



# Development of New Blue Robotics Pressure Temperature Sensors to Monitor Sunny Day Flooding

Ava Chretien, Aife Ruane, Kaylee Murphy, Christopher Bartos  
Innovation Scholars, University of New Hampshire, Durham, NH 03824

## Sunny Day Flooding

- Recurring issue for the Hampton Beach community
- King tides can occur without any storm and run into streets
- Wreak havoc on roads, cars, houses, and lawns
- Rising sea-levels have made them more frequent and destructive



**OUR GOAL:** To help the Hampton Beach community by testing and implementing improvements to the BRPT design, which can be used to gather pressure and temperature data from different specific locations to determine where the tides hit first and in which direction they travel.

## Existing BRPTs

- Cheap alternative to marketed pressure temperature sensors
- Accurately measures wave pressure and water temperature
- Intended for medium length application (1-15 days)
- Intended for depths up to 10 meters

## BRPT Components

- Temperature sensor
- Pressure sensor
- Circuitry
- Batteries
- Pressure housing



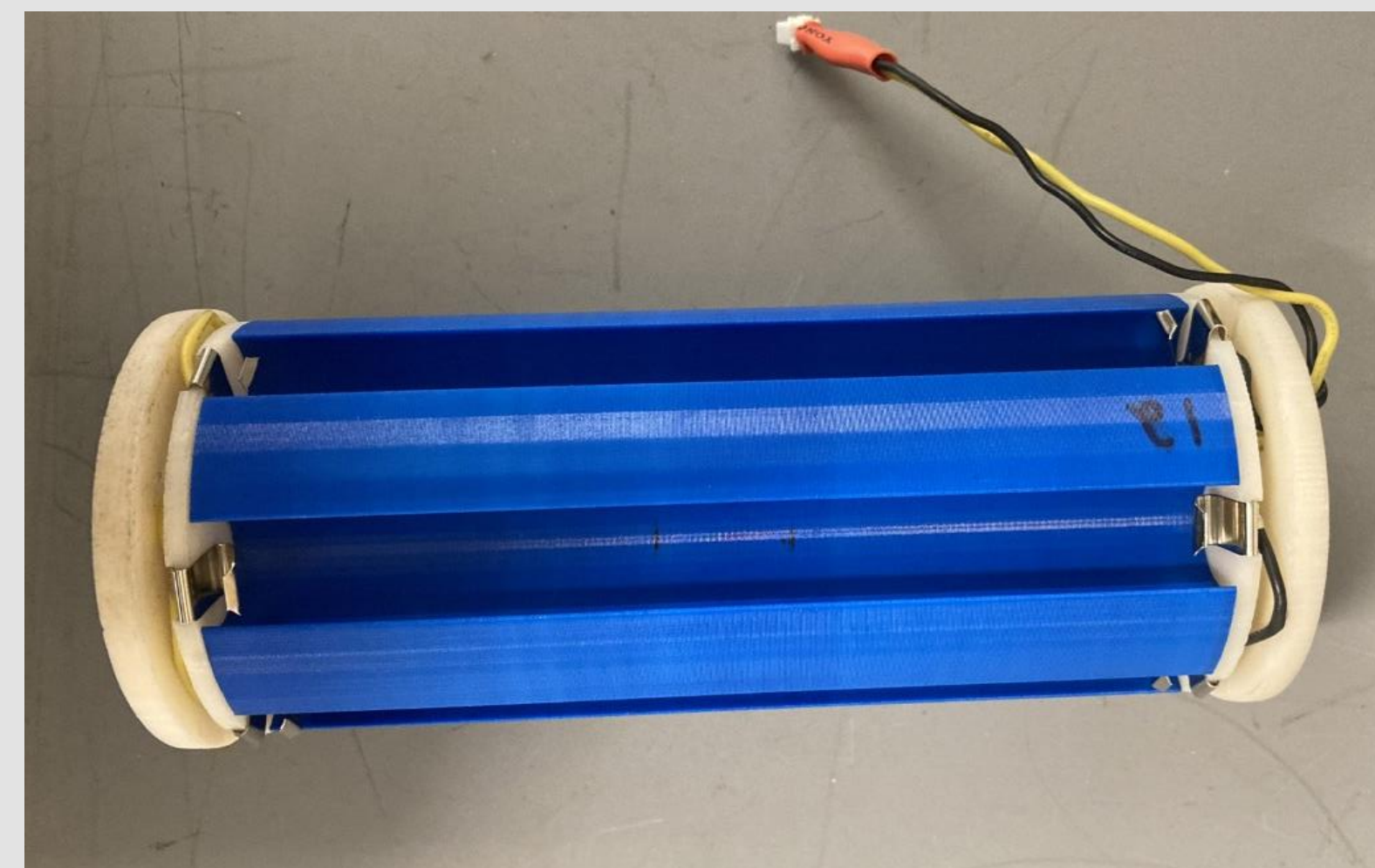
## Issues with Existing BRPTs

- Acrylic housing was affected by heat
- Water leaked into acrylic housing
- One BRPT wasn't recording data consistently



## New BRPT Design

- Parts manufactured by Blue Robotics
- New pressure release valves in the end caps
- New PVC pipe housing instead of acrylic
- Darker colored housing instead of clear
- New battery housing
- Soldered new PCBs



## Testing

- Tested waterproofness with leakage in two of five BRPTs
- Retested waterproofness two more times with no leakage in any BRPTs



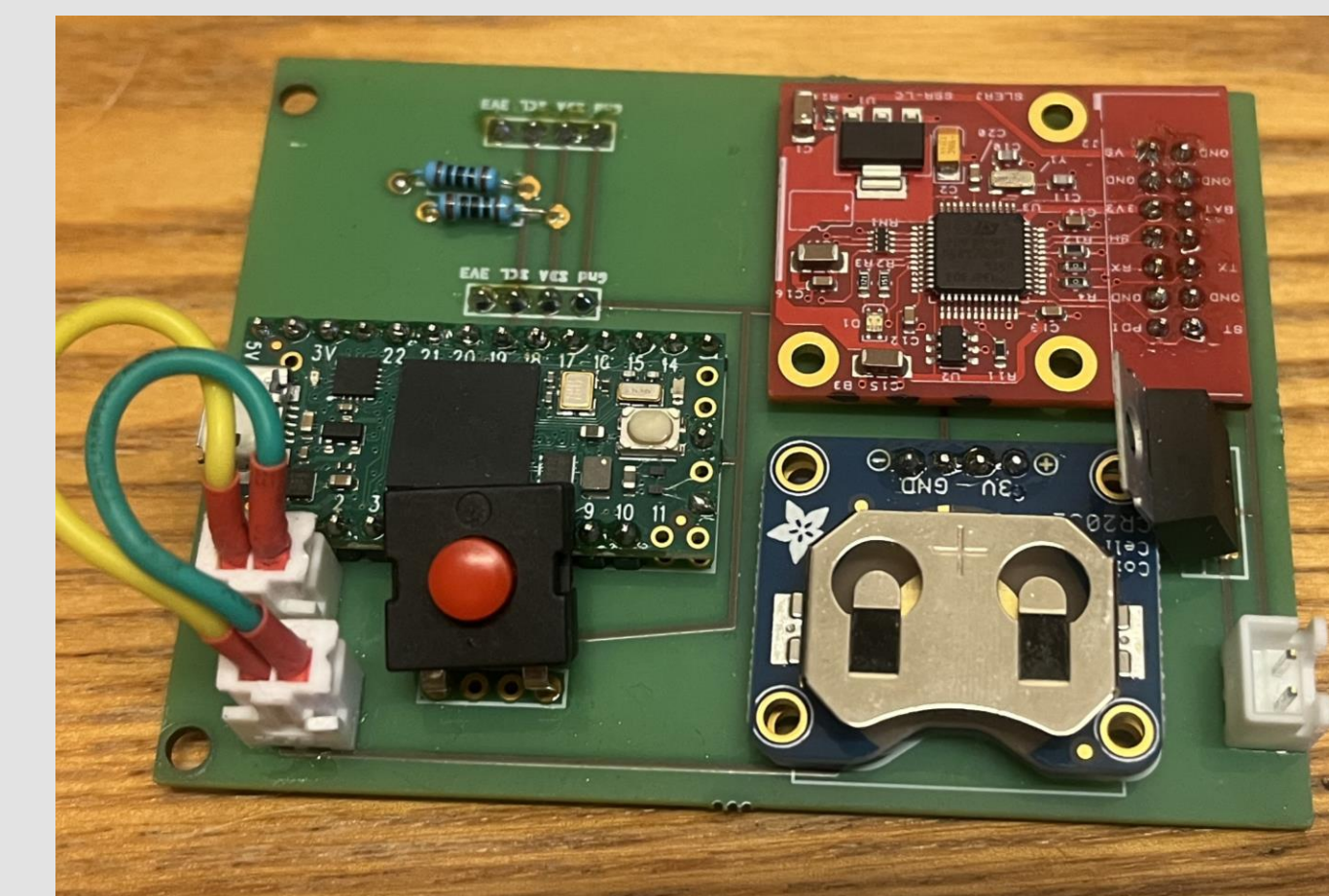
## Conclusion

- Successfully developed, assembled, and deployed the new BRPT design with no leakage
- New pressure housings, battery housings, wiring, and sensors
- BRPT deployment group deployed our new design
- BRPT deployment group was able to successfully upload the deployment data, which can be found at table 92



## Future Project

- Finish and test PCB circuitry
- Fix outlying housing issues such as the recurring problem with the threaded inserts in PVC housings
- Test the heat resistance of new PVC housings
- Assemble and test new acrylic housings
- Test new end cap latch system
- Test heat resistance of new acrylic housings



## Acknowledgements

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