



Challenge description

The city of Modena in Italy is famous all over the world for being part of one of the best cluster for motor and technology (also known as “Italian Motor Valley”): some of the best brands like Ferrari, Lamborghini, Ducati, Maserati and Dallara have their HQ in this hub of excellence and technical competences.

Our end customer is a flexible, agile and innovative provider of engineering solutions, technology projects and products, for automotive, motorsport, off- highway, automation solution, and defence sectors. In their HQ close to Modena they have several CNC numeric controlled machines that are used to manufacture extremely precise components for high performance engine development: their work center were not designed to be 4.0 connected but there is today an increasing demand of gathering and analysing data to prevent machine downtime and lack of performance due to tool breakage.

Solution

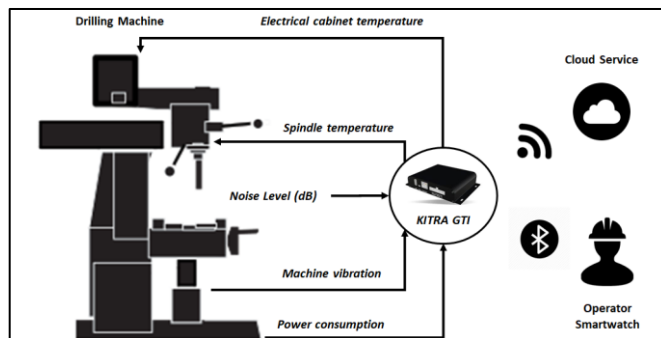
In cooperation with a global management consulting and professional services firm that provides strategy, consulting, digital and technology services to big companies, one of the FAE Technology products (in particular KITRA GTI - Industrial Gateway) was installed to support the digital transformation of some working machines.

KITRA GTI with its maximum flexibility and the great number of available I/O connections can act as an advanced mini PLC controller: the system integrator was able to connect the vertical milling machine in one working day only using the company wireless Wi-Fi network to transmit the data collected on-board in a Cloud web-based application customized to show some specific monitoring requirements.

Technical breakdown

The milling machine is collecting the following data:

- **Electrical cabinet and spindle temperature:** the company will monitor the temperature of the spindle and the internal temperature of the electrical cabinet, to prevent possible damage or breakage.
- **Noise level:** the company will analyse the noise level captured by the MEMS microphone of KITRA GTI in order to prevent machine breakage and maintain under control the maximum noise level for acoustic comfort of the human operator.
- **Power consumption:** the company can monitor and track down the power consumption of the machine and perform efficiency analysis (total effective working time / OEE calculation).
- **Bluetooth BLE:** KITRA GTI acts as a Bluetooth BEACON connected to the operator’ smartwatch. In case the operator gets out of the established connection range, an alert notice will be produced so that the company can track down un-necessary movements.



Conclusions and advantages

- **Reduced downtime:** Failures can be predicted and repairs scheduled in real-time. This increases asset availability for the company and reduces operating and repairing costs.
- **Improved spare parts cost:** predicting failures will allows maintenance manager and purchase department in optimizing the spare part management, avoiding stock of un-necessary components and increasing the system reliability.
- **Improved machine and operator safety:** machine breakage can be predicted on time and also the noise level (in dB) of the machine can be controlled and constantly monitored to ensure safety regulation compliance.
- **Increased asset efficiency and predictive maintenance:** Understanding how a machine is used and for how long allows for performance optimization and enhances profitability.
- **Advanced data reporting:** Depending on how assets are outfitted, an IoT management solution could allow companies to tell how often customers use certain device features. This can help identify customers who may need additional training on how to use assets effectively.