

Jetted Fiber Streamlines Two Network Upgrades for Global Industrial Company >



THE PROJECT

A global leader in value-added solutions for agriculture, energy and chemical markets was conducting a large-scale overhaul of their network infrastructure at several key campuses. The sites include a variety of industrial / manufacturing plants and support / administrative buildings.

One of the key elements of the upgrade was the implementation of robust pervasive wireless. This would allow staff more productivity and flexibility, allowing them to access the network from anywhere across the campus. It would also provide the infrastructure for a

variety of industry 4.0 technologies, including intelligent manufacture and automated vehicles.

THE CHALLENGE

Wireless technologies present new challenges, such as high concentrations of users and applications, high bandwidth demand, and a varying number of connected devices. High performance cabling and careful planning would be needed to ensure antennas / wireless access points were able to provide sufficient bandwidth for existing and future demand.

The project design had been taken to a full, detailed “construction

document” package, which left little room for change orders once installation commenced. Therefore, the network design would need to be delivered to 100% of the required detail, rather than the usual 75% or 80%.

It was also discovered that a concurrent upgrade project for the Process Controls Network required a new, separate physical backbone.

MOLEX PRODUCTS

Molex Jetted Fiber (MJF) Pathways

MJF Cables

Molex PowerCat Category Cabling

THE SOLUTION

The wireless network was designed to support several wireless protocols for flexibility and reliable coverage. The initial requirements were for industrial wireless protocols based on IEEE 802.15 standards as well as IEEE 802.11 standards AC (WiFi5) and AX (WiFi6). The network was designed to allow future upgrades and expansion without disruption to the existing networks once they were online.

To support this, the AP (Access Point) locations required multiple physical connections. Since all locations required power, most of the locations were cabled with Molex PowerCat copper cabling to support both networking and PoE (Power over Ethernet). AP locations beyond TIA distance standards were connected via optical fiber run through Molex Jetted Fiber (MJF) conduit.

The MJF system features multi-celled Microduct conduits, which enable multiple fibers for different networks to be installed into the same conduit.

The separate Process Controls Network design, which was already in progress, also specified optical fiber for its backbone. Fortunately the potential for the two projects to be combined was realized early.

THE BENEFITS

Molex Jetted Fiber is “jetted” into its conduits with compressed air, propelling the cable and reducing friction. The result is that significantly greater lengths of optical fiber can be pushed without risking damage to the media, and significantly reducing installation time and cost.

Over long distances, this also reduces the amount of manholes, handholes and pull boxes that are required. There is no need to install a winch or other pulling method, reducing the number of technicians required and minimizing disruption to active sites.

The ability to easily jet in additional fibers results in significantly reduced Day 2 management costs and disruption. Upgrades and additions can be managed without the need for demolition or construction of new pathways.

Designing to 100% of the required detail ensured a streamlined and efficient installation process, minimizing the need for reworking and additional 11th-hour costs which can often occur in infrastructure projects.

Integrating the process control network backbone into the existing MJF pathways eliminated the need to lay separate conduits and resulted in a substantial reduction in project costs.

