

A black and white photograph of an industrial facility, likely a refinery or chemical plant. The scene is dominated by large, cylindrical storage tanks and a complex network of pipes and metal scaffolding. In the background, several tall smokestacks are visible, with wisps of white smoke rising from them against a clear sky. The overall atmosphere is one of industrial scale and complexity.

**Tech
Mahindra**

**CONNECTED
FACTORIES**

**Connected World.
Connected Solutions.**



CONNECTED FACTORIES

The Dawn of the Smart Factory

The Internet of Things (IoT) is a simple but powerful idea that will change processes, improve services and make lives better. IoT will enable many big leaps in several areas, from healthcare to lifestyle to transportation and more.

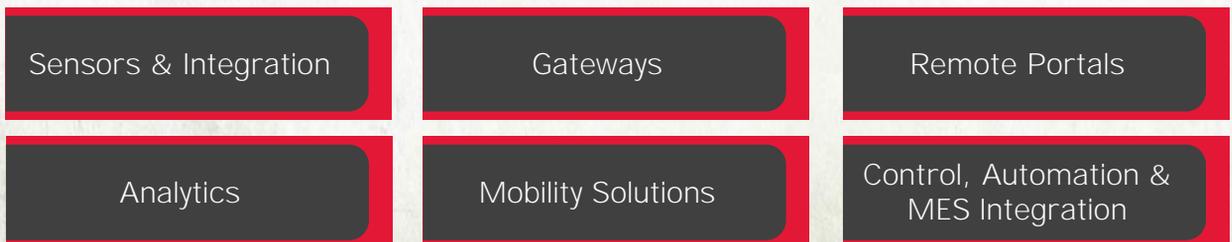
Nowhere will the leap be more pronounced or significant than in manufacturing and production. The IoT already plays a role in the world's industries and factories, eliminating silos, exploiting data and taking automation to a whole new level. This role will increase substantially with the maturing of IoT and the industrial internet.

Welcome to a world of Connected Factories, where connected, intelligent and aware equipment built on IoT, automation and IT take productivity and predictability to never-seen-before levels.

The Internet of Things will revolutionize a lot of things. Nowhere will it be more pronounced or significant than in the world's factories.

The Convergent Path to Connected Factories

Tech Mahindra's Connected Factories solutions combine the power of IoT with intelligent analytics and IT, connecting a variety of sensors, PLCs, robots and Digital Control Systems through an IoT enabled framework. The framework enables the acquisition of the data from all the connected sources. With built in analytics and enterprise system integration, the solution offers real time intelligence and data for improved productivity and OEE.



The Connected Shop Floor

Visibility and traceability are essential for automation in the shop floor. Connecting the different equipment in a shop floor on Tech Mahindra's Connected Factories platform makes available information that is critical for real time decision making. A 360 degree view of the production environment, together with intelligent visualization, means you can immediately identify unproductive practices, capacity erosions, inefficiencies and line performance bottlenecks.

Cloud deployable

Scalable

Flexible

Configurable

Multi-interface

Wireless

Predictive Analytics

Factories and production environments utilize a lot of equipment and machinery that are complex and expensive to operate and maintain. Connecting the equipment with sensors through a common platform can provide invaluable data about the condition of equipment that can be analyzed to predict possible failures. Predictive analytics eliminates the inherent cost and production risks associated with equipment failure and shutdowns.



Remote Monitoring

- ▣ SCADA based solutions
- ▣ Design of data collection systems
- ▣ Implementation of data collection systems
- ▣ Integration with enterprise systems
- ▣ Online real-time analytics
- ▣ Offline analysis
- ▣ Preventive maintenance
- ▣ Diagnostics and root cause analysis

Connected Tools: Track&Trace

Track&Trace is an IoT driven solution that significantly improves shop floor efficiency and reduces costs. Track&Trace allows you to track every tool on the floor because they are 'smart' and 'connected'. Tools constantly send information about their location, which is recorded and stored. Since the location of each tool is known, the solution can automatically deploy the required program to the tool. The tools' operational parameters are recorded and stored, ensuring quality and conformance to stringent regulations.

REAL WORLD DEPLOYMENTS

Connected Factories: Tractor Manufacturing Plants

We connected all the shop floor equipment with the plant's existing MES/ERP systems using our Connected Factories platform. The deployment encompassed multiple plants, providing the manufacturer complete manufacturing traceability and the ability to monitor performance real time, leading to an increase in overall production efficiency.



OEE



- TCO
- Inventory levels
- Labor costs

Connected Assets: Smart Asset Monitoring and Control for an MRO

We deployed the solution to enable the Smart Indoor Asset Tracking, Monitoring and Control System for Power Tools. The solution included executive dashboards for informed decision making and progressive quality improvement. The solution had a provision for Over-the Air Update, calibration and maintenance of all connected power tools.



- 15% Tools Productivity
- 10% Workers Performance

Remote Monitoring and Diagnostics: Steam Turbine

Steam turbines are critical equipment. Their failure or shutdowns for maintenance can lead to significant delays and costs. Therefore, we developed and deployed a real-time, remote monitoring solution for steam turbines. The solution included a rule based Health Check automation tool to intelligently check the health of the turbine. The turbine could be remotely monitored using a System Health portal.



Availability



90% person-hours

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