



tManager Seamlessly Bridges PLC and Enterprise System in Robotic Plasma Cutting Application

As digitization continues to take the manufacturing world by storm, there is a growing need to connect information technology (IT) systems with production machinery. In other words, to truly reap the operational and cost benefits of connected enterprise systems, there needs to be a technology in place to facilitate the exchange of data between the top-level enterprise and machine controller. Until now, many manufacturers have bridged this gap by writing custom code, driving up time and costs and significantly increasing their time to market.

These were some of the recent challenges faced by TranTek Automation, a Michigan-based manufacturer that specializes in robotic welding systems. Fortunately, a solution came in the form of the tManager® Enterprise Appliance Transaction Module, which seamlessly connects enterprise-level databases with programmable logic controllers (PLC).

With this innovative appliance in place, TranTek Automation quickly delivered a plasma cutting robotic system that could communicate with its customer's enterprise database without having to write any code. At the same time, the end user took advantage of tManager's ability to download recipes and manufacturing instructions directly into the controller.



tManager enables bidirectional data exchange between enterprise systems and PLCs.

Structural Steel Cutting Robots Need High-Level Instructions

Since 1986, TranTek Automation has designed and built automated welding, material handling, inspection and assembly solutions, including preconfigured robotic welding cells, as well as robot transfer units (RTU), tip dressers for resistance welding, conveyors and retractable locating pins. In one recent application, the company was tasked with designing a system consisting of six plasma cutting robots. These robots would work synchronously and apply plasma torches to large, made-to-order steel structural parts using various recipes, which defined the machine settings to process the steel.

One issue that arose during the machine-building process was connecting the customer's higher-level IT system to the machine controller. "All the production data for the steel parts was located in a large database within our customer's central server," explains Jeff Ebert, Senior Controls Engineer, TranTek Automation. "Creating an upward-level connection between the PLC and server was creating a lot of challenges for us. We were spending weeks just writing the code so the system could access and download the recipe files to the PLC."

tManager Seamlessly Bridges the Gap

A solution came in the form of tManager from Softing, a leading provider of products for industrial automation and IT networks. tManager enables bidirectional data exchange between enterprise systems and PLCs — in this case, ControlLogix® and CompactLogix™ control platforms from Rockwell Automation.

"tManager is an easy-to-use, finished application that enabled us to design a system that could seamlessly bring in the production data for thousands of steel parts — everything from how the steel has to be cut, to where holes should be located along the axis," Ebert says. After tManager downloads the manufacturing recipes from the database to the PLC, the plasma cutting robots can automatically adjust variables like amperage and gas flow.

Integrating tManager into this robotics application has brought several benefits to the end user once the system was delivered and installed at the customer site. Not only does the system download daily recipes from the database to the ControlLogix platform, it also uploads production metrics from the ControlLogix platform back to the database, thereby informing the enterprise system whenever production runs are completed.



tManager downloads recipes and manufacturing instructions directly into the controller.

"Thanks to this bidirectional data exchange capability, our customer can now confirm and update shipping orders directly within the ERP system, enabling them to fulfill their orders for steel parts faster and speeding their time to market," Ebert says.

Another benefit of tManager was its ease of setup, which enabled TranTek Automation to minimize engineering and installation time during the machine-building process. When the device is first inserted into the ControlLogix rack, the module automatically enumerates PLC and database tags and structures — no software coding or scripting required.

"I spent only a few hours setting up tManager, whereas previously we were spending weeks just writing the custom code" Ebert, who has a degree in computer science, says. "Thanks to tManager, we also avoided the code maintenance headaches associated with custom software."

Additional benefits of tManager include the following:

- **Easy operation and maintenance.** tManager's configuration software provides extensive online help for end users, as well as unlimited installations on computers. These features make the system easy to set up and monitor. And once configured, tManager handles all data transfer and transactions within the hardware itself
- **Superior security.** Unlike a PC, tManager is not subject to anti-virus updates and ongoing patches. Being a ControlLogix in-chassis module, it therefore resists viruses.
- **Robust data handling and auditing capabilities.** With access to the Rockwell backplane, tManager increases transaction speeds, automatically enumerates PLC tags and can monitor tags without touching the PLC logic. In addition, tManager maximizes data availability via store, forward (local buffering) and failover. All data is time-stamped, and transactions can be saved for future auditing.

"tManager has really taken a burden off of my shoulders," Ebert says. "We achieved OT/IT interoperability for our customer without having to write any code and delivered our robotics system quickly. And our customer is very satisfied — especially regarding the real-time shipping updates, which has saved them a lot of time. In fact, they've decided to move forward on a long-term plan to automate and upgrade their systems, and tManager has become a standard for all their installations."



An in-chassis module, tManager is easy to set up — minimizing engineering and installation time.

Learn More About This Versatile Technology

Appliances like tManager are a critical enabling technology for enterprise-to-controller connectivity, bridging the gap that exists between connected enterprise systems and the shop floor. Options exist for a variety of databases such as Microsoft SQL Server, Oracle Database, MySQL, AWS IoT SiteWise and Azure Cloud. In addition, via the front Ethernet port, drivers can connect tManager to additional PLCs by Allen-Bradley, Siemens, Schneider and Modbus.



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