MaintMaster IoT whitepaper

MAINTMASTER®

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MaintMaster Internet of Things (IoT)

Welcome

At MaintMaster, we believe that maintenance makes a difference in productivity, sustainability, and safety. Ensuring that you have accurate information at the right time enables you to make quicker and more intelligent decisions in your operation. MaintMaster's IoT solutions aim at providing you with this information and seamless integration with your CMMS, thus enabling you to take immediate action on real-time data from your operation.

This document is intended to get you acquainted with MaintMaster IoT, our solution for collecting, analysing and acting on data received from your operating environment and equipment.

As MaintMaster IoT constantly evolves, any information in this document is subject to change.

Summary

MaintMaster Internet of Things offering:

- Supports a variety of LoRaWAN sensors and gateways for different purposes.
- It is seamlessly integrated with your existing MaintMaster CMMS system.
- Can be configured to automatically create work orders, based on sensor values.
- Enables you to follow trends and react to changes in the data.
- Enables you to measure in locations where you would normally have to stop production to measure, and much more frequently.

Introducing MaintMaster IoT

MaintMaster IoT is here to help you realise the exciting potential of Industry 4.0. Smart maintenance is a key component of this revolution, empowering you to make decisions based on real-time data. With MaintMaster's new tools, you can significantly enhance your preventive maintenance capabilities.

MaintMaster IoT aims to empower your data-driven decision-making, providing you with all the necessary information to make smart decisions when it comes to the maintenance and operation of your equipment.

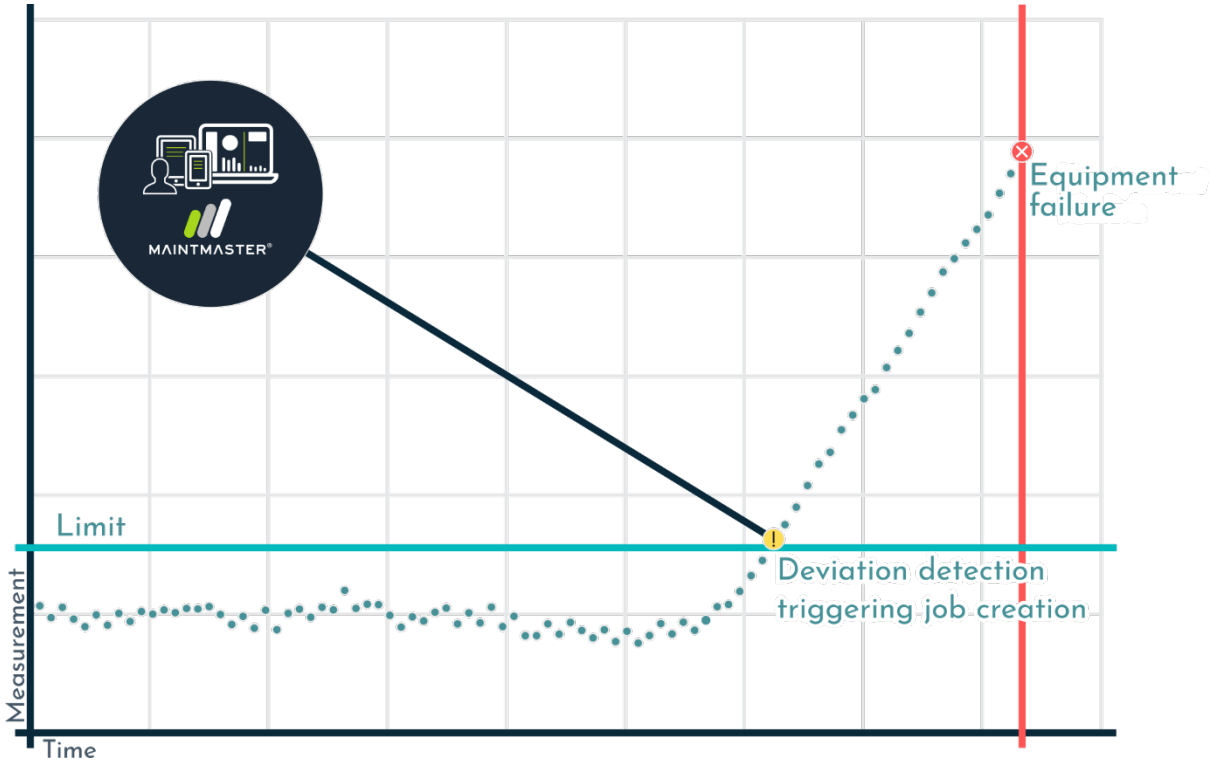
Sensors for these types of measurements are currently available:

- Temperature
- Humidity
- Current
- Energy consumption
- Pressure
- Leak detection
- Vibration

The sensors are intended to be placed throughout your operating environment and on your equipment. Sensors can be placed in places that are hard or dangerous to reach and most of them need little to no changes in your operating environment. Many of our sensors are also well-suited for installation in harsh environments.

Sensors and gateways all use the LoRaWAN technology, providing a very good range and penetration for wireless signals, even in cluttered environments. Should you, despite this experience connection issues with your sensors, it is always possible to add more gateways to your setup. The sensors will automatically pick the best possible gateway to communicate with as soon as the additional gateway is connected.

Using the ability to automatically create jobs in your MaintMaster system and to provide you with up-to-date data, MaintMaster IoT can help make you aware of problems quickly and to predict failures before they happen.



While MaintMaster IoT provides you with on-the-fly status through the collected data, the real power comes from aggregating and observing data trends in your operating environment. At MaintMaster, we believe that this is an important step towards preventive maintenance rather than reactive maintenance for the ambitious customer.

As always with MaintMaster technology, MaintMaster IoT is easy to use and easy to configure. We want your return on investment to be immediate and high.

Alerts and notifications

Alert thresholds can be configured for each sensor. Once an alert is triggered, the IoT platform can deliver an email and/or SMS notification directly to the relevant staff. On top of the notification, a job will be created in MaintMaster.

Use case examples

Example 1

Assume you have equipment that really depends on proper lubrication to keep running reliably. You place a temperature sensor on a part that you know will be running hot if additional lubrication is needed. The normal operating temperature is between 20-40 °C. Anything more than 45 °C means that we need to lubricate.

You configure MaintMaster IoT to alert if the temperature exceeds 45 °C. The IoT platform will notify you by SMS/email and create a maintenance job in MaintMaster when the temperature goes above 45 °C, alerting you of the condition and prompting an investigation of the situation.

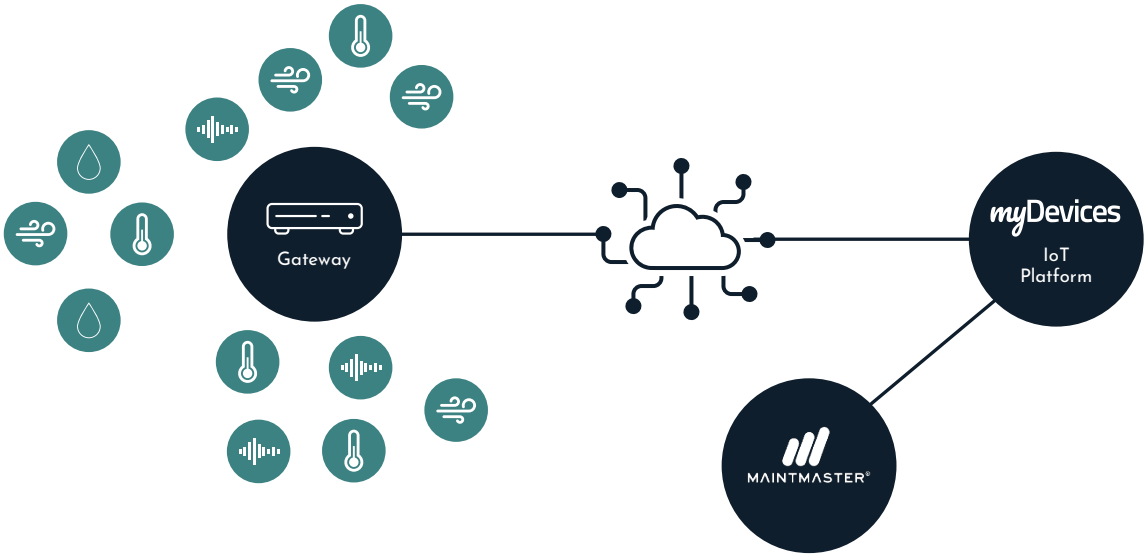
Example 2

Imagine that you have placed a vibration sensor on an electric engine. Using the data from MaintMaster IoT, you can observe the level of vibration the sensor is reporting continuously.

At some point in time, you observe that the level of vibration is slowly but steadily increasing, indicating a degraded component.

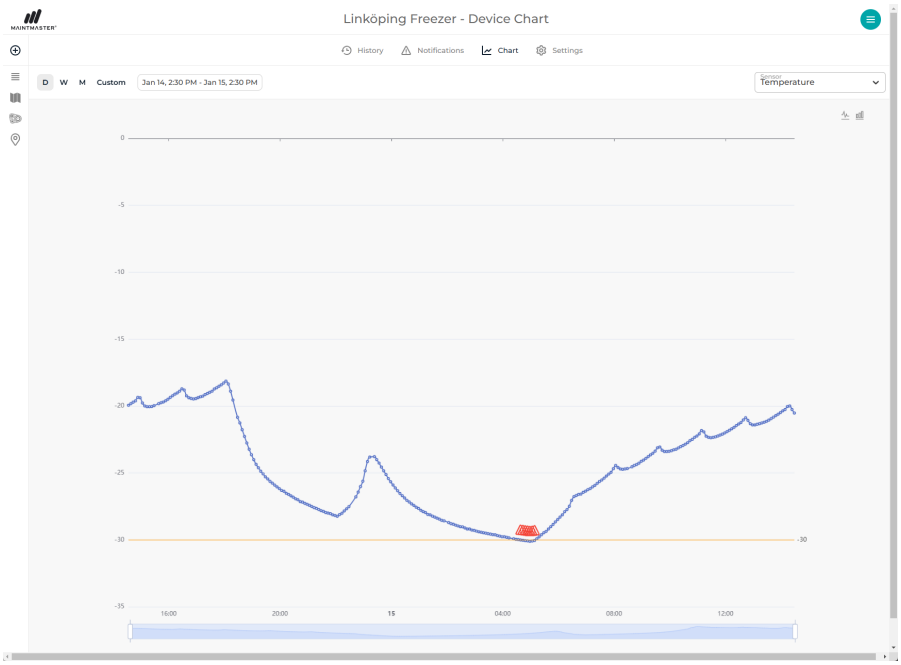
Thanks to the data received from MaintMaster IoT, you can act before the component breaks. Planning maintenance of the equipment allows you to avoid an unexpected halt in production.

How does it work?



Sensors installed at your location periodically send data to the local IoT Gateway. The data is then sent encrypted over the internet to the myDevices IoT Platform. If the data triggers alerts, notifications are sent by email and/or SMS to the configured recipients. An integration with MaintMaster creates a maintenance job and refreshes the sensor site object in MaintMaster.

Parts of the IoT Platform that are relevant for everyday use are accessible and embedded in MaintMaster.



Powered by LoRaWAN technology and the myDevices IoT Platform

LoRaWAN (Long Range Wide Area Network) is a low-power, wide-area networking protocol built on top of the LoRa radio modulation technique. It's designed to wirelessly connect battery-operated devices to the internet.

Here's a breakdown:

- **LoRa:** This is the physical layer, a radio modulation technique that provides long-range communication with low power consumption.
- **LoRaWAN:** This is the MAC layer protocol built on top of LoRa. It defines how devices use the LoRa hardware, how they communicate with the network, and the format of the messages.

Key features of LoRaWAN:

- **Long Range:** Can reach distances of up to 10 kilometres or more in rural areas.
- **Low Power:** Devices can operate for years on a single battery.
- **Secure:** Uses end-to-end encryption to protect data.
- **Cost-effective:** Relatively inexpensive to deploy and operate.
- **Standardised:** Open standard maintained by the LoRa Alliance, ensuring interoperability.

myDevices is a IoT solutions company that provides software, hardware, connectivity, and services to quickly deploy and scale IoT sensor solutions.

Sensor data is delivered over LoRaWAN and the internet to the myDevices IoT platform. This enables quick and hassle-free onboarding of new devices and centralizes configuration and administration. The platform has rich capabilities for integration, notifications and data analytics.