

Emanuele Falzone

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Aqua₂O₁



Objective

Aim of the project is to create a system able to:

- Monitor the domestic water flow in real time;
- Memorize the data about the consumption on a SD card;
- Transmit the data on a server to create a database of the consumptions for analytical and sensitization purposes.

Problem Description

The customer wants to be able to measure, monitor and analyze the water consumptions of the users, through a low cost system. For this reason, we are intended to use a low cost water flow sensor and a microcontroller.

This scenario present a crucial problem:

the supplied sensor is not accurate and it presents limits of usage.

Problem Description

The efforts of our team will be invested and focused on looking for a solution that will allow to get reliable measurements.

We will test the sensor simulating all the possible real cases in which the sensor could have to work.

In particular, we are interested in understanding if the sensor is sensible to the temperature of the water, magnetic fields and the installation position (vertical or horizontal).

System Requirements

Functional Requirements

- The system must acquire the consumptions data in real time, elaborating through the microcontroller the impulses coming from the Hall sensor installed within the water flow sensors connected to it.
- The microcontroller must transmit the elaborated data to a web server, through a Wi-Fi communication system.
- The system must have the possibility to save the consumption data in a external memory, in order to record all the data in absence of a wireless connection.

System Requirements

Non Functional Requirements

- The customer must have the possibility to easily replicate the system in order to install it in many apartments of a residence.
- For the same reason, the system must be low cost.
- The system must be reliable and must record with good approximation the real consumptions.
- The system must be auto configurable in order to be installed in a easy way from everyone and reduce the maintenance costs.

Technology

- Arduino Uno – Microcontroller
- YF-S201 – Water flow sensor
- ESP-8266 – Wi-Fi shield
- Database Server