CASE STUDY

INDUSTRIAL SHIELDS

AUTOMATION AND MONITORING OF WATER TREATMENT

This project implements the automation and monitoring of a water treatment plant using Industrial Shields equipment.

The installation allows operators to remotely know the status of the plant and also to control all parameters: solenoid valves, chemical dosing, speed regulation of dosing pumps, measurement of pH, chlorine, turbidity, among others.

SUMMARY

This project focuses on automating a water treatment station using Industrial Shields equipment. The main purpose of the project is to visualise the data collected by the station's sensors on a **Touchberry Pi 10.1" Panel PC** and also to allow remote configuration of the system.

GOAL

The customer's objective is to create an autonomous water treatment station with remote data monitoring capability. The aim is also to ensure ease of replication in another nearby area and to allow remote configuration of the system.

PROPOSAL

As the customer requires an industrial controller that can be easily integrated, he opts for an **ESP32 PLC 42**. The fact that the programming platform is free of charge is a decisive incentive, along with the flexibility of the programming itself. Arduino IDE is used for the PLC and Node JS for the user interface and database.

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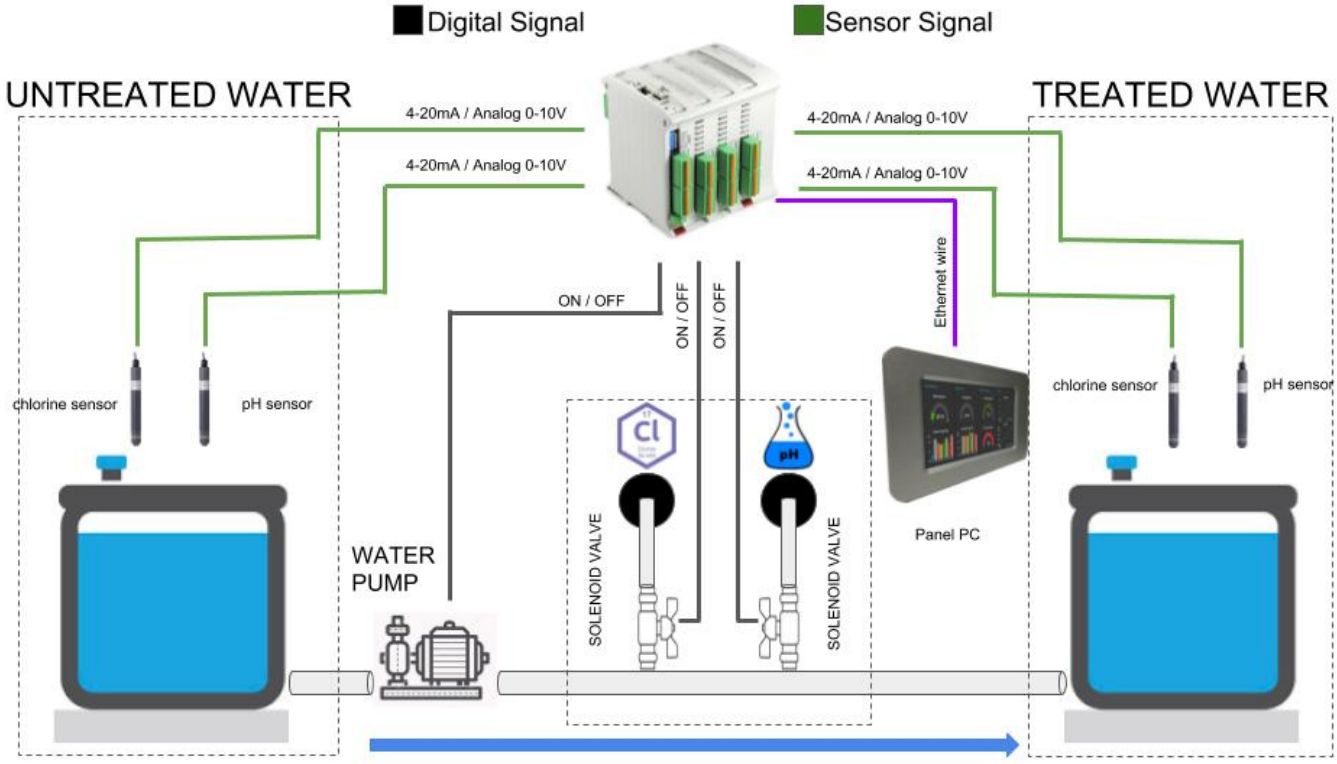
IMPLEMENTATION

The control system for water treatment must be able to obtain the composition of the solution, specifically the pH and chlorine levels. Analogue sensors read the pH and chlorine levels periodically. If the water quality properties are below the minimum value, the system activates the solenoid and valves to dose the necessary chemicals and bring the values within the allowed ranges. In addition, the system regulates the speed of the dosing pump to ensure proper dosing.

SOLUTION (HARDWARE)

The raw water tank has two sensors that check the chlorine and pH levels of the water. These levels can be shown on the Industrial Shields Panel PC in the plant using the MQTT protocol. The chemical solution is adjusted by valves if the levels are out of range. The water goes to the treated water tank after treatment, where two sensors confirm that the water is in good condition. The Industrial Shields Panel PC can also automate the dosing of the chemicals based on preset values.



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BENEFITS

Efficiency
Thanks to the automation of the water treatment process, the efficiency of the system is improved.

Quality
By having sensors that monitor chlorine and pH levels, the chemical solution can be corrected accurately and in a timely manner, ensuring optimal quality of the treated water.

Traceability and control
The solution allows recording and tracking of sensor data, which provides traceability and control over the water treatment process.

Fexibility
Accessing data and viewing it on the Panel PC remotely facilitates monitoring and decision making from any location. This provides flexibility and agility in system management.

Resource savings
By automating the process, the need for constant manual intervention is minimised. This saves time and resources that would otherwise be spent on manual monitoring and adjustment of chlorine and pH levels.

Cost savings
By having sensors that measure chlorine and pH levels accurately, over- or under-dosing of chemicals is avoided. This reduces chemical waste and ensures efficient dosing.

Early detection of problems
Continuous monitoring of chlorine and pH levels allows for early detection of any deviations or problems in the treatment process. Addressing irregularities in a timely manner avoids costly situations and major problems in the long run.

WHY INDUSTRIAL SHIELDS?

Industrial Shields has won the project and beaten its competitors thanks to the following points:

- **Open solution**, with no licence fees.
- **Modular solution**, with the possibility of future expansion.
- Team of **technical experts**, providing assistance and guidance from the project definition phase through to commissioning.
- Equipment designed and manufactured for **industrial use**, at **affordable prices**.

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