## The future of open automation networks – gigabit CC-Link IE and Industry 4.0

**Since 2013's Hannover fair, the topic of "Industry 4.0" has become of key interest to everyone in the automation community and the customers who depend on them for innovative solutions. In general terms, Industry 4.0 is seen as the next big change in manufacturing, where so called "cyber physical systems" and the Internet of Things will provide significant benefits to increase the capabilities, efficiency and flexibility of manufacturing systems in general.**

However you look at this trend, one thing is clear. Industry 4.0's success depends on information being able to flow seamlessly around a manufacturing process and beyond. For systems to offer optimum performance, this flow must be unimpeded and in real time. Hence, the "pipes" that carry this flow must be big enough to meet this requirement. In technical terms, the flow is bandwidth. While there are many different industrial Ethernet technologies to choose from, only one can offer the widest bandwidth of all, and that is CC-Link IE.

CC-Link IE (Industrial Ethernet) was first introduced in 2007 and has since developed into the fastest growing industrial Ethernet technology available. The original drivers for its development were leading Asian industries such as automotive and flat panel display manufacturers. They had ever increasing needs to track large amounts of data in real time. For example, typical automotive production lines have multiple models all being built at the same time on the same line with multiple variations in options, trim levels and so on. Being able to keep track of what parts go on what body for a whole production shift quickly becomes an extremely data intensive task with thousands of parts all needing to be available, correctly selected and installed in real time.

Hence it can be said that CC-Link IE foresaw the trends of Industry 4.0 about 6 years before they were formally identified. However, the one feature of CC-Link IE that really sets it apart from all other networks is its gigabit performance. No other open Ethernet technology can offer a similar performance. Hence for companies looking to take the capacity of their production lines to a level beyond that of the competition, the choice is clear. Only CC-Link IE equipped systems will outpace all other competing technologies.

On the other side of the industry, CC-Link IE also offers a clear opportunity for device makers looking to increase their business by offering new leading edge products. The CC-Link Partner Association (CLPA), the organization responsible for the development and promotion of CC-Link IE, has worked with leading development vendors across the world to ensure that there is a wide choice of different options available for companies who wish to build CC-Link IE connectivity into their products. Currently solutions are available from industry leading vendors such as Mitsubishi Electric, HMS and Renesas, with more being added all the time. Other possibilities such an FPGA based solution from Altera®/Altima and an SoC solution from Tokyo Electron Device™/Xilinx® will also be offered.

John Browett, General Manager of CLPA-Europe summarises, "In the past we often got questions about why CLPA was offering a gigabit technology that seemed so far ahead of what else was on the market. You could say that what is happening in manufacturing today is mirroring what happened with our home broadband connections. 5-10 years ago, megabit speeds seem futuristic. They are now commonplace and as a result, a whole set of new services such as streaming movies has arrived to exploit this capacity. In a similar way, Industry 4.0 will add new capabilities to manufacturing that maybe haven't even been thought of yet. However, the key point is that these systems will need maximum performance and only CC-Link IE is capable of delivering that today."

**Image Caption:** Industry 4.0's success depends on information being able to flow seamlessly around a

## About the CLPA

The CC-Link Partner Association (CLPA) is an international organisation with over 2,100 member companies worldwide. The partners' common objective is promotion and technical development of the family of CC-Link open automation network technologies. Around 1,400 certified products are now available from over 280 manufacturers. CC-Link is the leading open industrial automation network technology in Asia and is becoming increasingly popular in Europe and the Americas. The European headquarters is in Germany, with offices throughout the continent. The CLPA's main initiative for Europe is the Gateway to Asia (G2A) programme, which helps European businesses develop their Asian business further. More details are at www.cc-link-g2a.com.

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