



MANUFACTURING

GET BEST-IN-CLASS WIRELESS CONNECTIVITY WITH MIOTY™

ROBUST
SCALABLE
COST-EFFECTIVE



The adoption of communication technologies in manufacturing has evolved over several decades with industry Ethernet and classical fieldbus technologies continuing to serve as a backbone for time-sensitive automation and control applications. However, today the increasing prevalence of the Industrial Internet of Things (IIoT) and a new suite of data-driven applications is driving the need for a complementary communication infrastructure. To realize the Industry 4.0 vision and fully harness enormous potential of IIoT, a robust, scalable, and cost-effective interconnection of vast sensors on the shop floor is paramount.

Transcending the trade-off between industry-grade reliability, cost & power consumption

Conferring ease of installation and possibility for future network expansion, wireless technologies have been increasingly implemented in industrial settings. Despite providing carrier-grade reliability, current solutions like cellular and mesh networks (e.g. WirelessHART, Wi-Fi) are expensive and have high power consumption that hinder their applicability and scalability in growing IIoT use



cases. MIOTY™ introduces a new generation of low power, wide area (LPWA) connectivity that overcomes this trade-off between reliability, cost and energy. One-hop star topology combined with a massive range of 15km and a high network capacity of 1.5 million messages per day greatly reduce infrastructure requirements and associated capital costs, not to mention the already low device cost. In parallel, by implementing the high-performing, worldwide standardized Telegram Splitting transmission approach, the system delivers unmatched power efficiency and robust connectivity in structurally complex and electromagnetic interference environments.

Use Cases

Designed to meet the requirements of large-scale, mission-critical IIoT applications, MIOTY™ empowers manufacturers to harness massive IoT insights on the factory floors.

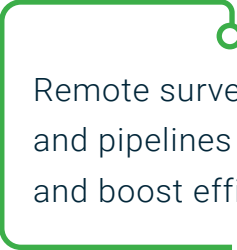
Condition monitoring & predictive maintenance augments equipment effectiveness (OEE), production uptime and throughput

Using MIOTY™ networks, embedded sensors capture and communicate key health and operational metrics like pressure, vibration, temperature, humidity, and voltage of numerous machines and equipment across the entire industry complex (condition monitoring). Besides generating an insightful picture of current production processes and asset performance, these massive data flows power analytical models

to proactively predict an impending issue and schedule demand-based inspection and repair (predictive maintenance). For example, high humidity in the gearbox diminishes the performance of rotary components, resulting in corrosion, impaired product quality or even machine breakdown. Excessive vibration of motors and pumps suggest possible mounting defects, shaft misalignment and bearing wear. With predictive maintenance, failures can be prevented ahead of time, thereby maximizing asset utilization and reducing costly losses due to downtime.

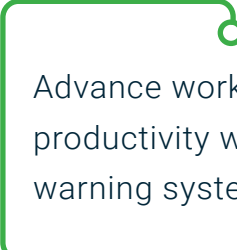
Environmental monitoring improves production processes & secures product quality

Ambient conditions can play a significant role in production and quality management. With the help of MIOTY™-enabled sensors, plant operators can monitor and control optimal environments for various, factory-wide processes remotely from the comfort of their command center. For instance, maintaining ideal air pressure differential, prevents dust infiltration in the manufacturing area, thereby securing product quality in pharmaceutical and microelectronics industries. Gluing and painting processes in automotive production, on the other hand, can be improved with optimal humidity level. Likewise accurate temperature monitoring of processing and storage facilities can ensure product safety in the food industry.



Remote surveillance of storage tanks and pipelines helps bypass disasters and boost efficiency


Tanks and pipelines are critical assets in many process industries. Overflows or leakages of chemical products and gases not only lead to production losses but also cause serious damages to the environment and threaten public safety. Implementing level, vibration, flow rate, and pressure sensors, businesses can now keep an eye on the structural health of their widely distributed tanks and pipelines round the clock, while simultaneously reducing manual checks. Potential spills, leaks or ruptures are instantly alerted to avoid disasters. Low levels of material tanks can also be notified for timely refills to improve productivity.



Advance workforce safety & productivity with wearables & safety warning systems


Leveraging environmental sensors and professional wearables, plant working conditions (e.g. noises, atmospheric gases, radiation, heat, humidity, etc.) and employees' health metrics (e.g. pulse, movement, body temperature, etc.) can be continuously reported to managers. When the environment becomes too dangerous or when accidents and potential explosions are detected, alarms are immediately triggered for evacuation and rescue activities. Wearables

are also instrumental in delivering important safety information to workers and advising them to take short breaks when needed, thus improving workforce health and productivity.



Power consumption reporting for enhanced energy efficiency and sustainability

Wireless sub-meters communicating via MIOTY™ networks allow for seamless multi-level energy consumption tracking from plant, process unit to machinery level. Energy flows, consumption patterns, and usage behavior across multiple sites can be analyzed for effective production planning, identifying power waste sources and improving energy efficiency. Additionally, energy usage at the machinery level can reveal insights into the service life of an asset and when an upgrade is required.

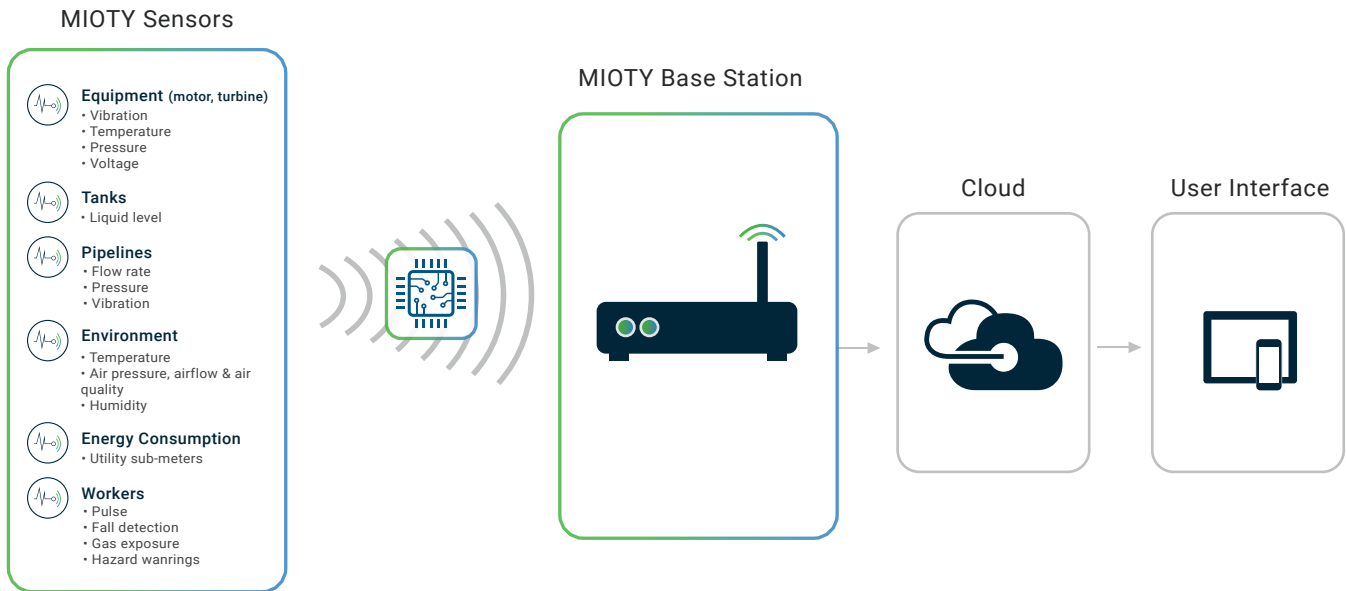


Cut-down manual operations with digital plant facility management

IoT solutions further enable digitized management and protection of critical plant facilities. Once connected to MIOTY™ networks, elevators, smoke detectors, fire alarms and other facilities across the entire factory can periodically send data on their battery, health or "alive" status. This helps manufacturers cut down time-consuming manual inspection, while quickly responding to any issues.

MIOTY™ in Action

Feeding Massive Data for Real-time Analytics & Visualization



Why Choose MIOTY™?



About BTI

Founded in 2018, Toronto-based Behr Technologies Inc. (BTI) is a worldwide licensee of MIOTY™, the leading wireless communication technology for Industrial Internet of Things (IIoT). The company is focused on commercializing, licensing, and supporting the MIOTY technology through partnerships with industry-leading technology providers, and the development of new MIOTY-based products and applications for the IIoT marketplace. BTI's first commercial product using this ETSI standard is the MIOTY 1.0 Starter Kit with Microsoft Azure, which was launched in April 2018 at Hannover Messe, Germany.

For more information, visit:

www.behrtechnologies.com

