

IT Enabled Future-Ready Plant Mahindra in Pune >



CUSTOMER PROFILE

THE COMPANY

Founded in 1945 as a steel trading company, Mahindra entered the automotive manufacturing in 1947 to bring the iconic Willy's Jeep onto Indian roads. Over the years, they have diversified into many new businesses in order to better the needs of customers.

The Mahindra Group is a US \$12.5 billion multinational group with more than 119,900 employees in over 100 countries across the globe. Today, their operations span over 17 key industries that form the foundation of every modern economy: aerospace, aftermarket, agribusiness, automotive, components, consulting services, defense, energy, farm equipment, finance and insurance, industrial equipment, information technology, leisure and hospitality, logistics, real estate, retail, and two wheelers.

THE PROJECT

Mahindra Vehicle Manufacturers Ltd. (MVML) is located in Chakan - Pune, India. This constitutes the complete manufacturing facility for Heavy & Light Commercial vehicles, SUV's, Pick-up vehicles, four wheeler vehicles for domestic and export business. MVML was designed and built as a green-field facility to integrate the best in technology, environmental sustainability, social responsibility, and operational excellence. Spread across 700 acres of area, Chakan offers a flexible and eco-friendly manufacturing layout, with approximately 2700 employees located on site.

Mahindra anticipates further growth as the plant gradually expands its operations with the commissioning of new shops. To date, there are 14 major shops catering to both heavy, light and SUV type vehicles. The plant is also supported by a

separate supplier park, stock yard of approx 200 acres and other entity companies of Mahindra & Mahindra Ltd within the entire campus. The entire campus development is planned in phases. Of the 700 acres, presently 280 acres of land has been developed in Phase - 1, which includes the 14 shops.

MOLEX PRODUCTS

Optical Fiber Cables
UTP/FTP Cables

PRODUCT FEATURES

Molex's PowerCat solutions have been developed with the highest performing capabilities in mind, with improved data transmission over higher frequencies and enhanced noise suppression. Molex Cat 6 cable offers enhanced alien crosstalk characteristics, allowing 10GBASE-T to be run for the same 100 meter maximum distance.

THE NETWORK DESIGN

The Mahindra network solution was to be of a scalable modular design and future proofed to accommodate the next stages of the plant development. A fault-tolerance mechanism was built in whereby the network traffic could re-route in case of network failure and be self-healing during the network recovery. This implies that in case of any breakdown in the physical cable connected to the primary port of the network switch, it automatically re-routes the traffic through redundant port using the port redundancy technique.

The network was of simple design to improve its adaptability yet included a high level of security requiring an intelligent, proactive, and multilayered approach to network security; not only from the external world, but also between different functional groups within the network. With that in mind, network performance and network failure prevention were at the forefront of expectations. Ensuring an optimised enterprise network operation was vital, and therefore must be compatible with unique industrial protocols and achieve real-time networking performance requirements of automation and control applications; usually defined as latency, jitter, and minimal packet loss. Lastly, the network was designed to be suitable for the physical and environmental constraints of the production floor.

THE CHALLENGES

As with all large scale projects, each supplier had its share of challenges to overcome. System Integrator, Wipro Technologies overcame several hurdles to ensure the network challenges were met professionally. The very nature of the working automotive environment caused several implications, in particular providing

a continued hosting service from multiple locations, including available IT resources from portable cabins and maintaining seamless connectivity to the 14 shops spread over the 280 acres. They experienced frequent cable cuts, both internally and externally, as well as working with extreme conditions of dust, moisture, oils, chemicals, gases, shock, vibrations, EMI and temperature fluctuations. At the same time, they had to maintain a safe working distance from the HT/LT electrical cables when planning and executing the installation of the fiber cable.

To manage a rollout on this scale not only from the Mahindra plant perspective, but also from Molex's side was phenomenal. There was no assigned storage space for the connectivity products. It was astute Project management on Molex's part to get in the right material in right quantities in line with the different levels of progress of the project.

THE SOLUTION

Today, approximately 124 Km of OFC and close to 165 Km of UTP/FTP cables has been laid in the facility. The project has achieved its intermediate deadlines and is fully functional as per the Mahindra plan. This fully sustainable green initiative project is ready, future proofed for the next phase of development and is completely IT managed. Sustainability, heat control, recovery system, solar panels, water treatment along with several manufacturing processes are all riding on the IT backbone provided by Molex.

According to the Head of IT at MVML – Mr. B. Venkatakrishnan, *“the key to any business success is its solid infrastructure. A versatile, scalable and future-ready plant was the vision behind the new Mahindra Automotive manufacturing facility.*

An Innovative engineering, a frugal mindset, manufacturing excellence and environmental sensitivity have always been the hallmark of this new plant. The Molex solution was chosen to provide more mileage to the new emerging challenges and technological advancement growth at the MVML facility.”

He further remarked that *“we have very carefully invested to take care of the business needs and the company's future global expansions at-least 10 years plus down the line by employing the right resources. The entire campus network has built-in resilience and redundancy with the High Level design, which was conceived by the industry technology experts at Molex”.*



Mr. B. Venkatakrishnan, Head of IT at MVML



CONCLUSION

The state-of-the-art data centre at MVML is best in class. This has been designed to accommodate the latest technology servers, database, sophisticated networking devices and high end application systems to support its modern manufacturing facility built on the Molex platform. Apart from the specialized equipment employed in the Data Center, the fiber backbone cables (primary and secondary) originating from all the 14 shops converges in the Data Center. The server farm and core network switches employ Molex specialized fiber / FTP cables.

Virtualized environment (VMware) is used on the server end, thereby reducing physical hardware and saving power, space, green gases and cost, copper cables replaced by fiber cable in the server consolidation stage.

Mr. Venkatakrishnan commends that *“with the extensive guidance and onsite support from the Molex team, we were able to complete the Datacenter Development project within a stunning time of 100 days, which was else targeted at 240 days. Besides, we have been able to build a highly scalable, reliable, modular and robust backbone network for ensuring best performances to meet the requirements of the future-ready plant – MVML Chakan.”*

