

Gigabit Ethernet is key when there is a mine of information

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Continuous, reliable communications are essential for the success of mining operations. They enable the transfer of crucial information across facilities, ensuring that fans, pumps, conveyors and other key pieces of equipment operate correctly. When ineffective communications led to an increase in downtime at a mining complex in Mexico, CC-Link IE network technology offered a solid solution.

Mining operations are becoming increasingly smart and digitized, with key pieces of equipment connected via industrial communications networks in order to run autonomously. In addition, they provide businesses a unique actionable insight into all mining operations. With non-stop activities characterizing this sector, the ideal network should be able to process large volumes of data without any interruption. When a Mexican mining complex was not benefitting from such communications infrastructure for its operations, a rapid revamp was necessary.

When the (broadcast) storm is coming

The facility utilizes a Mitsubishi Electric MELSEC iQ-R PLC platform to control 35 variable frequency drives (VFDs), which in turn modulate the speed of fans, pumps and conveyors. While the automation components have been operating successfully for years, the mining complex was experiencing prolonged downtime associated with network failure. More precisely, approximately 20 hours were lost

every month because of broadcast storms, data packet collisions, intermittent or even lost communications between higher enterprise level software and field devices.

To address these challenges, the mining company decided to replace its existing network technology with a more effective one. After evaluating and testing CC-Link IE open industrial Ethernet, the company was convinced this was the best solution to address their need for reliability and continuity. In particular, the mining specialist was impressed with how CC-Link IE's unrivalled gigabit bandwidth could prevent congestions and ultimately downtime. In addition, the company found the diagnostic tools provided extensive and easy to use.

Gigabit Ethernet to ensure reliability

When Mitsubishi Electric started to support the mining company in the configuration of CC-Link IE, further benefits became apparent. Carlos Sepúlveda, Sales Engineer at Mitsubishi Electric Mexico, explains: "It is possible to conduct network configuration and diagnostics from the same software used to program the iQ-R PLC, GX Works, which offers a single point of contact. This also streamlines any work on the infrastructure and architecture, as, if the topology is altered, e.g. by adding components, the platform automatically incorporates and reflects these changes."

In addition, the installation of CC-link IE helped the company reduce infrastructure costs. While the existing network technology required managed switches to ensure correct operations, these devices are optional with CC-Link IE, minimizing capital expenditure (CAPEX) as well as expenses associated with their maintenance.

Since the new network has been put in place, no downtime associated with network failure has been experienced, maximizing productivity. The gigabit bandwidth has also supported the mining complex to enhance responsiveness. Furthermore, it is playing a key role in getting the information technology (IT) and operational technology (OT) domains closer, hence opening a gateway to the Industrial Internet of Things (IIoT).

Sitting on a goldmine of data

Carlos Sepúlveda comments: “The customer is extremely happy with CC-Link IE open industrial Ethernet. This technology is helping the mining company reduce the gap between IT and OT as well as make its operations ‘smart’, as it can now rely on a robust network that can manage a lot of data packages while offering high performance. These successful results are boosting the customer’s confidence in CC-Link IE – this is why they are already planning to use it in a new project.”

The mining specialist is also looking at futureproofing its facilities, by leveraging CC-Link IE TSN, the first open industrial Ethernet to combine gigabit bandwidth and Time-Sensitive Networking (TSN) to enhance determinism and convergence. Carlos Sepúlveda adds: “The customer has been showing considerable interest in learning more about CC-Link IE TSN and what benefits it offers.”

Mariana Alvarado, Marketing Specialist at CLPA, concludes: “We are delighted with the positive feedback received by the mining company and look forward to collaborating with the company again soon. Our family of network technologies for industrial communications are designed to offer next-level capabilities and support the digital transformation of businesses by means of round-the-clock, reliable, high-speed data transfers.”

Image captions:



Image 1: Mining operations are becoming increasingly smart and digitized, with key pieces of equipment connected via industrial communications networks in order to run autonomously.



Image 2: When ineffective communications led to an increase in downtime at a mining complex in Mexico, CC-Link IE network technology offered a solid solution.

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About The CC-Link Partner Association (CLPA)

The CLPA is an international organization founded in 2000, now celebrating its 20th Anniversary. Over the last 20 years, the CLPA has been dedicated to the technical development and promotion of the CC-Link open industrial network family. 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 4,100 corporate members worldwide, and more than 2,000 compatible products available from over 370 manufacturers. Around 38 million devices using CLPA technology are in use worldwide.

Anyone interested in joining the organization can apply here: <https://www.cc-link.org/en/clpa/members/index.html>

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