

FACTORY AUTOMATION

Customer Reference

KFT Food machinery boosts precision and simplifies architecture with CC-Link IE TSN

How open industrial Ethernet technology enabled ultra-fast multi-axis motion control for next-generation cutting systems

Key points

- **Ultra-fast performance:** Synchronises 10+ servo axes delivering up to 14 precision cuts per second
- **Deterministic control:** Time-Sensitive Networking ensures perfect synchronisation at maximum speed
- **Simplified architecture:** Unified communication across motion, I/O, pneumatics, and safety on single network

KFT Food Machinery designs high-performance cutting machines used in some of the most demanding production environments in the food industry. When the company needed to support ultra-fast, multi-axis motion control in its latest cutting machine series, it turned to CC-Link IE TSN—the open industrial Ethernet technology from the CC-Link Partner Association (CLPA). By integrating this advanced networking solution, KFT achieved the rapid multi-axis coordination required for modern cutting systems whilst optimising system design, scalability, and ease of implementation, delivering up to 14 precision cuts per second with unprecedented reliability.

The Challenge: KFT's cutting machines represent some of the most advanced technology in the company's portfolio, which includes sausage peelers and co-extrusion systems engineered for durability, reliability, and ease of use. Customers rely on these systems in high-volume settings where long shifts, rapid changeovers, and consistently high throughput are the norm. The cutting machines use ten or more independently controlled servo axes to deliver up to 14 precision cuts per second. Achieving this level of speed and accuracy requires a motion architecture capable of fast, deterministic communication across all components, ensuring perfect synchronisation even at maximum operating speeds in demanding production environments.

The Solution: To meet these stringent performance requirements, KFT integrated CC-Link IE TSN into its cutting machines, enabling multiple servo axes to be synchronised in real time whilst maintaining a clean, easy-to-manage system architecture. With Gigabit bandwidth and Time-Sensitive Networking technology, CC-Link IE TSN provides high transmission speed, deterministic synchronisation across all axes, and unified transport of real-time control and diagnostic data on a single network. The network's bandwidth and flexibility allowed KFT to streamline control system design by standardising communication across motion control, I/O modules, pneumatic systems, and safety devices, reducing wiring complexity and simplifying integration.



The Results: KFT engineers saw immediate gains from the implementation. Stable high-speed communication led to more precise cutting, higher reliability, and improved productivity even at maximum operating speed. The simplified communication structure reduced setup time significantly, accelerating commissioning processes. Standardising key elements of motion programming enabled KFT to reuse code and parameters across multiple machines, shortening development cycles and improving consistency. The unified, open communication infrastructure provides a future-proof foundation that supports scalability and new applications including pneumatic and safety control. With CC-Link IE TSN now established as a core part of its machine architecture, KFT plans to expand its use across future designs, confident in the technology's performance, robustness, and flexibility.

Technical Performance: KFT's cutting machines demand exceptional motion control performance, coordinating ten or more independently controlled servo axes to deliver up to 14 precision cuts per second. This requires a communication infrastructure capable of transmitting control commands and feedback data with minimal latency and guaranteed delivery timing. CC-Link IE TSN meets these requirements through Gigabit Ethernet bandwidth combined with Time-Sensitive Networking (TSN) technology. TSN ensures deterministic communication by prioritising time-critical motion control traffic, guaranteeing that synchronisation data reaches all axes within precise time windows regardless of other network activity. This deterministic behaviour is essential for maintaining cutting accuracy and preventing coordination errors at high operating speeds.

Simplified System Architecture: The bandwidth and flexibility of CC-Link IE TSN enabled KFT to fundamentally streamline their control system design. Previously, different subsystems often required separate communication networks or protocols. With CC-Link IE TSN, KFT standardised communication across motion control, I/O modules, pneumatic systems, and safety devices on a single

converged network. This unified approach reduced wiring complexity, eliminated the need for protocol gateways or converters, and simplified system integration. As Marti Clos, CEO of KFT Food Machinery, explains: "We can now simplify our communication structure and reduce setup time. CC-Link IE TSN gives us a future-proof foundation that supports scalability and new applications like pneumatic and safety control."



Operational Benefits: For KFT's customers operating in high-volume food production environments, the performance improvements translate directly into business value. More precise cutting at higher speeds increases throughput whilst maintaining product quality and reducing waste. The reliability improvements from deterministic communication minimise production interruptions, supporting the long shifts and consistently high throughput that characterise modern food processing operations. Faster changeovers enabled by simplified system architecture reduce downtime between product runs. The robust, proven technology provides confidence in demanding production environments where equipment failures directly impact output and profitability. Marti Clos confirms the impact: "CC-Link IE TSN delivers the performance, robustness, and flexibility we need. It has strengthened our machine capabilities and is easy to implement and expand."

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