

TO: ME 2171 Instrumentation Lab Instructional Staff

March 3rd, 2025

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SUBJECT: Weekly Project Update 1

This week, we focused on finding an effective way to transfer heat into the salt-water solution and settled on using an immersive water heater. One of our key challenges was determining the amount of heat actually being absorbed by the solution. To tackle this, we considered the entire system, that is, the heater, salt-water solution, and our container—as a closed, insulated setup where no energy is lost to the surroundings. This assumption allowed us to simplify our calculations. We also determined how to express the work done on the system in terms of voltage, internal resistance, and time using our knowledge of thermodynamics.

Finally, we ordered the immersive water heater and will begin calibration once it arrives. We plan to first measure the heat capacity of deionized water, which is a known value, so we can assess potential errors and fine-tune our setup.