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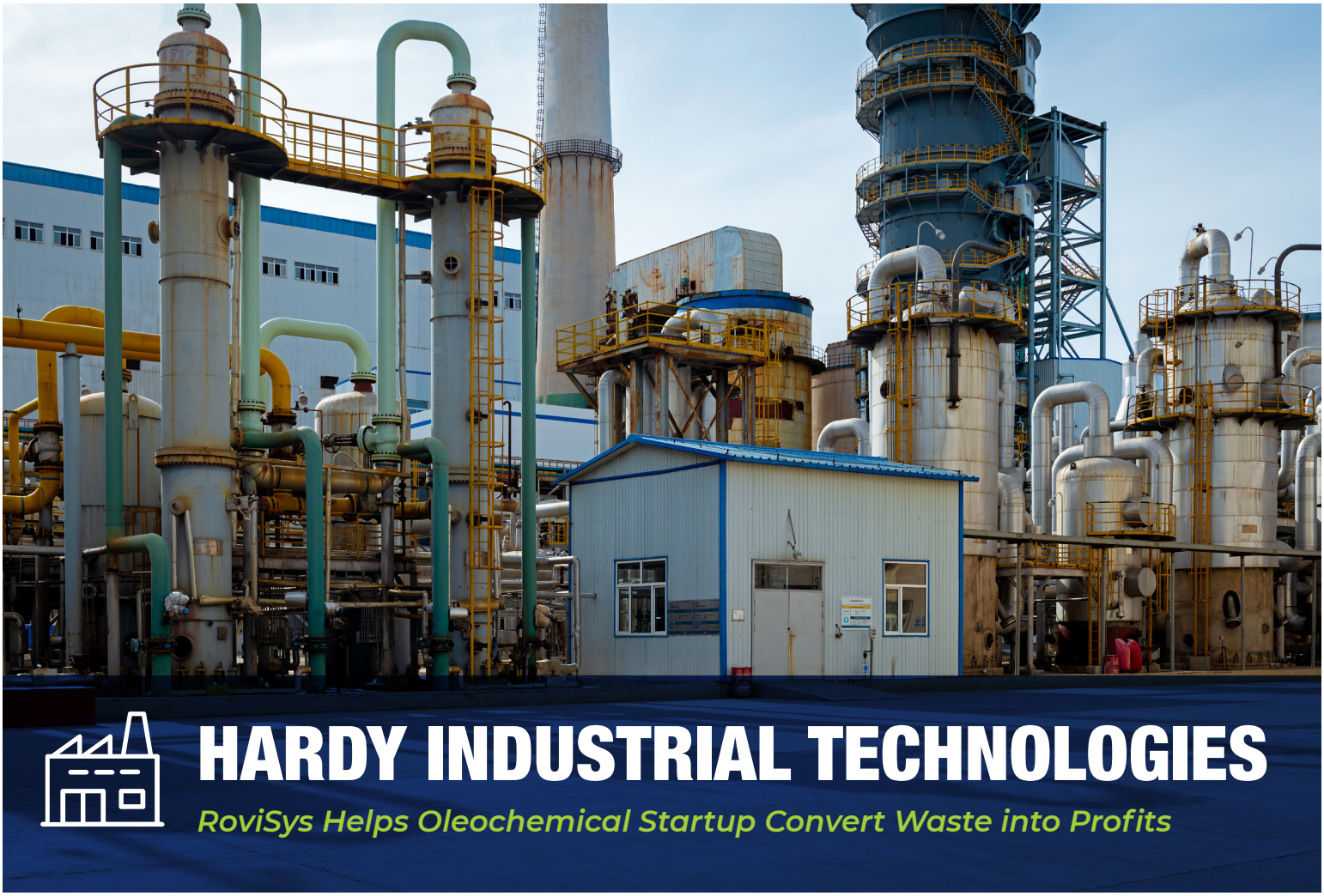
Automation & Information Solutions

CASE STUDY



HARDY INDUSTRIAL TECHNOLOGIES

RoviSys Helps Oleochemical Startup Convert Waste into Profits

When Magnus International Group purchased a shuttered specialty chemicals plant in 2007, the Cleveland-based startup saw it as an entry point into the oleochemicals market with the initial goal of converting natural fats and oils into industrial products. But before Magnus could tap into a market that is projected to reach nearly $30 billion by 2020 , it needed to revive a decades-old factory equipped with a multitude of control systems spanning numerous ownership changes and expansions.

When Magnus co-founders Eric Lofquist and Scott Forster reopened the plant in 2007, the facility began refining co-products from food manufacturers into industrial waxes for renewable firelogs — while running at a mere fraction of its total capacity. The co-founders soon realized that the facility also could produce quality animal-feed ingredients, plugging them into a $400 billion global market while adding new layers of process complexity that exceeded the capabilities of the plant's patchwork of automation platforms.

Like most entrepreneurs, Lofquist and Forster hoped to grow their business, penetrate new markets, diversify their product portfolio, and expand their client base. To achieve those objectives, they realized the need for an efficient production system that could

accommodate a variety of raw materials based on customer demand.

Operating as Hardy Industrial Technologies and Hardy Animal Nutrition and located in Painesville Township, Ohio, about 30 minutes east of Cleveland, the plant had a variety of outdated controllers, I/O modules, graphic terminals, HMIs and software — most of which lacked any supporting documentation. It was clear that some components had been pirated and would need to be repaired before processes could be brought online. While this arrangement might have been workable when one process was running (out of 13 total processes), there was a clear need for a flexible automation platform that could quickly and seamlessly adapt to changes in project scope, product demand, and raw materials as they ramped up production.

Knowing that the existing automation system lacked the capabilities to support their business goals, the Hardy management team explored several solutions from leading vendors. Their tactical requirements for a new system included:

- Plant-wide interoperability of controllers, HMIs, drives and other components
- A standardized code library, supportable for the long term
- Reliable hardware to support maximum process uptime
- Connectivity between processes, and visibility into system performance
- A scalable, customizable solution that is easy to configure and operate
- A long-term solution to grow with

After evaluating several automation products, the decision was made to move forward with Rockwell Automation and its solution partner, RoviSys. The pair offered the most flexible, cost-effective approach to designing a process infrastructure that aligned with growth plans.

“RoviSys and Rockwell were willing to work with us without a rigid project scope by using a high-level I/O count control system,” says Tom Szucs, Plant Engineer. “This enabled us to refine the scope as the project progressed and perhaps most importantly, it reduced the project timeline significantly.”

Hardy Industrial Technologies leadership recognized the business benefits of adopting Ethernet/IP technology to connect their manufacturing and business networks. As they restarted the plant using the Rockwell/Cisco Converged Plantwide Ethernet (CPwE) standards, RoviSys and Rockwell also helped them develop a long-term vision for the facility’s control network that incorporated and optimized each process.

A PHASED APPROACH TO MODERNIZATION

The first project for Rockwell and RoviSys was the glycerin department, where crude glycerin is refined into a clear, 99.7% pure glycerin product. The department is comprised of a distillation column, 15 storage tanks, a thermal fluid system, a carbon-filtration system, and truck and railcar access.

The solution: PlantPAx DCS, Allen-Bradley ControlLogix controllers and I/O modules (with a total I/O count of 164) running on Rockwell FactoryTalk View SE software. The components are connected via a distributed HMI server/client architecture.

RoviSys and Rockwell recommended similar solutions for the plant’s F5 fractionator (I/O count: 146) and S3 still (I/O count: 86), which are adjacent to each other in the same department. The solutions partners also deployed a distributed HMI system, installed redundant servers, and assisted with the design and implementation of a central control room as part of an audit and upgrade of the plant’s control network.

The flexible, customizable solutions paid immediate dividends. Uptime and yield were significantly impacted, with PLC and control system uptime better than 99% and F5 yield improving 20% post-commissioning phase. After six months of operating the F5 fractionator, which converts crude fatty acids into high-purity, low-odor, low-color fatty acids, Hardy customers expressed interest in a new distillate. RoviSys had designed PID loops that allowed plant operators to modify the distillation process on the fly, enabling the plant to produce the new distillate within a week. The new product sales have quadrupled since the first shipment and it has been a growth catalyst ever since.

RoviSys and Rockwell implemented the various control solutions on a project-by-project basis, allowing the plant’s departments to come online incrementally and reducing the upfront financial burden. Through this phased approach, as each process restarted and began contributing to the company’s revenue stream, Hardy was able to fund the next project on its wish list.

AUTOMATION FUELS GROWTH, EMPOWERS TEAM MEMBERS

Thanks to the flexible, customizable automation platform, plant operators have been able to leverage operational data to continually improve controls, optimize yields, and quickly develop new products. Because the PlantPAx DCS technology is far more reliable than the previous systems — minimizing the

ROVISYS

RoviSys is a leading independent provider of information management solutions, manufacturing automation solutions, control systems integration, building automation, and enterprise and industrial networks. RoviSys is distinctly qualified to deliver solutions that drive productivity, improve product quality, increase asset utilization and integrate technology. Since 1989, RoviSys has been a partner that makes businesses stronger and more profitable.

MAGNUS INTERNATIONAL GROUP

Magnus International Group develops and manufactures natural animal-feed ingredients, natural industrial and consumer waxes, customized fatty acids, biodiesel-fuel feedstocks and other specialty chemicals by refining and repurposing renewable raw materials.

Headquartered in Chagrin Falls, Ohio, Magnus operates through three subsidiaries: Hardy Industrial Technologies, Hardy Animal Nutrition, and Hardy Technical Services.

need to debug hardware and instrumentation — team members can focus their time and energy on process optimization and product development.

"Automation has drastically changed the way our operators work and the way our managers manage," Szucs says. "Employees now can focus on doing their jobs instead of troubleshooting the processes. Supervisors no longer have to spend time diagnosing system faults and process issues, freeing them up to help impact yield, throughput, and product quality in a positive way. All of our team members are empowered to perform more high-value work, and this has cascaded throughout the workforce."

Today, the Painesville Township facility is running eight of 13 processes with 75 employees. The company recently added a quality-control lab and made a number of other improvements to the 25-acre production site as part of a $4.5 million expansion. Crain's Cleveland Business and the Case Western Reserve University Weatherhead School of Management have recognized Magnus as one of the fastest-growing companies in the Cleveland area and Eric Lofquist recently won E&Y's Entrepreneur of the Year in Manufacturing and Distribution.

1 Zion Research, *https://globenewswire.com/news-release/2016/03/01/815643/0/en/Global-Oleochemicals-Market-Poised-to-Surge-from-USD-21-25-Billion-in-2014-to-USD-29-50-Billion-by-2020-MarketResearchStore-Com.html*

2 International Feed Industry Federation, *http://www.ifif.org/pages/t/Global+feed+production*