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Case Study
2023

tManager ControlLogix Module Optimizes Food Production R&D

Exploring the ways tManager creates on-demand time-stamps of process data, improving the product development process in food manufacturing applications.

To achieve success in today's data-driven manufacturing environments, plant floor control systems must be able to exchange information with enterprise computing systems. Transaction managers, like the tManager® Enterprise Appliance Transaction Module from Softing, provide this critical bridge, simplifying the data integration process between PLCs and higher-level systems. This solution has many operational advantages: tManager enables seamless enterprise-to-controller connectivity. As an in-chassis ControlLogix module, it also offers robust data handling capabilities, ease of usability and superior security, all while eliminating the need for software coding or a PC in the middle.

Taking these benefits even further, tManager can significantly improve the research and development (R&D) process for manufacturers, capturing on-demand production data that informs and enhances successful product development.

For example, a company approached Wenger Manufacturing to develop and test a biodegradable packing peanut. This new peanut would need many of the same production requirements as traditional peanuts, however, the company was looking to incorporate materials that were less impactful on the environment. A specialist in extrusion and dryer technologies, Wenger has a unique Technical Center with data acquisition capabilities to solve customer challenges such as this. In this instance, Wenger had to conduct hundreds of production runs of the peanuts, all while capturing process data to meet packing specifications, achieve environmental goals, decide which run was optimal and then recall those parameters for full-scale production.

Using its unique testing and manufacturing approach, complete with tManager's data-capturing and time-stamping capabilities, Wenger successfully provided its customer with process data that optimized the new packing peanut's material formulation. The customer has since used this information to scale up production of this new, sustainable product across four plants.

Making Data Available For Product Development

Using tManager to time-stamp production data for customer R&D unlocks many benefits for Wenger and its customers, including shortening customer time to market, optimizing the development of new, sustainable products and ensuring food manufacturers produce safer food products in accordance with FDA regulations.

The Wenger Technical Center

Wenger uses tManager to collect data during customer tests and production runs within its Technical Center. Located in Sabetha, Kansas, this fully equipped, 25,000-square-foot agrifood laboratory enables companies to test their ideas and production techniques using Wenger's suite of production-scale extrusion and drying equipment. The test runs conducted in the Technical Center dramatically increase customers' understanding of the extrusion process, enabling them to improve product quality and manufacturing efforts in food production applications related to alternative proteins, pet food, aquatic feed and more.

tManager, an in-chassis module that enables direct bi-directional data exchange between SQL databases and ControlLogix® PLCs, was installed on a Wenger Magnum ST Series twin-screw extrusion machine. The device captures roughly 90 data points, including flow rates, temperature zones and pressures during production runs, tying process parameters to specific samples in a way that optimizes the overall product development process.

For example, if a customer likes a sample, Technical Center professionals can create an on-demand time-stamp of the process data that resulted in the product. These capabilities have improved Wenger's ability to test, analyze and produce product prototypes and develop manufacturing processes for its customers.

In addition to capturing and time-stamping machine data during production runs, tManager offers the necessary flexibility Wenger needs for its production runs. For example, Technical Center professionals can adjust the rate at which tManager captures the data, ensuring customers only receive what is beneficial to them and are never overwhelmed by the volume.

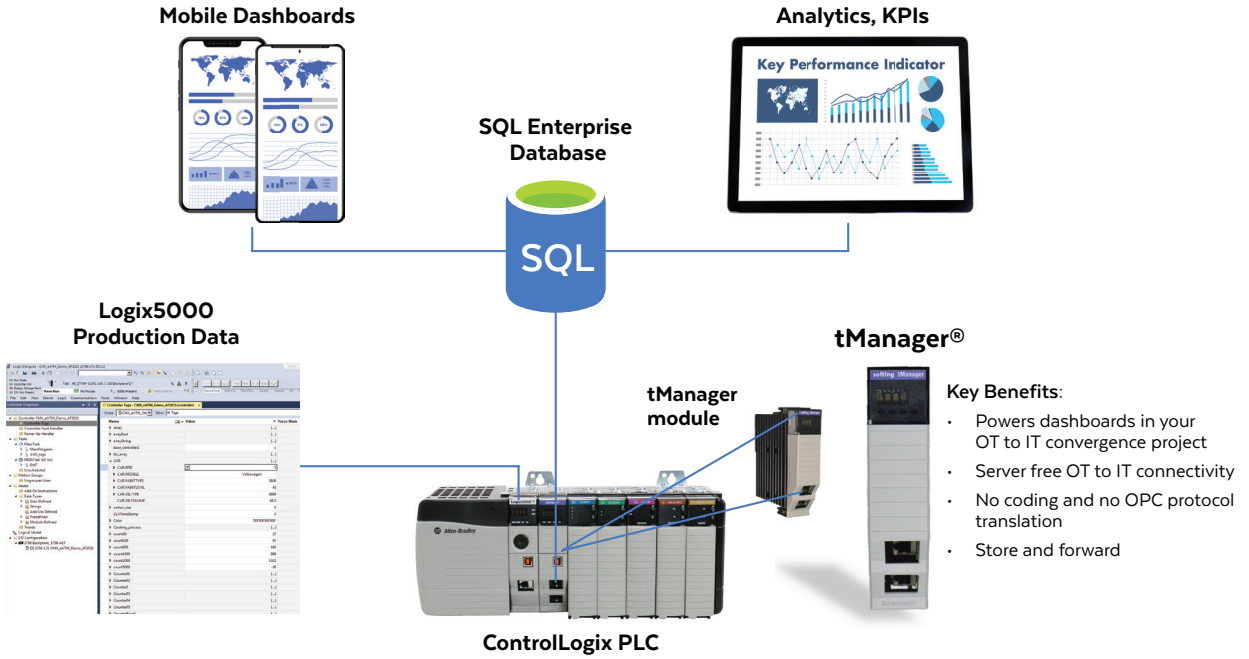
According to Wenger technical experts, adding tManager to the extrusion machine, which took place between April and May of 2022, was a quick and straightforward process. The Wenger team appreciated Softing's comprehensive library of how-to videos, which walk tManager users through the configuration process in various applications.

tManager Features at a Glance

Robust data handling and auditing capabilities. tManager has access to the Rockwell backplane, increasing transaction speeds. It automatically enumerates PLC tags and can monitor tags without touching the PLC logic. It also maximizes data availability via optional store and forward capabilities. All data is time-stamped, and transactions can be saved for future auditing.

Superior security. Unlike a PC, tManager is not subject to anti-virus updates and ongoing patches. Being a PLC in-chassis module, it is also virus-resistant.

Easy to operate and maintain. tManager's configuration software comes with extensive online help and unlimited installations on computers. Once configured, the device handles all data transfer and transactions within the hardware itself.



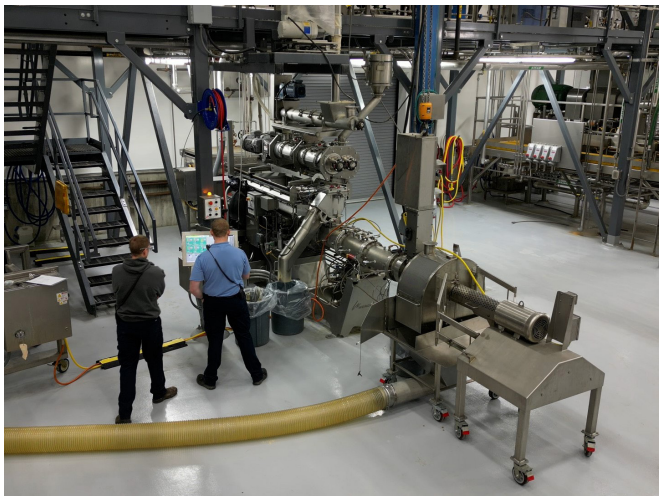
"Over the course of the project, Softing technical experts went above and beyond the call of duty to answer our questions, often making themselves available off-hours," says Andrew McClaskey, Process Director at Wenger. "Their high level of service accelerated the configuration process within our Technical Center."

Driving Safety and Sustainability With tManager

By marrying the production runs and machine data, tManager has improved Wenger's ability to assist customers with process engineering, scale-up processes and transferring the technology to customer facilities. It has also unlocked benefits related to more sustainable product development, safer food production and overall equipment effectiveness (OEE):

Driving sustainable product design. tManager's data-collection capabilities within the Wenger Technical Center support and accelerate emerging corporate sustainability and green technology initiatives. For example, using tManager's time-stamping capabilities, Wenger successfully provided its customer with process data that optimized the new packing peanut's design.

Improving food production safety. In addition to supporting sustainable product development, tManager's role within the Technical Center has unlocked benefits related to safer, more efficient food production. Producing food for the growing human population has become increasingly difficult — particularly from a protein standpoint.



An inside look in Wenger's Technical Center.

"We pride ourselves on developing quality plant protein alternatives for meat," McClaskey says. "We're optimistic that tManager's data collection and time-stamping capabilities during test runs will help us optimize the composition of these new food sources and get them to market quickly."

Facilitating compliance with FDA regulations. Because precise temperature is critical to food production, the FDA requires proof that manufacturers have reached a kill step, which represents the point at which dangerous pathogens are removed from a product. In the past, if there was a network outage, Wenger would need to discard the production run since the data was not collected continuously to prove they met the precise temperature requirements. With tManager, the Wenger team can now provide its food production customers with this critical information during production runs, mitigating risks to consumers once these products hit the market — even during network outages — thanks to tManager's store and forward capability at the PLC level, which previously was not possible.

Unlocking new OEE insights. Thanks to tManager, Wenger Technical Center professionals can provide their customers with accurate, reliable and accessible extrusion machine data, allowing these companies to scale up production and get new products to market ahead of the competition. In addition to accelerating the product development process, tManager has become an important part of new customer conversations regarding OEE. In fact, one company recently consulted Wenger to learn how the process data from the extrusion machine can improve this metric.

Expanding tManager's Role at Wenger

With the success it has seen with tManager, Wenger plans to add tManager ControlLogix modules to additional extrusion and dryer machines within the Technical Center. The company also plans to incorporate these modules on the OEM extrusion machines it sells to customers.

For more information about tManager, visit ***our website***.