SMART MANUFACTURING SOLUTION
PRIVATE 5G CELLULAR NETWORK

Background

Manufacturing industry is undergoing a major generational shift to Industry 4.0 through a period of rapid digital transformation and is increasingly using data and technology to improve efficiencies within the plant, enhance productivity and enable new business models. Increased global competition is putting pressure on prices, consumer demands are changing more quickly than ever before.

To achieve these goals, manufacturing industries need a robust underlying communication infrastructure to ensure that technologies provide the outcome they promise. 5G has unique capabilities that allow it to play a significant role in providing platform to enable multitude of use-cases. Tata Communications Smart Manufacturing solution using private 5G networks helps to develop innovative business solutions required during digital transformation journey.

Smart Manufacturing - Challenges

- **Inefficient production** - To remain competitive, manufacturers must produce more relevant, better products at a faster pace. Given the complexity, most manufacturers do not have these areas all figured out.

- **High cost** - Manufacturers are looking to reduce the cost of output by modernizing and compacting their sites, but neither these companies nor their suppliers have the clear execution strategy in place.

- **Increased supply chain complexity** - Due to the fragmentation of production globally, strong demand fluctuation and increasingly scarce resources, manufacturers found it difficult to be agile and always-connected to address ever-shifting priorities.

- **Labour shortage** - Many manufacturers have found themselves struggling to find both skilled and unskilled labor to keep their operations running.

- **Growing competitive pressures** - The rise of smart digital technologies has ushered in the threat of entirely new competitors who can leverage digitisation and lower costs of entry to gain a foothold in new markets.

Tata Communications Private 5G Proposition

Tata Communications Smart Manufacturing solution is designed to deliver end-to-end flexible, robust, programmable connectivity solution based on advanced technologies like Automation, Big Data and IoT.

Features

- **Edge Computing** - Integrated with Edge Cloud to deploy industry-grade mission-critical applications
- **SASE** - Secured enterprise connectivity and data
- **MOVE platform integration** for seamless handover to public network

Value Proposition

- Seamless, low latency and highly reliable network
- Zero-touch automation and orchestration
- Zero-trust security
- Optimised TCO
- On demand scalability
- Deployed and managed using our Global footprint

Smart Manufacturing Use Cases

USE CASE	VALUE PROPOSITION	BENEFITS
Advanced predictive maintenance	Using dozens of sensors to give an accurate, real-time status of a machine to perform predictive and preventative maintenance	1. Reduce downtime 2. Reduce spend on maintenance 3. Reduce machine replacement rate
Precision monitoring & control	Real-time monitoring and control of robots/machine tools (e.g. change speed of process based on vibrations)	1. Reduce defects 2. Increase throughput Increase yield
Augmented reality & remote expert	Using augmented reality headsets to guide worker via augmented display and/or remote expert when carrying out maintenance	1. Reduce spend (and time) on maintenance and repair 2. Reduce spending on training
Remote robot control	Controlling robotic machinery remotely (video link may be required) for tasks where human involvement may be hazardous	1. Health and safety 2. Increase throughput
Automated Guided Vehicle	Coordinating vehicle control of AGVs (e.g. forklifts, pallet movers or tractors) in a more flexible way	1. Increase efficiency 2. Increase productivity
Drone inspections	Using drones to perform tasks that may be difficult, dangerous or tedious for humans (e.g. inspecting hard to reach equipment, checking inventory)	1. Health and safety 2. Reducing spend (and time) on inspections
Asset tracking	Connected equipment (e.g. tugboats) using private 5G network to track locations of assets and enable machine-to-machine communication	1. Real time location tracking 2. 24*7 visibility of assets 3. Optimal utilisation of resources

Way forward

With rapid increase of mass consumerism and e-commerce market, manufacturing industry has to take their first step towards digital transformation solution. In today's era, advanced digital capability is no longer a competitive advantage, but a necessity. **Tata Communications Smart Manufacturing** solution provides end-to-end cutting-edge digital transformation solution specifically tailored as per industry operational requirements.

Tata Communications also leverages its long experience as a global network provider to offer single pane of glass for all network requirements.

For more information related to Smart Manufacturing solution and POCs, please email us at:
5Gnetwork@tatacommunications.com