

Team Members



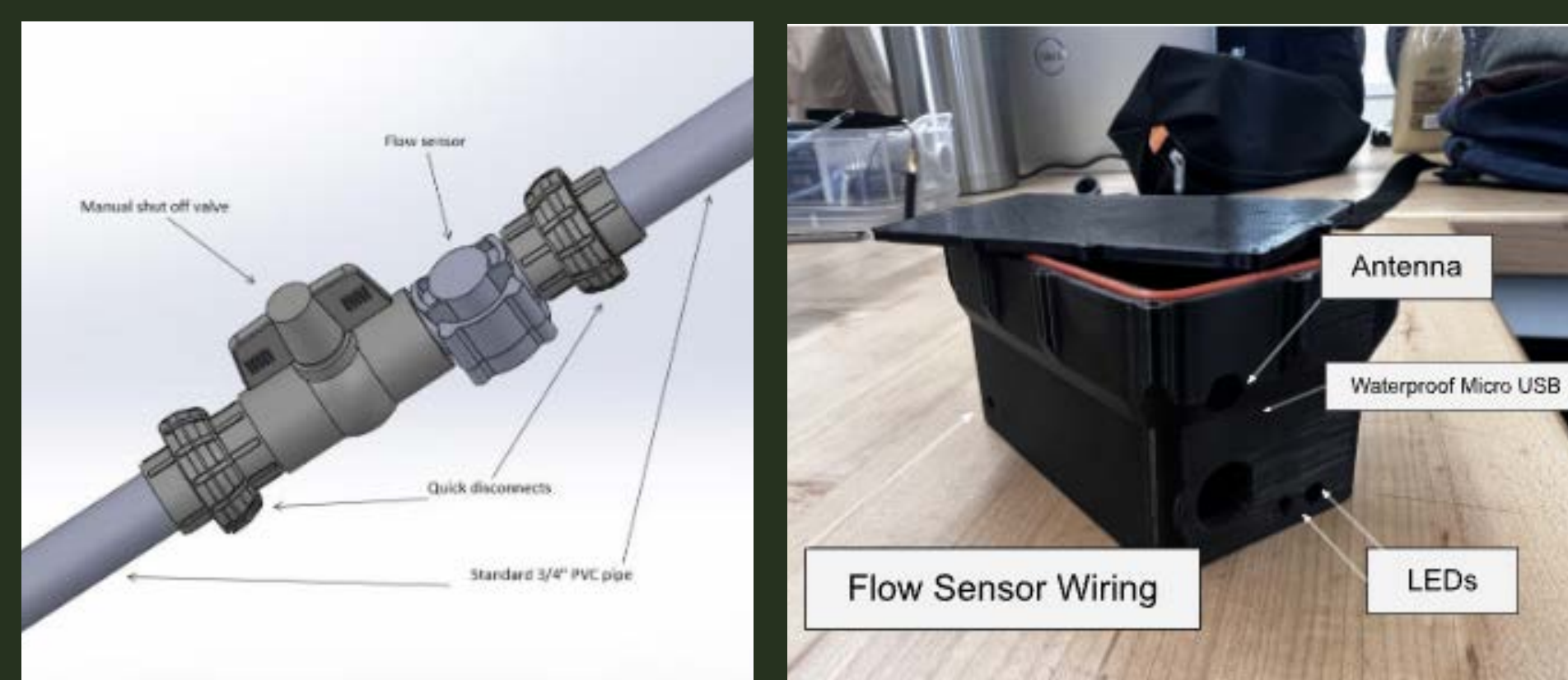
Aleksandr Abdurahmanov
 Kaylista Halliday
 Arghavan Sadeghi
 Shon-Li Sutherland
 Al Vincent Zabat

Manufacturing



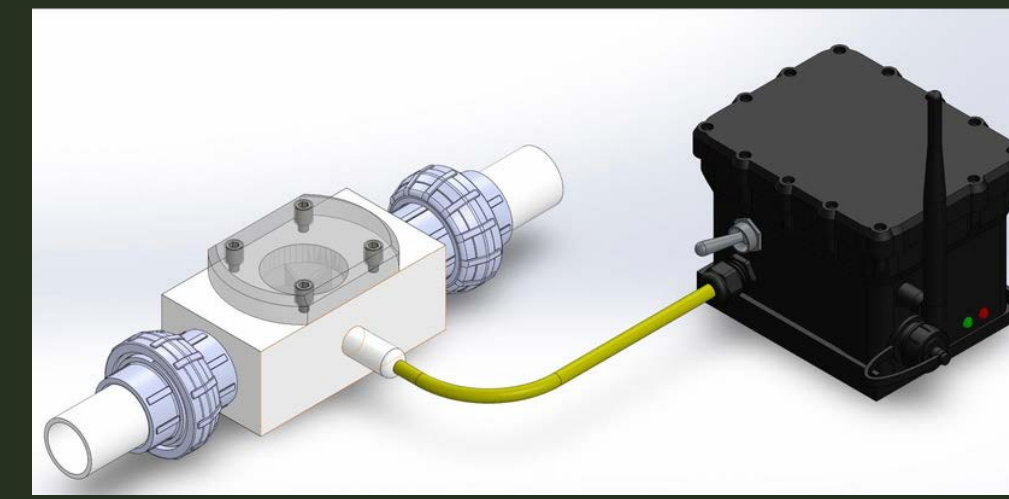
The electrical housing contains the components that allow this data to be sent directly to your phone. The housing was 3D printed using PETG - a durable material which can withstand a wide range of weather conditions. All openings on this housing are also water tight, so there is no risk of water damaging the system.

Prototype Development

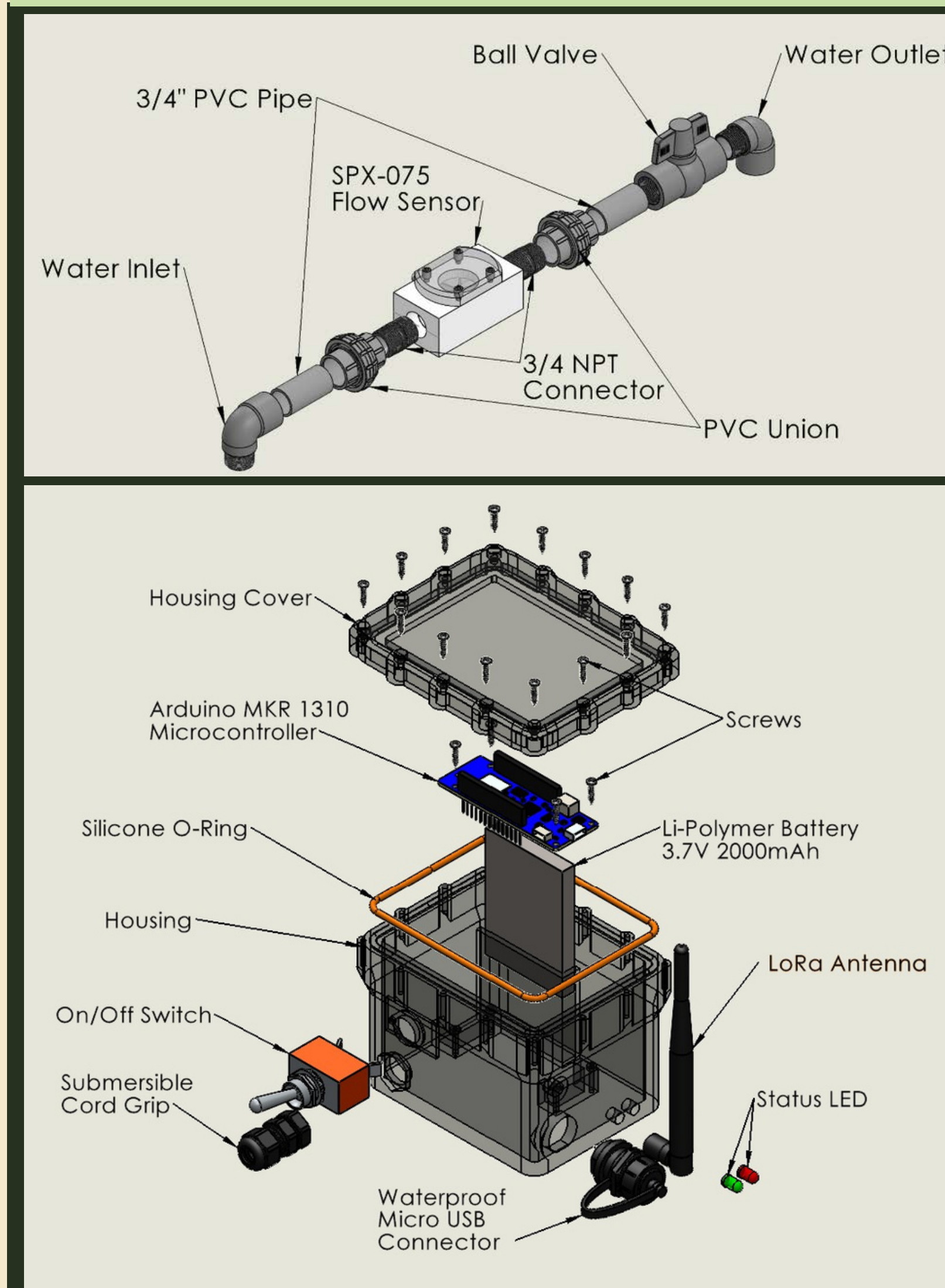


Project Overview

In residential irrigation systems, small, undetectable water leaks can cost a homeowner hundreds of extra dollars on their water bill. Team Poseidon Green Solutions was tasked to design a simple solution for small water leaks at high risk locations. This device detects changes in the flow in the pipe and sends that data to an app on the homeowner's mobile device.



The Design



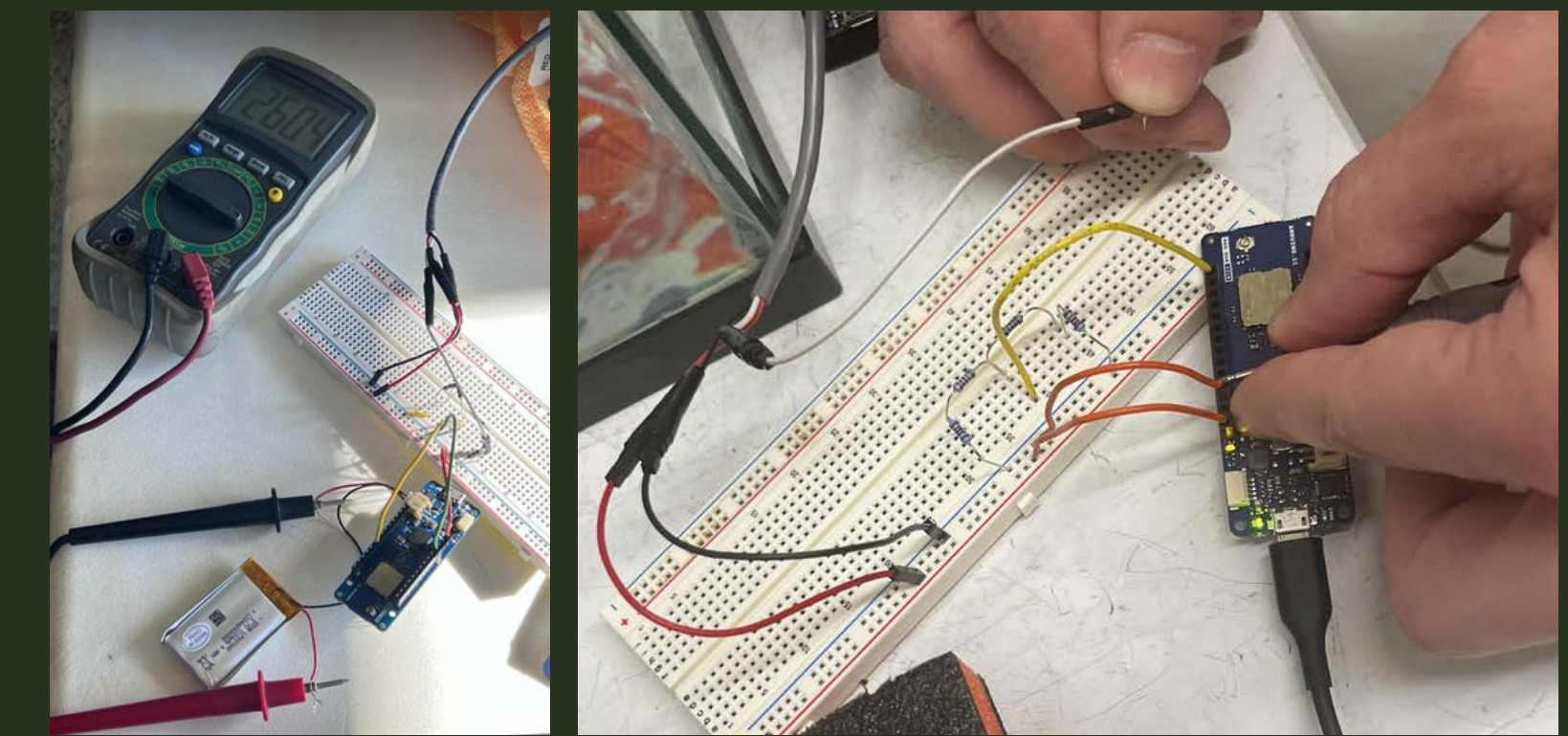
The team's design consists of a flow rate sensor connected to an electrical housing. The sensor will detect any abnormal changes in the irrigation system's flow and will alert the homeowner of possible leaks through a connection to a LoRaWAN gateway.

The user will also be able to view a dashboard on their device containing information about trends of the water flowing through their system with up to 2 weeks of data collected from the sensor.

Testing

Electronics Testing:

Measurements of the current draw of the system were taken to approximate battery life.



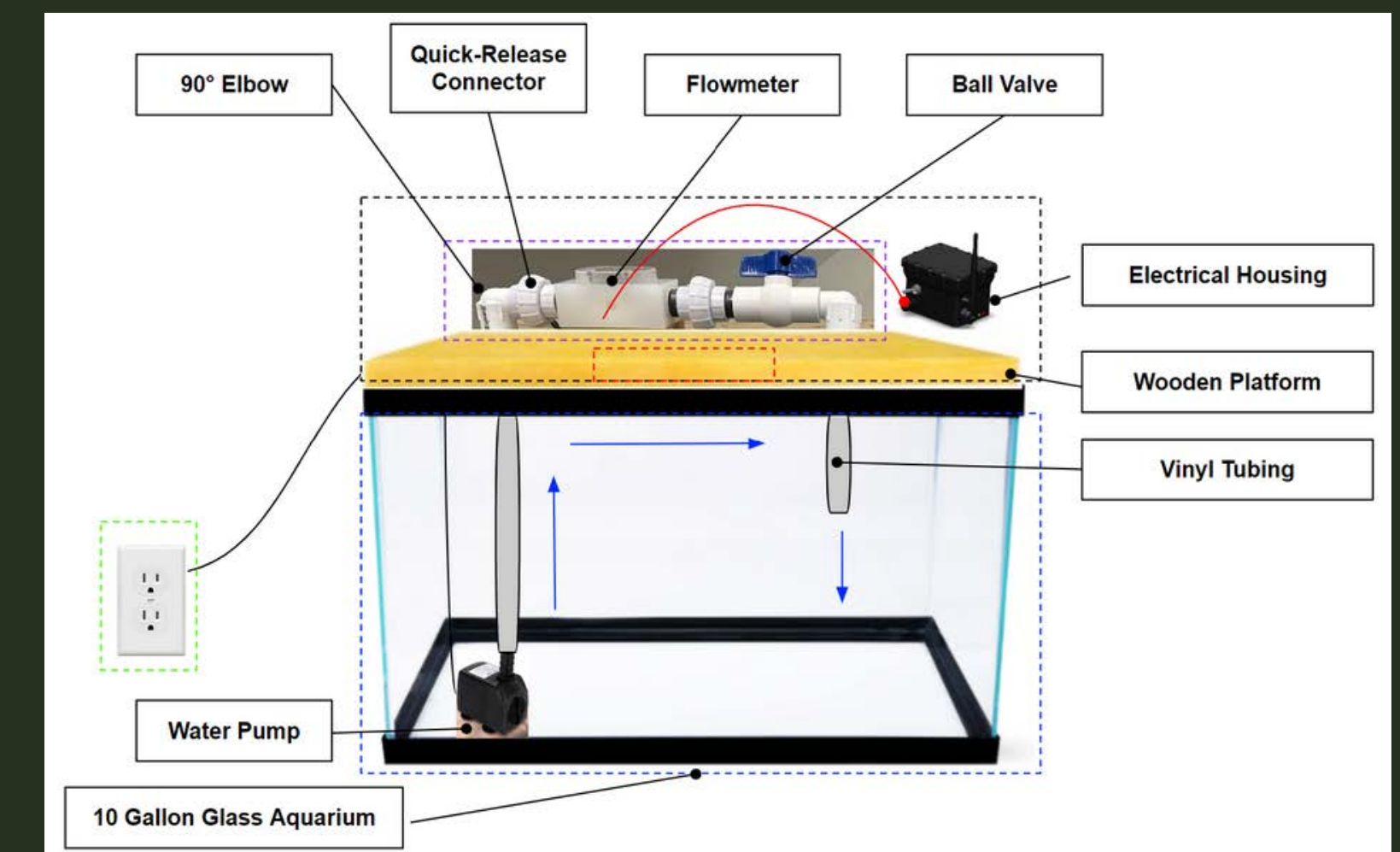
Liquid Ingress Testing:

The housing to hold the electronics was submerged to ensure the system could withstand extreme weather conditions.



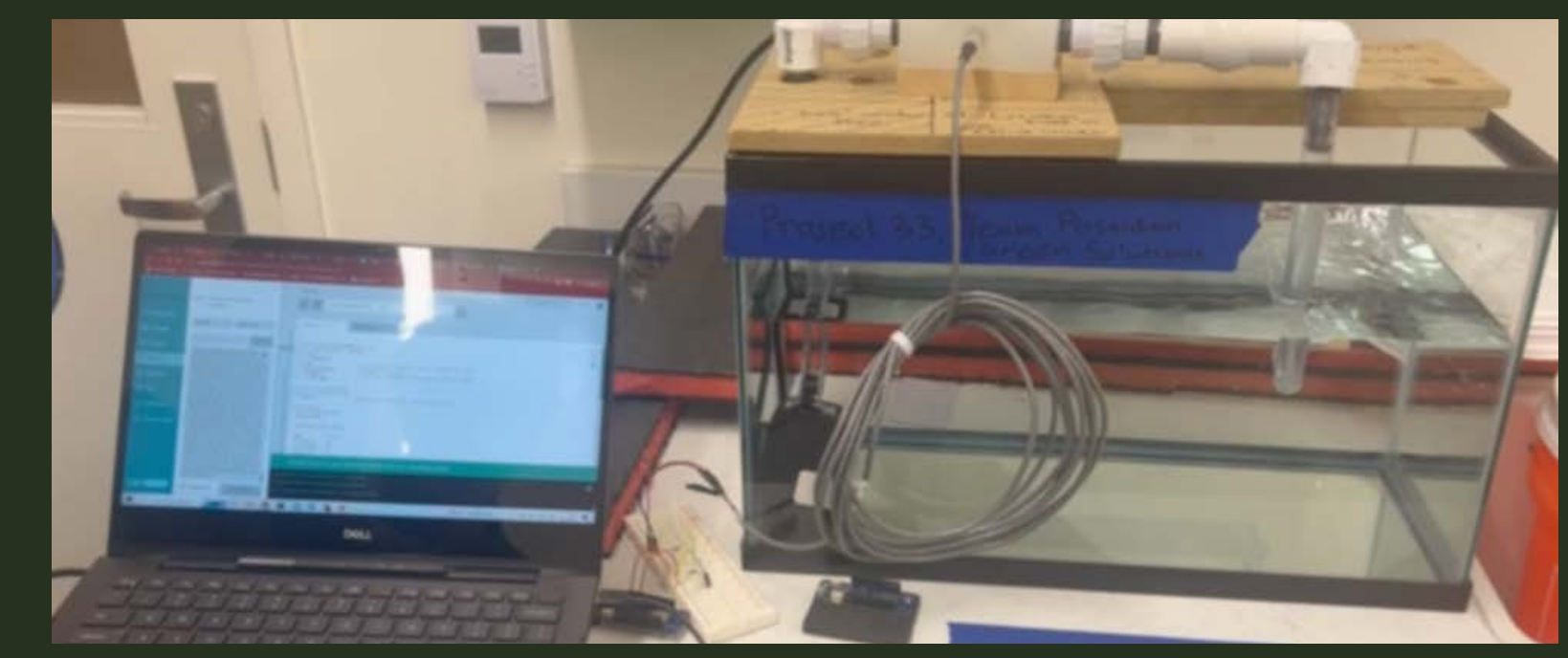
The Testing Rig:

The team designed a testing rig, which could control the flow and analyze how the system behaved under different flow rates.

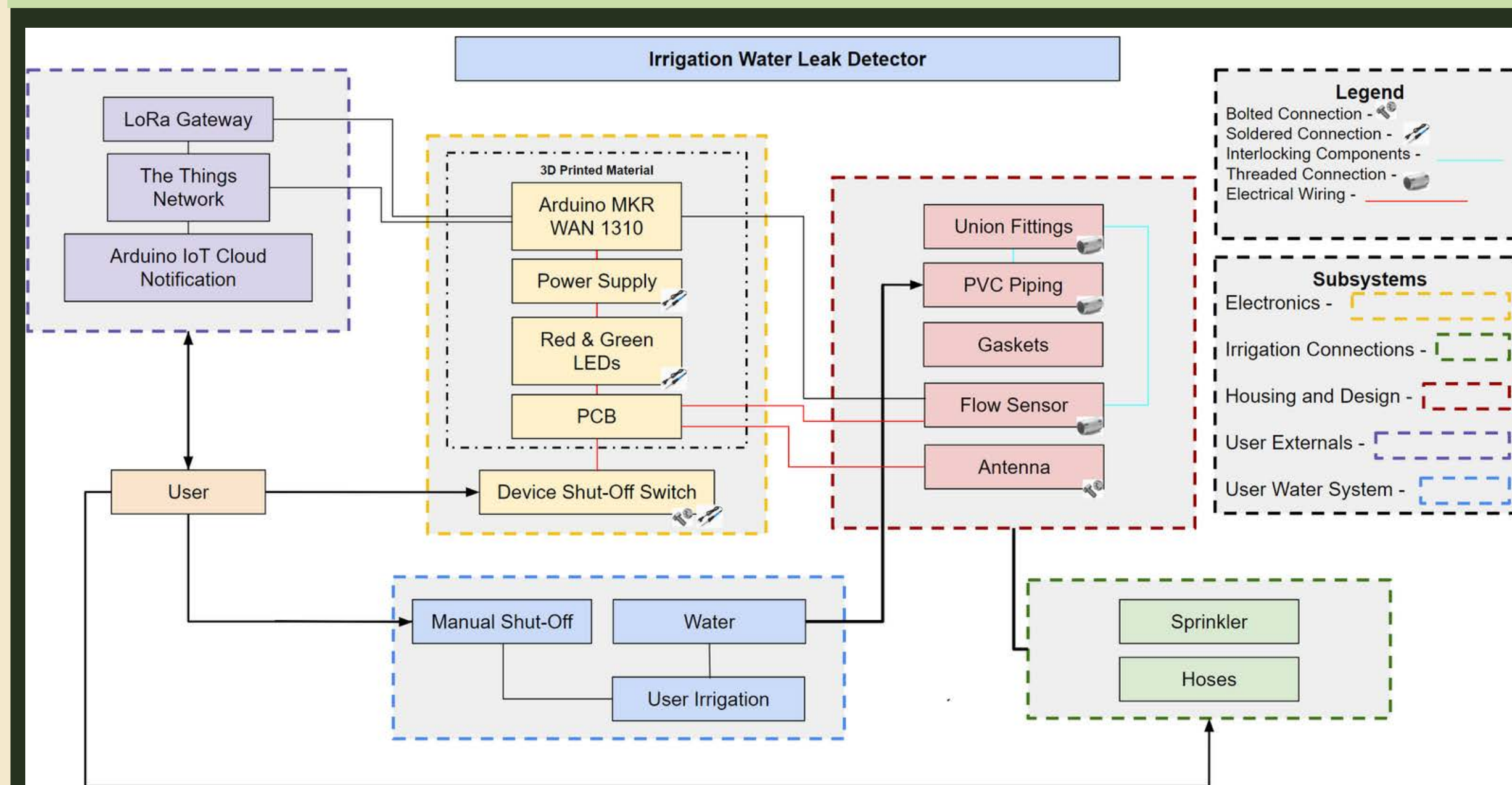


Flow Meter Calibration:

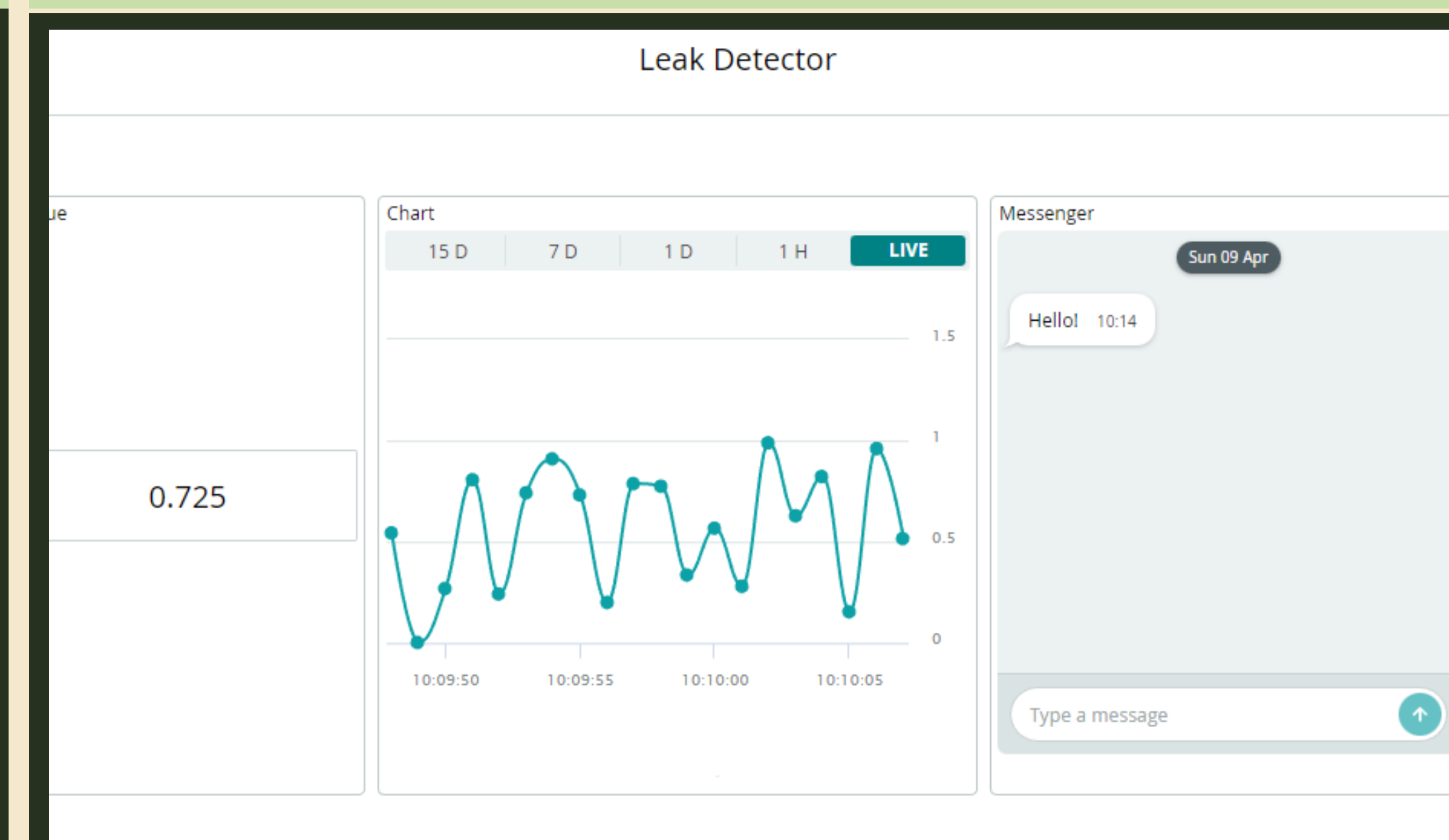
The flow rate sensor was also calibrated with the testing rig. Accuracy and sensitivity were measured to avoid false alarm leak detection messages sent to the user.



System Level Diagram



User Dashboard



Acknowledgements

We would like to thank the following individuals for supporting the project and advising the team:

- Dr. Scott Shaffar
- Dr. John Abraham
- Professor Barry Dorr
- Professor Escalona-Galvis
- Mr. Michael Lester
- Drake Jones