

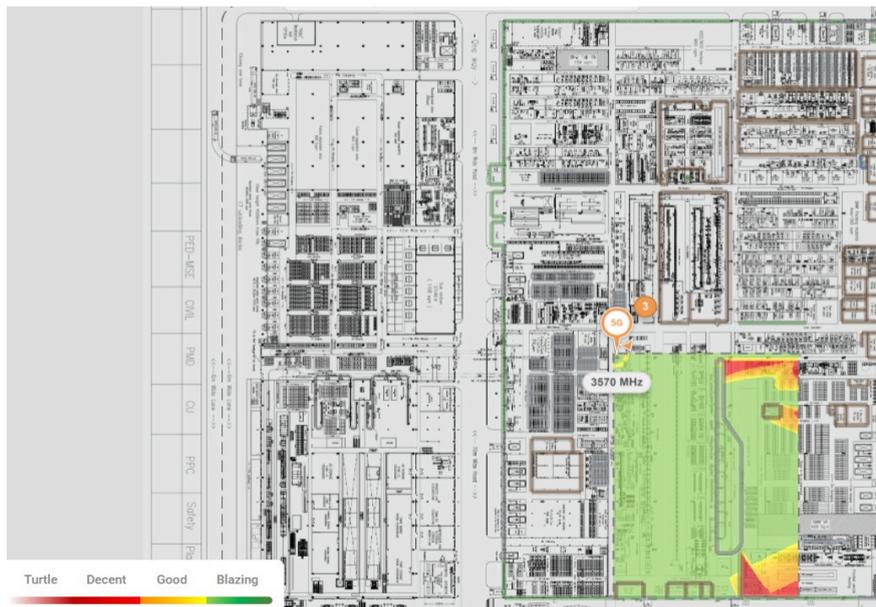


## Case Study: TVS Motors – Private 5G–Enabled Smart Manufacturing Transformation

Driving Factory Automation, Reducing Downtime, and Improving Production Efficiency with Private 5G

### Summary

TVS Motors operates large-scale, high-throughput manufacturing facilities where production efficiency, coordination, and uptime are critical to business performance. As motorcycle manufacturing volumes increased and operational complexity grew, traditional factory workflows and communication systems began to limit scalability and efficiency. To address these challenges, TVS Motors embarked on a digital transformation initiative aimed at reducing manual intervention, minimizing downtime, and enabling factory-wide automation—without disrupting existing manufacturing systems.



### Problem Statement

TVS Motors' Bangalore manufacturing facility faced multiple operational challenges impacting productivity and output:

- Heavy manual involvement in material handling, with workers dedicated to transporting materials across the shop floor.
- High factory downtime caused by traditional workflows and lack of automation.
- Inefficient communication systems, relying on basic walkie-talkies with limited reliability and integration.
- Lack of real-time visibility into production processes and quality checkpoints.
- Dependency on legacy manufacturing software, making automation adoption complex.

These challenges resulted in productivity losses, inefficient workforce utilization, and significant revenue impact across plants.



## Proposed Solution

A private 5G network infrastructure was deployed as the foundation for factory-wide digital transformation, operating on the 3570 MHz frequency band, optimized for industrial performance. The solution enabled multiple use cases simultaneously:

- 1. Automated Material Handling:** Enabled real-time coordination and automation readiness for material movement across the factory floor.
- 2. Mission-Critical Communication (MCX):** Replaced traditional walkie-talkies with a secure, low-latency MCX communication system.
- 3. Real-Time Video Monitoring:** Deployed high-definition cameras for real-time monitoring, quality inspection, and operational visibility.
- 4. Manufacturing System Integration:** Seamlessly integrated existing manufacturing software and control systems with the private 5G network.

## Outcome and Impact

The deployment successfully demonstrated multiple use cases operating simultaneously on the private 5G network, proving its readiness for factory-wide automation without a system overhaul.

Metric	Result
Workforce Optimization	Reduced manual material handling and redeployment to higher-value roles.
Production Throughput	Improved due to continuous material flow and better coordination.
Factory Downtime	Significantly reduced, resulting in cost savings and revenue protection.
Scalability	Established a reliable architecture for replication across multiple TVS plants.

## Conclusion

The Private 5G deployment at TVS Motors has created a strong foundation for advanced automation, robotics, and Industry 4.0 initiatives. By providing a reliable and high-performance connectivity backbone, the network has enabled TVS to overcome critical operational challenges, improve efficiency, and prepare for the future of smart manufacturing.