1- First steps

Hello and thanks for checking Ness, if you haven't yet please watch the video for our entry in Makers Against Drought. Also, we know the first time it's a bit hard to understand how the system actually works, so please, watch the quick animation located in "\Makers-NESS\how-it-works.mp4"

1.1- Web application

To test this solution, first you will need to install a Tomcat 7 in a Linux server, and set its IP to 192.168.2.22. Then, deploy "\Makers-NESS\Web app\War\Artik.war".

For the database, install a MySQL manager and import "\Makers-NESS\Web app\Database\db-artik.sql".

1.2- Android application

In an Android mobile phone (Minimum API 22) install the apk for the Android app or compile and run it from Android Studio opening the project.

1.3- Artik application

In the Artik Board, after connecting to the internet, copy the file "\Makers-NESS\Artik code\main.c" and compile it with 'gcc main.c –lcurl –o main'.

Then, using the TX and RX pins connect the Artik board to a PC using an RS-232 connection (You'll need a TTL to RS232 converter), after that, use any client that lets you do this type of connection, and put the communication settings to 115,200 bps, 8n1 , no parity, flow control off.

2- Test

The first step to test the system would be to open the Android app, but before that, make sure you are connected to the same network as the Linux Server. If everything went OK, you should see 3 Systems on the list, Kitchen 1 and Bath 1 &2.

The system we'll be testing will be Kitchen 1, as it's the one controlled by the Artik board. The idea behind this is that every Bypass module will carry an Artik board.

At first, the icon for "Cold" will be highlighted in Kitchen 1, it's time to change that, tap on Kitchen 1 and then on "Start Recirculation", this will try to start a recirculation. If everything

went right, the PC will receive “@START,XX,DD,MM,SS\n” (XX,DD->Desired Temperature MM,SS-> Maximum recirculation time , in this first version both are fixed and cannot be changed by the user, but that will change in the next version) this should be answered with either “@STARTOK\n” (recirculation will begin) or “@STARTCOLD\n” (There’s something that prevents the circulation from beginning, most usually the water is already hot).

By now, if you answered with “@STARTOK\n”, the recirculation icon should be highlighted. It’s this moment when the latched solenoid valve in the bypass module opens creating a closed circuit and the pump turns on, bringing all the cold water back to the heater.

To make the recirculation end, use “@END\n”(Recirculation completed successfully) or “@ERRXXDD\n”(Error, XXDD is the temperature of the water as of the moment of the error. This closes the valve and turns the pump off, now the icon for hot water or error should be highlighted.

To get the bypass back to cold water (this happens about 20 minutes after the last hot water use) just send “@BLUE\n”.