



## Key Benefits

- **Reduced assembly line downturns** – savings associated to reduced lead times
- **Real time electric motor monitoring** via temperature tracking
- **Retrofitted solution** without requiring wiring or battery changes over time

## Battery free temperature sensor monitoring to improve BMW's factory automation

### The Challenge

Reducing lead times in each of the manufacturing processes is of utmost importance for manufacturing sites nowadays. Automation is used to reduce process times and avoid the manufacturing line being stopped – saving the company hundreds of thousands of dollars.

BMW Brilliance, a BMW factory in China, is focusing on improving the automation of their car manufacturing. A single issue in the assembly line affects the whole line, so BMW wants to make sure issues are limited as much as possible. The **electric motors** of the overhead conveyor lines are an integral part of the assembly line and, as such, BMW wanted to have them monitored. These motors do not have sensors to alert the plant managers of potential issues and BMW was looking for a solution.

### The Farsens Solution

Tianjin Feiyue Brother Monitoring & Control, Ltd, with headquarters in the city of Tianjin (China), has developed a solution based on our **Rocky100** chip to **monitor the temperature** of electric motors in overhead conveyor lines at the BMW-Brilliance factory.

Each lifting hanger in the assembly line supports one car under construction. These hangers are operated by an electric motor, where a UHF RFID battery-free sensor tag with a thermistor has been installed. The solution provides two main **advantages**:

- Real time **identification** of overheating problems of the motor.
- **Location** of the hanger through the assembly line.

## Reduced downturns

By monitoring the temperature of each electric motor, BMW gets alerts of a potential problem with the electric motors of their hangers – even before they are forced to stop the complete line in the factory.

The maintenance service has data of all the motors in real time and is able to **detect overheating temperatures** in advance. This allows BMW to focus their efforts on the specific motors requiring maintenance, thus saving time and money.

When one of the motors is overheated, it is automatically removed from the line before it has a failure. The car is then changed to a new hanger and is reintroduced into the process **without wasting time**.

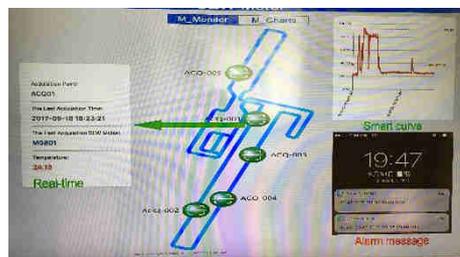
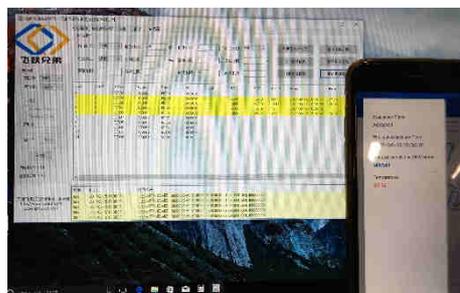


## Real time temperature monitoring

Passive temperature tags and RFID readers are installed in the assembly line so each device is read by one of the readers distributed along the factory.

**Temperature data** of each tag is saved in a database **in the cloud**. The custom software then processes the data and sends alerts to the maintenance team whenever a specific motor shows an anomaly. The software also compares previous information to proceed or provide recommendations for the specific issue at hand.

The solution also includes a **mobile App** for key personnel's mobile phones. These persons receive notifications via the App on their phones with alarms or reports with the status of the motors. Using the App makes it easy to check the temperature of each motor in their latest checkpoint and to track each motor along the assembly line.



## Retrofitted solution

Battery free wireless sensors can easily be used in existing motors since **no wiring is needed**. Furthermore, no maintenance cost is added as they will **never require any battery change**. Factory automation is improved, and real time information is available for data mining to **enhance processes** based on the temperatures acquired over time.

