ECE 445

SENIOR DESIGN LABORATORY

TEAM CONTRACT FULFILLMENT

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# Scrubbing CO2 Operational Prototype

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**Team #32**

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# 1 Project Goals

Our project was working with professor Allen on his desalination project. Our project was be that we'd help consolidate and automate much of the process that was already established. The start was housing all sensors in the existing prototype along with other components. By doing so we'd be able to automate every aspect of running an experiment to make testing and data collection easier. Lastly we wanted to give a clean UI that would interact with the setup so the prototype could be ran at the press of a button. Currently the consolidation of components has been established and the autonomy and UI are in the works of being finalized.

# 2 Expectations

All of the expectations were fulfilled. We brought our completed documents to the meeting and received feedback from the TA to make improvements before the next meeting. We consistently revisited and enhanced the PCB designs on a weekly basis, ensuring optimal functionality. Two hours before the 4:30 pm meeting, our team gathered, discussing improvements and addressing missing elements. Throughout the project, we consistently provided feedback to enhance both the hardware and software aspects. Particularly, during the design phase of the second board, team members actively contributed ideas on implementing relay and MOSFETs for controlling subsystems. Specific tasks and responsibilities were assigned to each member for document completion and design phases. We shared what we have written down on lab notebook to maintain accurate data and share the updates. We demonstrated flexibility by deciding to separate the control subsystem onto the daughter board. This adjustment was made due to challenges we encountered when attempting to incorporate everything into a single PCB, as initially planned. We consistently communicated with team members, either through face-to-face conversations or Zoom meetings.

## 3 Roles

Our original team contract outlined in the beginning had established that each member would contribute equally to each aspect. As the project had progressed we have deviated from this with each member working on aspects most suitable in. At the start when making our design, Seunghwan was most active in the design as to the circuit and PCB specifications. When the project progressed, Alan had focused more on the firmware so that the project would be able to read sensors and control devices. Meanwhile, Kinjal took the lead in making the UI that would interact with the hardware and be able to make running experiments easier for the user. The three parts were mainly tackled on by one person with help from the others when issues had risen and outside help may have been needed.

## 4 Agenda

The agenda for our project was mainly set by our initial talks with Professor Allen about what he wanted and expected us to work on from his current prototype. This had given us a simple outline as to what is expected for our project goals. When an issue did come up we looked at what aspects were affected by the issue to see what changes could be made and if any of the affected aspects could in some way altered to help with the issues.

## 5 Team Issues

Throughout the course, there were no team-related issues, as each team member effectively carried out their tasks and fulfilled their responsibilities. We would have asked TA for the suggestion if we had any issues. All of the process set our in the team contract was followed. However, we could have enhanced the team experience by organizing team meetings before the mock demo to better coordinate and refine our presentation.