

# The Smart Factory is Here

*Insights from the experts at Banner Engineering; supplied by RET Automation Controls*

*Smart factories are an important part of the Internet of Things (IoT).*

The term IoT describes the technologies that connect objects—from consumer electronics to industrial components to the internet. Meanwhile, the Industrial Internet of Things (or IIoT) refers specifically to the impact of this innovation on industrial applications. IIoT technologies together create ‘smart’ networks. For example, the wireless technologies of a smart home connect homeowners to almost anything in the house from their garage door to their refrigerator and allow remote access via smart phone.

Similarly, a smart factory provides plant managers with remote access to wirelessly-connected machines as well as access to a wealth of data on the operation of those machines by automating the communication between industrial automation equipment and systems. Data availability is one of the hallmarks of IIoT because it allows businesses to leverage data more meaningfully, including enabling predictive maintenance for machines.

## Top capabilities of Smart Factories

Three key capabilities of smart factories are: Remote Monitoring, Predictive Maintenance, and Process Optimisation:

### Remote Monitoring

Visibility into the operational status of machine components (both historically and in real-time) allows plant managers to remotely monitor and diagnose systems quickly as well as identify and resolve problems before the impact on machine availability and productivity compounds.

For example, tower lights with wireless communication allow operators to remotely monitor machine performance without lengthy and expensive cable runs. The lights indicate machine status visually while updates are also transmitted over a secure wireless network to a remote device, triggering an action or prompting a response from an operator at a workstation away from the machine. The data logged by these devices can also be used in OEE (Overall Equipment Effectiveness) calculations. Not only can operators respond to alerts quickly as they occur, but historical data can be used to track machine uptime, production volume, rejected parts, and other key metrics.

### Predictive Maintenance

Predictive analytics allows for more accurate planning of machine maintenance, which can help reduce machine downtime, increase Mean Time Between Failures (MTBFs), and reduce costs of un-



OEE	– Overall Equipment Effectiveness
MTBF	– Mean Time Between Failures
IoT	– Internet of Things
IIoT	– Industrial Internet of Things

## Abbreviations/Acronyms

necessary preventative maintenance and spare parts inventory. With predictive maintenance, much of the guesswork is removed because maintenance decisions can be made based on the historical and real-time data from the machine itself. For example, wireless vibration and temperature sensors like the QM42VT Series from Banner can detect signs of misaligned, loose or worn parts on a machine.

The wireless sensors then transmit that information to a wireless controller that makes data available immediately (via text or email alerts) and for long term analysis.

By monitoring machine components in real-time for increases in vibration and temperature, problems can be detected and resolved before they become too severe and cause additional damage or result in unplanned downtime. Over time, the historical data creates a valuable machine performance log that can be used to make more informed maintenance decisions down the line.

### Process Optimisation

The interconnectivity afforded by IIoT technologies enables seamless communication among machines, components, and people. This interconnectivity allows for data-driven process optimisation—increasing efficiency and productivity. For example, a wireless notification system can be used to alert managers and technicians that they are needed on

the line, reducing the need for technicians and managers to constantly check each production line and for workers to leave their workstations when they need assistance.

A system like this could be set up so that an operator pushes a button or flips a switch to alert the manager or technician that he or she is needed on the production line. A tower light connected to the gateway's outputs would then indicate which production line needs a manager's attention, and colours could be assigned to indicate the need for a technician (yellow) or manager (red).

By utilising a wireless network of connected devices to streamline communications, managers, technicians, and line workers are able to use their time more efficiently and productively. Similarly, a wireless solution can be used in pick-to-light and call for parts applications.

### Conclusion

Overall, the capabilities afforded by IIoT mean that these technologies are not just short-term investments or solutions to immediate problems; rather, they enable continuous improvement by providing companies with the ability to solve new problems as they arise – compounding the value of the investment over time.

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*IoT and IIoT technologies  
– together – create 'smart'  
networks.*



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