Testing

There were several attemps done while testing with a few failures and fixes.

Firstly, the turret was tested on wether it reads the inputs from the Nextion display for turning up or down, left or right, and whether it increases the pressure in the water tank and shoots. The turning of the turret in all four directions was succesfully done, but the increase of pressure and shooting functions were not working. In the end it all came down to wiring problems, which were fixed, and the first problems were taken care of.

The second part of testing was whether the turret using the coordinate system turns to the position of one's choosing. Since the program to turn the turret is made to go from 0 to 359 and the math function gives values from –180 to 180, in the calculations there was a mistake made where if the function calculates a negative number, instead of adding 180 to it, 360 was added and the turret didn’t go to the correct position in the x-axis. After that was fixed, the turret still didn’t go to the correct position on the x-axis. That was because the program was set to turn the turret the wrong way, which was fixed afterwards.

The biggest issue arose when the turret started working differently when the Arduino was unplugged from the PC. For some reason the turret tried turning in a different direction in the y-axis, and because of the base the turret could not get into its needed position since it tried to aim downwards, where the base of the turret was blocking it. Because of this the program got stuck on turning the turret in the wrong direction while the Arduino was unplugged from the PC and thus didn’t work.

There could be a few possibilities of what could be happening:

1. After disconnecting from the PC, the whole system might have a different ground or 5V reference, thus making the motors turn to the wrong angle.
2. There also could be a problem with the calculations giving incorrect values when the PC is unplugged from the Arduino, because of the math functions implemented in the code.
3. Otherwise, there might be a difference in voltage coming through the whole system after unplugging the PC, making the turret work incorrectly.

A few steps to try and fix the problem:

1. Recheck the wiring once more and try to change the ground and 5V reference.