Machine building

Customer case study

Access only where needed

Highlights

- As part of an Industrial Internet of Things (IIoT) initiative, Showa Denko Materials needed to upgrade its plant network.
- Showa Denko Materials' goal was to improve overall equipment effectiveness by 10 percent and needed machine data available in real time, so the production team could take a proactive approach to scheduling.
- Showa Denko Materials worked with Neff Automation to install Phoenix Contact's FL mGuard to implement 1:1 NAT routing.
- The mGuard has improved remote access, reduced man-hours, and made it possible to connect production equipment to the plant network for data access without overburdening the network.

"Confidence in Phoenix Contact products, and especially support, is very high."

Steven Dwenger, Automation Engineer at Showa Denko Materials

Customer profile

Showa Denko Materials is a leading global supplier of precision engineered powdered metal components used in a variety of highly diverse and competitive industries. The company's products include valve guide inserts, timing system sprockets and pulleys, and variable valve timing components, including housings, vanes, rotors, and sprockets. Showa Denko Materials produces high-volume, advanced engineered components primarily for the automotive, construction/agriculture, lawn and garden, and general-purpose engines.

Challenge: Better data through the IIoT

As part of an Industrial Internet of Things (IIoT) initiative, Showa Denko Materials needed to upgrade the plant network. Production data collection required production cells to be connected to the plant network.

Originally, all of Showa Denko Materials' machine network devices were tied to the higher-level plant network. Over time, the level of traffic overran the network's capability. At one point, the plant network was taken down due to excessive traffic. The local networks on the individual cells had to be disconnected from the plant network.

The engineering team wanted to save a few IP addresses on the plant network and reuse IPs on the machine networks. They also wanted to segregate the local machine network from the plant. However, they still wanted to route certain devices (cameras and HMIs) through the network, so that those devices are accessible for data collection.

Showa Denko Materials targeted a 10 percent improvement in overall equipment effectiveness. The ability to track machine effectiveness and utilization will allow strategic improvement in production throughput, reducing necessary overtime labor and saving labor costs.

Once the project is complete, machine effectiveness data will be available in real time. The production team will be able to take a proactive approach to scheduling/focus, rather than reviewing the previous day's performance after the fact.

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Solution: Better networking with the FL mGuard

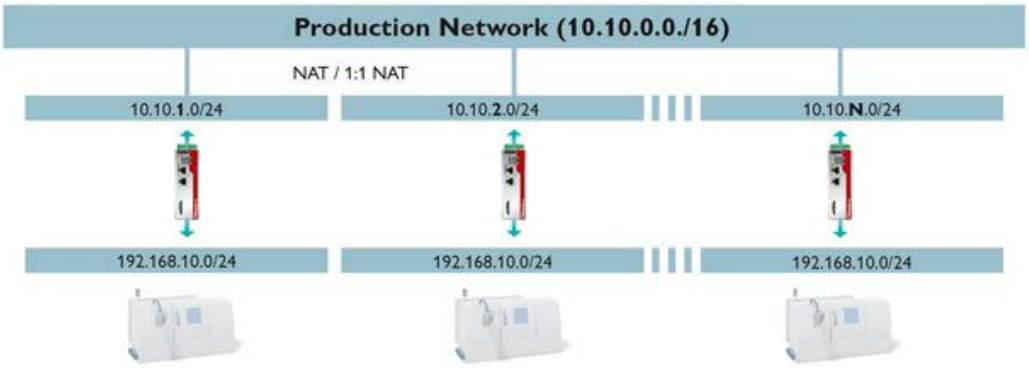
Neff Automation proposed 1:1 NAT routing to isolate machine network traffic from the plant network. This would allow only the necessary IIoT traffic through to the higher-level network. Showa Denko Materials' IT personnel searched for possible solutions, but to no avail. Phoenix Contact's FL mGuard was the logical choice, and was the only device tested.

The mGuard was installed at the top of the machine network to isolate the network from the plant network. The installation has been phased and is still ongoing. The first unit was installed in mid-2018.

"The ability to access network devices from anywhere in the plant has freed up man-hours for system engineering personnel. The mGuard solution also bridges the gap between the needs of IS personnel and plant engineering personnel. The machine networks can be built to fit the needs of plant engineering, while the plant network side of the system conforms to the requirements of IS," said James Adams, automation engineer at Showa Denko Materials.

This makes a difference any time a machine cell needs to be accessed. Engineering staff no longer needs to walk to the cell to diagnose and rectify problems, which saves several minutes per instance. These issues occur multiple times daily, so the time savings will be cumulative over the life of the deployment.

Steven Dwenger, automation engineer at Showa Denko Materials, gave the mGuard high marks for deployment, support, and reliability.



Neff Automation suggested 1:1 NAT routing as a secure way to isolate the plant network from the machine network.

He cited the support from Neff Automation as especially helpful. "Adam Hessling, Neff's Phoenix Contact specialist, was phenomenal," said Dwenger. "Neff provided on-site support with installation and configuration. Ongoing support has been provided since installation."

Results: Remote access saves time and money

Showa Denko Materials' biggest benefits so far have been the remote access, man-time savings, and the ability to connect production equipment to the plant network for data access without overburdening the network.

Phoenix Contact's FL mGuard family includes firewall, routing, and VPN functionalities in an industrial package.

Engineering personnel can access and rectify issues much more quickly, using remote access and eliminating the need to travel to the site of the problem. The IT group has significantly decreased man-hours troubleshooting issues related to automation equipment. Also, common addressing schemes on local machines has made control engineer lives easier.

Dwenger said that Showa Denko Materials has historically used numerous Phoenix Contact products, including unmanaged Ethernet switches, power supplies, and terminal blocks, and "The mGuard application is a continuation of a well-established relationship."

He concluded, "Confidence in Phoenix Contact products, and especially support, is very high. The manufacturing and distributor support throughout deployment gave a very positive image of Phoenix Contact and Neff."

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