TOSIBOX®

Machine builder uses TOSIBOX® for remote monitoring and diagnostic services to improve machine reliability and uptime

TOSIBOX® technology enables smarter, more reliable machines for Ecoclean Inc.

ECOCLEAN

Ecoclean makes a broad array of cleaning equipment from aqueous robotic washers to solvent-based vapor degreasing systems that employ vacuum drying. The parts they clean range in size from engine blocks to components made by small screw machines.

A global company with a large installed base in the United States, Mexico, Europe, India, and China, Ecoclean makes systems for parts cleaning and surface treatment applications for industries around the world.

Hugo Benzing LLC manufactures fasteners for the automobile, aerospace, fine mechanical, and electrical industries.

Challenge

Industrial IoT concepts are inspiring new business models for manufacturing. In turn, manufacturers are asking equipment makers to find new ways to help them improve machine reliability and production uptime.

Ecoclean Inc. provides remote monitoring and diagnostics services on dashboards by using Profinet networks. Ecoclean machines are a key part of the quality control process for manufacturers and reliability is critical. Often a washer can be fed from many production lines, making that process crucial in overall plant production.

Ecoclean's technical support involves three tiers of service, beginning with remote diagnostics of the programmable logic controllers (PLCs), human-machine interfaces (HMIs), robots, drives, and other components that control the cleaning machines. Online troubleshooting, modifying parameters for process control, software upgrades, and adjustments to the PLC code can be handled remotely.

Statistical data from the machines also can be logged onto a server and then used to identify trends and make preventive decisions for maintenance prior to any equipment failure. A third service level enables the information that's been compiled to be displayed for the customer in real time on a dashboard interface that shows the pertinent machine data graphically.

Ecoclean's primary goal was to maximize uptime and customer satisfaction, as well as to identify opportunities for continuous improvement for current and future equipment. Algorithms evaluate machine performance and guide the company's service technicians in their troubleshooting and technical assistance work with customers.

Solution

The first installation of Ecoclean's new remote support capability was at the Hugo Benzing manufacturing facility in New Hudson, Michigan. The plant has a Profinet network, which allowed Ecoclean technicians to remotely connect to the network and clean machines using a self-contained, secure TOSIBOX® Lock.

Although it would have been possible to connect to the Internet in other ways to provide support, the use of the Profinet protocol was fundamental because of its functionality and processing of safety signals. The installed devices had embedded hardware configurations, dedicated diagnostic signals, and priority settings for safety. These types of options are crucial when making a safe, but also fast and reliable system. Systems built on this framework are easily upsized without impacting functionality due to the complex nature of industrial automation.

Ecoclean and the customer ruled out using a cloud-based system for providing remote technical support. A cloud would have slowed down response time for remote technicians. It was also a question of security for customer data since a third-party service would have been required with that approach.

Onsite installation for the remote service required establishing the connection and testing all nodes on the network. Ecoclean's back office engineering and technical support specialists interact with customers as needed daily. Spare parts and service sales staff take leads from pertinent machine data and automatically sort it, streamlining the ordering and support process. Customers have found value in the option to have remote support from machine and process specialists.

Ecoclean intends to embed remote service capability into each new capital sale, making the hardware standard and the service contract an option for customers that require high uptime through preventive maintenance and statistical analysis.

"This is a perfect example of a streamlined integration for remote diagnostics. With the Profinet architecture and TOSIBOX®, we had a secure VPN connected to the network in minutes, and it required minimal interaction with the customer's IT department. It uses a non-IP protocol on top of the Profinet Ethernet layer, making the remote connection implementation easy and secure."

"As devices compatible with the IIoT become more prevalent and with broader options, we intend to target key data points within all types of equipment to measure and log machine performance. The IIoT is here to stay, and we are building the foundation to accelerate automation's continuing evolution."

Aaron Zarembski,
Controls Engineer,
Ecoclean Inc.

Benefits

- Secure: One TOSIBOX® Lock protects all devices behind it.
- Point-to-point data flow: data streams directly between two modules, no cloud
- IT/OT convergence solved
- Easy configuration-free Plug & Go™ implementation without special IT skills
- Interaction with a customer's technicians helps expedite troubleshooting and keep uptime to the highest level.
- Remote support allows Ecoclean to provide the added value of flexibility for any custom controls or HMI upgrades the customer might want.

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