Fire hydrant drinking tap project

Soltész Péter 2016, ÓE, kvk

embedded systems project 1

**Description**

The project’s aim is to create an embedded measuring instrument fit inside IVÓCSAP’s product, in order to count how much water is flowing through it.

The main purpose of this is to minimize costs and time of maintenance operations, and also to provide statistical data about the usage of the tap.



**Requirements**

Vízművek has a very strict quality control for drinking water, every month they take a sample from the taps, and every two weeks they wash it inside out to prevent the presence of bacteria.

Pending water can cause infections, so the device should send a warning if it is not operated for more than a day.

Pressure of the water should be measured by a thin film resistor type sensor, also the temperature of it. The device should count each opening of the tap by a tactile button. It should calculate water flow from pressure and time of operation (open time, button pushed).

The device must be as low power as possible as no external power source will be available whatsoever.

It should run for at least one season or 8-9 months without changing its batteries or any general maintenance.

**Technical description**

The circuit itself is hidden under the button of the tap. There is a very tiny space left for this purpose, therefore it must be minimal in dimensions.

The structural plans of the tap are secret, bit there is a 6mm height ring shaped space inside the tap, with a 2cm radius inner, and a 4.9cm outer round. The device must run on batteries as minimal maintenance is required.

The brain of the device is the ATmega 328p MCU, which is a low power chip. It is enhanced by a Neoway M590 GSM module with 2G communication to provide a stable connection countrywide. IP based data frame is used to get the gathered information onto the server.

I decided to use the Neoway module because it just perfectly fits in the available space. It will need a separate battery section, as GSM communication sometimes jumps up to 2A for matter of microseconds when transmitting.

