



CC-Link Partner Association (CLPA)

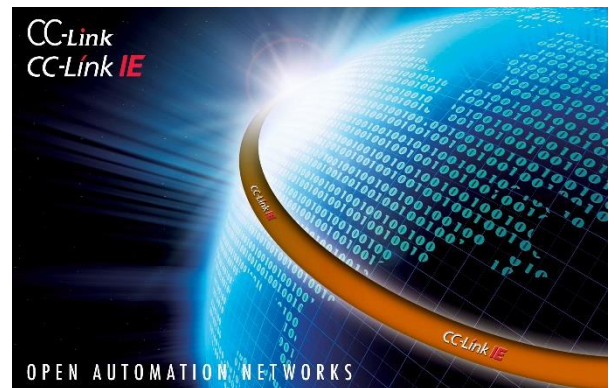


Subject: Industrial networks open-up to the future

Keywords: CC-Link Partner Association, CC-Link IE, Industry 4.0, industrial networks, Factory of the Future, manufacturing, digitalization, gigabit industrial Ethernet, PROFIBUS & PROFINET International, CSP+ for Machine, OPC Foundation

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Vernon Hills, IL United States; January 23, 2019

Industrial networks open-up to the future



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The Factory of the Future – taking into account Industry 4.0 - is loaded with sensors and devices that record real-time processes and statuses across the factory floor. A fast, efficient and reliable industrial network is key to successfully sharing and utilizing the data being generated. The network architecture should be designed as an interconnected platform, able to link all the nodes together and provide both upstream and localized communication.

John Wozniak, Manager of CLPA-Americas, explains why open industrial networks are fundamental components of the Smart Factory.

The interconnected factory envisioned by Industry 4.0 has the potential to revolutionize manufacturing by demanding greater interconnectivity and control over the different factory processes. In this way, companies in any sector can boost productivity and efficiency while improving product quality and consistency.

The adoption of Industry 4.0 is much more than a simple plus for general operating efficiency, as it marks the transition to new manufacturing processes that are truly synchronous with customer demand. Now, during this titled 'fourth industrial revolution' – i.e. Industry 4.0; the implementation of automation and network technologies is essential for businesses to remain competitive.

While Industry 4.0 is likely unavoidable, its adoption could be a problem for many companies. In real, practical terms, the development and implementation of a suitable digital strategy is a marathon, rather than a sprint. It is tempting to reengineer the whole enterprise at once, but this would be overwhelming, compromising the entire digitalization process.

After having defined a suitable digital strategy, its implementation should take place in stages. It is generally helpful to proceed with small projects that have a clearly defined end-goal that are relatively easy to complete and manage. In this way, the success of each automation project can be measured, and their implementation helps to develop a controllable and scalable system that can adapt to future needs. Small projects also lend themselves to small investments where the implementations can be justified and the improvement measured to justify the adoption of Industry 4.0 techniques and processes.

The rise of big data is inextricably linked to networking speed and data carrying capacity, hence any solution needs to have a high capacity. Of the current Ethernet variants, CC-Link IE stands out as the only open gigabit industrial Ethernet currently available. It is a good example of why choosing technologies that already offer an advantage, as well as a clear defined path toward to future developments, can be beneficial.

Digital strategies need to consider interconnectivity

A methodical step-by-step approach, where the installation and upgrade of factory equipment is completed at different times, usually involves vendors, technologies and protocols can vary. Therefore, it is important to make sure that any new component is compatible and can communicate with the existing ones.

This is more difficult than it sounds. Many current products have closed, proprietary standards and protocols that let them exchange data only with solutions from the same vendor. Choosing a single hardware vendor is not always a feasible alternative either, as applications may require the need to mix different vendors in order to optimize their intended application. In addition, these businesses may face changes in the hardware, the product market and its key players, as this journey to Industry 4.0 is a marathon as mentioned above and likely to be spread over a long period.

While this can cause frustration among manufacturers, not all is lost. Open Ethernet, which is not locked to a specific vendor system, can provide a framework that not only allows the connection of current automation products, but also features a built-in flexibility for future factory revamps, installations and upgrades. Therefore, open Ethernet actively supports innovation and is well suited for the journey to Industry 4.0.

On the flip-side of proprietary solutions, where hardware and software are tightly coupled together; open Ethernet is based on the complete independence between hardware and software. This ensures a hardware application can run on any Ethernet software platform.

Organizations such as the CC-Link Partner Association (CLPA) are helping businesses to become highly connected by developing open networks, thus facilitating multi-vendor and multi-platform interoperability. The CC-Link family of network solutions developed by the CLPA features compatibility from over 300 manufacturers, making a huge catalog of certified, interoperable products. This broad range of solutions allows end users and factories to select the component that best fits their needs.

Furthermore, the CC-Link family accomplishes seamless transfer of data between communication layers within an enterprise, from shop floor to top floor. More precisely, CC-Link IE Field embraces all the requirements of general machine control, motion control and safety for the factory floor, while CC-Link IE Control is designed for higher level communication, such as between controllers in different production cells.

Action plan for a more open Ethernet

Providing an interoperable environment is a constant work-in-progress activity and the CLPA's continuous effort to provide open industrial networks is reflected by its collaborations. For example, the organization has produced the specification for a coupler with PROFIBUS & PROFINET International (PI). This device allows CC-Link IE and PROFINET networks, and their respective machines to be freely interoperable. Similarly, the CLPA has also developed the CSP+ for Machine OPC UA Companion Specification with the OPC Foundation, allowing for unification of the interfaces between machines and IT systems. In this way, the CLPA, OPC Foundation and PI are collaborating on the network of the future, which will ensure openness and interoperability from an intuitive and easy to use platform.

■ CC-Link Partner Association

Founded in 2000, the CC-Link Partner Association (CLPA) is an international open network organization dedicated to the technical development and promotion of the CC-Link family of open automation networks. The CLPA's key technology is CC-Link IE, the world's first and only open gigabit Ethernet for automation and an ideal solution for Industry 4.0 applications due to its unmatched bandwidth. Its main activities include the development of CC-Link IE and CC-Link technical specifications, conducting of conformance tests, development support, and promotion of the CC-Link technologies. The CLPA boasts more than 3,400 members. CC-Link is the leading open industrial automation network technology in Asia and is becoming increasingly popular in the Americas and Europe.

■ Captions

Image 1: Now, during the fourth industrial revolution, the implementation of automation and network technologies is essential for businesses to remain competitive.

Image 2: Organizations such as the CC-Link Partner Association (CLPA) are helping businesses to become highly connected by developing open networks, thus facilitating multi-vendor and multi-platform interoperability.

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