

The future of market conditions remains unclear. Nevertheless, we will continue to take on new challenges to create innovation while advancing steady improvements through straightforward and earnest effort. To this end, we are rethinking the parts we use, reducing the number of parts contained in our products, revising production processes, and otherwise refining our technologies.

As automation spreads, people’s lives become more fulfilling, which in turn enables them to be more creative at work, leading to the further evolution of automation. Looking back at the history of automation, it is clear that demand for automation will continue growing into the future, as will its potential.

IAB will create cycles in which changes in society’s needs and technical innovation give birth to one another. And these cycles will be created around the world. IAB will also work to grow as the provider that is “No. 1 in control,” “No. 1 in product lineup,” and “No. 1 in the future” so that it can make greater contributions to the ever changing Asian market.