CASE STUDY

TEMPERATURE MONITORING

HEAT TREATMENT IN INDUSTRIAL DRUM

Solution for heat treatment process monitoring in an industrial drum.

OBJECTIVE

Monitoring of the temperature of heat treatment, carried out in a rotating industrial drum, with real-time data visualization.

Implement a system the monitors and informs users about the conditions of the process.

SOLUTION

TRANSMITTER

TWPH-1UT wireless transmitter is entirely committed to the acquisition of temperature in industrial processes. The wireless communication promotes its implementation and adaptations to different processes.

GATEWAY

The WGW420 gateway of PLUS product family, is the key point of the wireless network to which the transmitters send the collected data. The Modbus protocol allows the integration with automation systems, essential to make data available in the cloud for later viewing on Tekon IoT Platform.

TEKON IoT PLATFORM

Tekon IoT Platform is a software-based tool that highlights the added value of the entire solution with the focus on the use of the TWPH-1UT transmitter. The platform allows users to observe all data in real time and, thus, create a risk profile for their application, through the alarms.

TECHNICAL DETAILS

Temperature monitoring is of high relevance for a wide range of industrial processes. Infrastructures and production equipment can be a factor that influences the decision of the solutions to implement. Often, processes, where products or raw materials are exposed to heat treatments, involve the linear movement or rotation, of support and transport equipment. The presence of movement can limit the use of wired solutions, which can interfere with the production equipment, causing possible damage to both parts and possible process parameters.

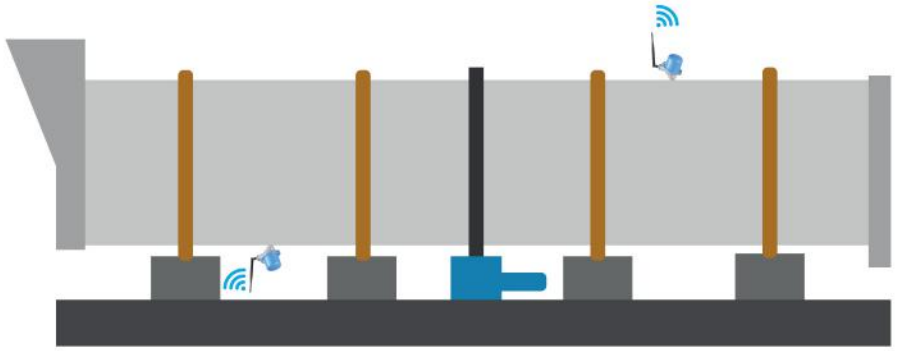
This document focuses on the application of a wireless temperature monitoring solution, implemented in a rotating drum of industrial dimensions, with the purpose of recording the temperatures inside the equipment and allowing the monitoring of the entire process, with data visualization in real time, supported by an alarm system that notifies users when outliers are registered in the temperature profile.

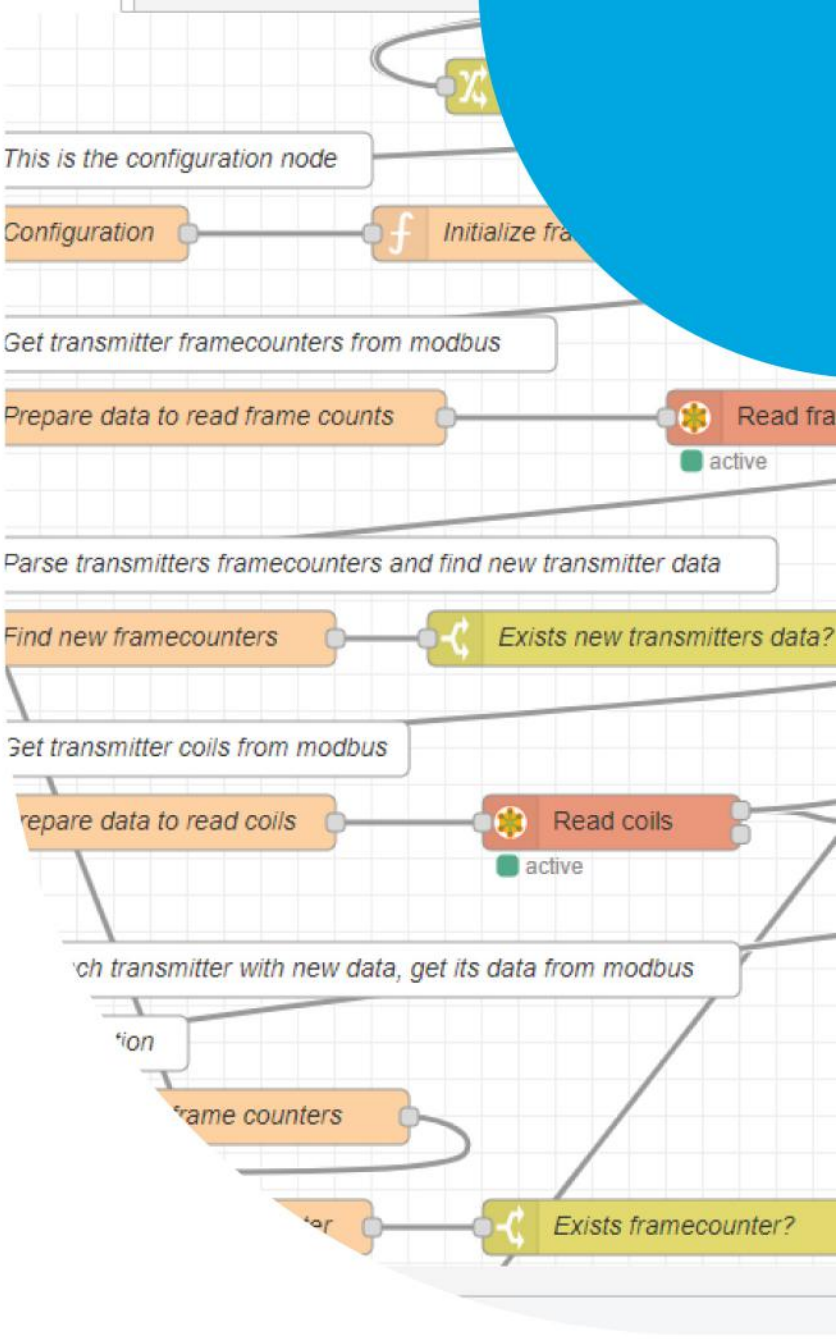
The TWPH-1UT transmitters, from the PLUS wireless product family, can respond to this type of application. The implementation and support in H-SBUZH head, with built-in power, allows to protect the transmitter and support the connection to the temperature probe introduced through the wall of the drum.

TECHNICAL DETAILS

Due to the dimensions of the equipment, it is necessary to fix two measuring points, which are at the same distance from the central axis of the drum but positioned in a non-parallel way. With this positioning, it is possible to have greater coverage of the process and greater reliability of the data.

The TWPH-1UT transmitters are connected with the PLUS WGW420 gateway. The sending of data to the cloud and further consultation of the data in real time on the Tekon IoT Platform, implied the connection of the WGW420 gateway, through the RS-485 port, to an industrial gateway with Ethernet connection, already installed in the local automation. With this connection, it is possible to access the data using the Modbus RTU protocol. The industrial gateway was equipped with a framework, which ensures data collection via Modbus protocol, structured in a JSON format and sent to the cloud. The structuring allows the data to be organized in order to be interpreted by the Tekon IoT Platform, ease its integration and pairing with the equivalent datasources.





TECHNICAL DETAILS

In the Tekon IoT Platform instance, was created a dashboard where the visualization of the most critical variables of the process is centred - temperatures recorded in the process, signal strength of the connection between the transmitters and the WGW420 gateway and batteries voltage that feed the transmitters.

Once that the industrial equipment produces movement, due to its rotation, it is necessary to check if the reception signal has the necessary quality and strength to guarantee the correct monitoring of the processes.

At Tekon IoT Platform, a set of alarms are outlined based on the collected variables, which reinforce the monitoring and security posture of the process, alerting the user, on the platform or through notifications, when the registered values exceed the limits defined in the alarm configuration.

The data stored in the cloud, ensures the security of information and allows, later, to be able to carry out analyzes on the process data. Users can, at any time, make detailed analyzes on the Tekon IoT Platform and export this information in order to implement measures that improve the production process.

CONCLUSION

The monitoring of industrial processes, should be performed and deployed, in order to reduce interference in the environment and using systems that lower the time of interaction with operators, eliminating unnecessary risks.

Wireless solution are increasingly becoming a reality in ndustrial infrastructures, with cloud data storage and platforms dedicated to data visualization.

PLUS wireless systems are a practical example of integration with industrial automation systems and communication with Tekon IoT Platform, making data available in real time and allowing different types of analysis of collected information.

WIRELESS SENSORS TECHNOLOGY

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