

## Boosting industries with the right industrial Ethernet

Automation systems engineers working in various sectors are all being challenged to streamline industrial processes and workflow. Industrial networks play a fundamental role in creating an efficient communications infrastructure, acting as an enabler for Industry 4.0

***What are the main challenges of implementing network systems for different industries how can automation specialists address them?***

When developing an industrial communication network for a business, having a clear understanding of how its specific processes work is of utmost importance. In particular, network specialists will examine the process data and the existing factory infrastructure in order to identify key requirements and subsequently develop a reliable and efficient platform for management and control.

For example, with downtime easily costing tens of thousands of euros in the space of a few minutes, the automotive sector requires highly reliable networks that have the capacity to ensure all process data is handled in a timely manner. Today's assembly plants routinely produce multiple models, all characterised by multiple trim levels. Therefore, the combinations of component parts can easily run into many thousands, which need to be assembled correctly and in a timely manner. Delays in the transfer of time-critical data that manages all these processes can cause unexpected downtime, affecting the overall plant productivity. In these cases, ensuring sufficient network bandwidth can help to address these issues.

### **In the fast lane, thanks to a high performance network**

Process transparency and availability were the key requirements for Toyota's engine and power transmission manufacturing plant in Wałbrzych, Poland. The company wanted to extract more process and machine data to monitor its engine assembly and forging processes with greater accuracy and efficiency. As a result, it was necessary to upgrade to a new, fast and reliable network system that could efficiently handle large volumes of data coming from many devices across the lines.

In addition, [Toyota Motor Manufacturing Poland \(TMMP\)](#) needed a solution that wasn't locked to a specific vendor system in order to benefit from freedom of choice when selecting suitable automation components from leading automation vendors such as Balluff and Mitsubishi Electric.

To implement such a network system, the staff at TMMP turned to the CC-Link IE, open gigabit industrial Ethernet. John Browett, General Manager of the CC-Link Partner Association (CLPA) in Europe, explained: "CC-Link IE was the ideal candidate, as it is built on the twin pillars of performance and openness, which were both key in Toyota's case."

The resulting network systems combined CC-Link IE, the first open industrial Ethernet with Gigabit bandwidth, and CC-Link, its fieldbus counterpart, to establish communication and data transfer between each part of the processes and their subsystems. In this way, the lines could integrate all their devices into a single network architecture while retaining freedom of choice in sourcing future products from leading suppliers.

### **A network cut out for improved performance**

Speed, productivity and maximum usage of raw materials are other benefits the right network can deliver , as shown by the CC-Link IE infrastructure used by the biggest producer of wooden packaging in [Denmark, Dansk Træemballage A/S \(DTE\)](#).

DTE's sawmill comprises a number of process stages to turn logs into finished lumber. Each stage is run by inverter drives, which need to be connected in order to coordinate operations across the plant. In the previous system, when one of the many inverters needed to be replaced, the network software setup also needed to be modified. As a result, DTE struggled with downtime, and always needed both technicians and programmers to replace or add a drive, further affecting uptime, productivity and maintenance costs.

By upgrading to CC-Link IE technology, software alterations or programming are no longer required when substituting inverters or other devices. As a result, the sawmill successfully simplified management and maintenance operations, slashing plant downtime and associated costs, which also led to improved productivity, performance and maximum usage of raw materials.

### **Leading experts to address any network requirement**

While many industries are benefitting from following Industry 4.0 based approaches, the ideal networking infrastructure of each business may differ substantially to ensure responsive and reliable communications. By choosing cutting-edge solutions such as CC-Link IE, industries can not only address their most pressing issues, e.g. handling larger volumes of data or optimising maintenance operations, but also improve entire processes, boosting performance, efficiency, quality and reliability.

**Captions:**

**Image 1:** CC-Link IE is an industrial Ethernet that can support both 1Gbps and 100Mbps devices and forms part of the CC-Link family of open industrial network solutions.



**Image 2:** Toyota Motor Manufacturing Poland (TMMP) needed a solution that wasn't locked to a specific vendor system in order to benefit from freedom of choice when selecting suitable automation components from leading automation vendors such as Balluff and Mitsubishi Electric.



**Image 3:** Speed, productivity and maximum usage of raw materials are other benefits the right network can deliver, as shown by the CC-Link IE infrastructure used by the biggest producer of wooden packaging in Denmark, Dansk Træemballage A/S (DTE).



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## **About The CC-Link Partner Association (CLPA)**

The CLPA is an international organisation founded in 2000 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 TSN, the world's first open industrial Ethernet to combine gigabit bandwidth with Time Sensitive Networking (TSN), making it an ideal solution for Industry 4.0 applications. Currently the CLPA has over 3,400 member companies worldwide, with more than 1,800 certified products available from over 300 manufacturers.

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