

Keep ahead of the competition with TSN

In a world of global markets where everything is moving faster and competition is fierce, companies need to have agile manufacturing operations to introduce products faster to market than other industry players. A key enabler to support this is Time-Sensitive Networking (TSN), a network technology that can help businesses create interconnected intelligent factories.

Jeremy Shinton, Product Manager for PLC and Edge Computing Technologies at Mitsubishi Electric, explains how implementing TSN compatible devices can benefit businesses.

TSN is an innovative technology that is designed to enhance the capabilities of Ethernet, providing the network connectivity to create smart factories.

TSN can synchronise devices with extreme accuracy and relies on IEEE 802.1 standards to enable scheduled network traffic and the prioritisation of the most urgent time-critical messages while avoiding data collisions.

In practice, these two major characteristics offer businesses the determinism and reliability required by the Operational Technology (OT) domain. Applications include closed-loop processes and motion control, where low latency and avoidance of jitter are critical. Even more, TSN can also merge other types of traffic, such as Information Technology (IT) data, onto the same network.

Delivering intelligence

Thanks to these features, TSN-compatible automation devices are

providing users with the tools to benefit from the convergence of IT and OT. This level of connectivity can turn into a cascade of benefits by delivering actionable insights to improve processes enabled by data availability, transparency and interconnectivity.

For example, within a single packaging machine, it is possible to combine devices such as robots, vision, remote I/O as well as RFID readers and printers within the same network topology, with the advantage of sending production data to higher level systems using the same network. This allows businesses to generate comprehensive insights into their activities and develop cooperative ways of working through higher-level enterprise systems.

These capabilities, in turn, enhance strategic decision-making activities, which benefit from greater responsiveness and empirical evidence. For example, businesses can identify and address process bottlenecks or inefficiencies, improving productivity. Furthermore, decision making can be automated using intelligent control setups, where machines are able to self-regulate their processes based on the results from advanced data analytics.

Convergence – and its advantages – are ultimately the reason why TSN-compatible devices are considered key enablers of Industrial Internet of Things (IIoT) and smart manufacturing applications. In effect, these applications can only succeed if backed by a reliable and accessible framework to collect, integrate and contextualise data.

Leap at the chance of convergence

Advanced automation components with TSN connectivity, such as the drives and controls offered by Mitsubishi Electric, are a pillar of futureproof

manufacturing strategies. At the same time as looking ahead, these devices also ensure that existing setups are supported by providing backwards compatibility. This means that companies can upgrade legacy systems and seize the opportunities offered by these state-of-the-art devices without hesitation. By adopting TSN-driven solutions now, businesses can increase the flexibility and efficiency of their operations to keep ahead of the competition.

Image captions:



Image 1: TSN is an innovative technology that is designed to enhance the capabilities of Ethernet, providing the network connectivity to create smart factories.

[Source: Mitsubishi Electric Europe B.V.]



Image 2: Jeremy Shinton, Product Manager for Edge Computing Technologies at Mitsubishi Electric.

[Source: Mitsubishi Electric Europe B.V.]

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The role of Industrial Automation – UK Branch is to manage sales, service and support across its network of local branches and distributors throughout the United Kingdom.

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