

Overview



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Continuous Evolution of FA Solutions - History and New Initiatives -

Recent issues in the manufacturing industry include labor shortages due to the declining birthrate and aging population, handing down of skilled workers' techniques and expertise, and coping with uncertainty. In the last two years, in addition to trade friction, the manufacturing industry was affected by the global spread of COVID-19. Protectionist measures and restrictions on people's movement caused rapid changes to supply chains, business models, and workstyles. We have learned that the unexpected can happen suddenly.

In recent years, the terms "Internet of Things (IoT)" and "digital transformation (DX)" have gained increasing attention. Mitsubishi Electric Corporation noticed the importance of linkages between FA and IT as components advanced. In 2003, before these terms became common, we started proposing manufacturing reform through "e-F@ctory."

In e-F@ctory, accumulated know-how is used to increase productivity, quality, and efficient use of energy to reduce the total cost for development, production, and maintenance. For such linkage between FA and IT, devices are needed to collect and process appropriate data from actual manufacturing sites at appropriate times, as well as systems to use the data.

Our Field Network CC-Link for FA was developed to satisfy the need for wire-saving at first. It was later developed into CC-Link IE Time Sensitive Networking (TSN)¹ which has been contributing to DX at manufacturing sites as an open global standard.

Regarding elemental technologies, we have been working on automation by merging digital technologies with technologies originating at manufacturing sites required to link, process, and control every type of data at the sites. We have also been working to actively use IoT, robots, AI, the 5th generation mobile communication system (5G), etc.

Our objectives are to achieve: cooperation between humans and robots and labor-saving by using the collaborative robot MELFA ASSISTA; good use of compact AI technology Maisart,² which can be incorporated into devices, for real-time data analysis, diagnosis, and processing; and application of 5G to augmented reality (AR), virtual reality (VR), automated guided vehicles (AGVs), and flexible factory layout.

In addition, in order to achieve the Sustainable Development Goals (SDGs), we use FA and AI technologies to improve productivity, develop convenient working environments, promote sustainable industrialization, expand technological innovation, and secure sustainable production and consumption forms.

Through such efforts to create and support new forms of production and a low-carbon society, we will help build a society where companies and humans are linked, overcoming restrictions of time and space.

¹ CC-Link IE TSN https://www.cc-link.org/ja/cclink/cclinkie/cclinkie_tsn.html

² Abbreviation of "Mitsubishi Electric's AI creates State-of-the-ART in technology"