

CC-Link IE helps triple manufacturing output for popular front doors

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When Profile Developments, a renowned door manufacturer in Ireland, wanted to implement a new production line at its plant in Glin, Co. Limerick, one key challenge was the simultaneous, accurate control of multiple drives in real-time. The technology used to address this issue and connect the line to other sections of the factory was CC-Link IE open gigabit industrial Ethernet.

Profile Developments is a leading producer of composite doors, the most prominent being those belonging to the Palladio Collection for external applications. The company is highly committed to quality, with a proven-track record of delivering durable, safe and stylish products to customers in Ireland and the UK.

When Profile Developments felt the need to expand its facilities in Glin to better serve customer demands and drive its competitiveness in the market, the door manufacturer decided to build a new panel gluing unit. This would help ramp up productivity and throughput by complementing the existing line and processing doors' outer skins at high speed.

Scaling-up door production capabilities

The selected design for the new system features a conveyor belt that moves the necessary door components through different stations, namely a glue machine, a frame assembly post and a roller press unit. To support this setup, multiple motors

are installed across the conveyor. These, in turn, use a total of 19 inverters or variable speed drives (VSDs) from Mitsubishi Electric to run their operations and a PLC from the same vendor to control these multiple drives. Finally, an HMI provides users with an overview of the process as well as the ability to adjust it, when needed. Michael Cafferkey, Automation Engineer at Mitsubishi Electric, comments: “It is really important that the movement of the conveyor is controlled accurately so that a door doesn’t miss a stage or spends the wrong amount of time in any production process. For example, the duration of the gluing and pressing processes has to be incredibly precise to ensure quality.”

To smoothly and efficiently run the inverters and the entire new line, leveraging a state-of-the-art communication network technology was deemed essential. This would connect the drives, PLC and HMI to share large volumes of motion control data in a timely manner. Even more, it would be key for the components to be highly responsive, quickly adjusting their operations when inputs from operators are received.

The selection of a suitable industrial communications technology to support these tasks led to Profile Developments immediately specifying CC-Link IE open Ethernet with 1 Gbps transmission speed. John Barrett, Site Engineer at Profile Developments, explains: “The existing automated machines in our plant use CC-Link IE and we are very happy with the performance that this solution offers. We decided to continue with this network technology to connect the HMI, PLC and many inverters, as we knew it would be able to address our needs for high speed, accuracy and bandwidth. Even more, it would help us ensure seamless connectivity between this and the existing lines.”

John Browett, General Manager of the CC-Link Partner Association (CLPA) Europe, adds: “CC-Link IE is designed to offer maximum performance, and thanks to this it

can help Profile Developments successfully build a large network of inverters that operate the new door gluing line. The door manufacturer can deliver quality and consistent products by benefitting from the high-speed response time and bandwidth that CC-Link IE's gigabit Ethernet offers, which provides extreme accuracy and real-time control.”

A gateway to upscaling

The use of CC-Link IE and best-in-class automation equipment primarily contributed to the development of a high-performance, responsive production line, which can process up to 12 doors per hour. As a result, the whole plant tripled its output.

John Barrett says: “We are extremely happy with the solution delivered and the results obtained. Thanks to the broad portfolio of CC-Link IE compatible devices, we can incorporate the industrial automation components that are best suited to address our applications while ensuring interconnectivity across the shop floor.”

John Browett concludes: “We are delighted that Profile Developments decided to continue investing in CC-Link IE networks for its plant in Glin. In this latest application, the key results of using our leading network technology to support a challenging motion control application are greater productivity, process transparency and connectivity. Consequently, all these help the company increase its profitability and competitiveness in the marketplace.”

Image captions:



Image 1: Profile Developments has seen a threefold increase in productivity of its door manufacturing facilities, thanks to its latest collaboration with Mitsubishi Electric. [Source: Mitsubishi Electric Ireland]



Image 2: Profile Developments wanted to build a new panel gluing unit to ramp up productivity. [Source: Mitsubishi Electric Ireland]



Image 3: An intuitive and user-friendly GT2510 widescreen HMI maximises process visibility and accessibility, helping operators monitor and interact with the drives, identify anomalies and interpret alarms. [Source: Mitsubishi Electric Ireland]



Image 4: The new door press application line was is run by 19 Mitsubishi Electric's FR-E series VSDs. [Source: Mitsubishi Electric Ireland]



Image 5: To control the 19 VSDs, Profile Developments selected Mitsubishi Electric's iQ-R series PLC. [Source: Mitsubishi Electric Ireland]

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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 the leading solution for Industry 4.0 applications. Currently the CLPA has over 4,200 member companies worldwide, and more than 2,800 compatible products available from over 380 manufacturers. Over 40 million devices using CLPA technology are in use worldwide.

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