

# Carnegie Mellon University

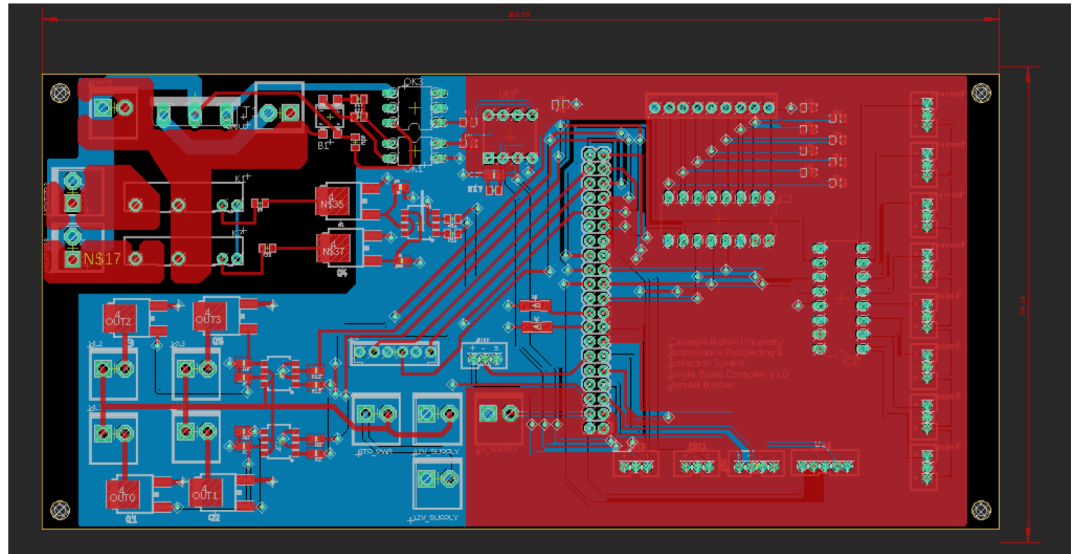


## Autonomous Extraction and Prospecting System

By Ismael Mercier

# Single Board Driver

- Solenoid Valves
- DC Heaters
- AC Heaters
- Stepper Motor
- DC Motor
- AC Motor
- Analog Sensors
- Serial Interfaces



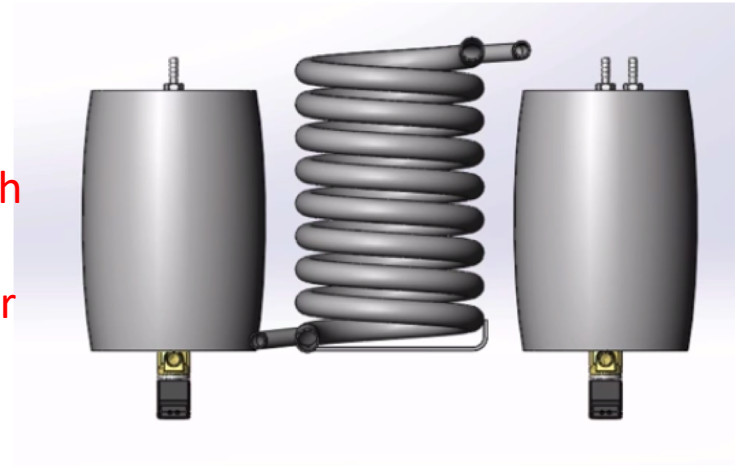
# Thermal Distillation System

## Pros:

- Guaranteed Purity
- Works for both dirty water and icy regolith
- High degree of long term reusability
- Secondary usage as Rodriguez Well heater

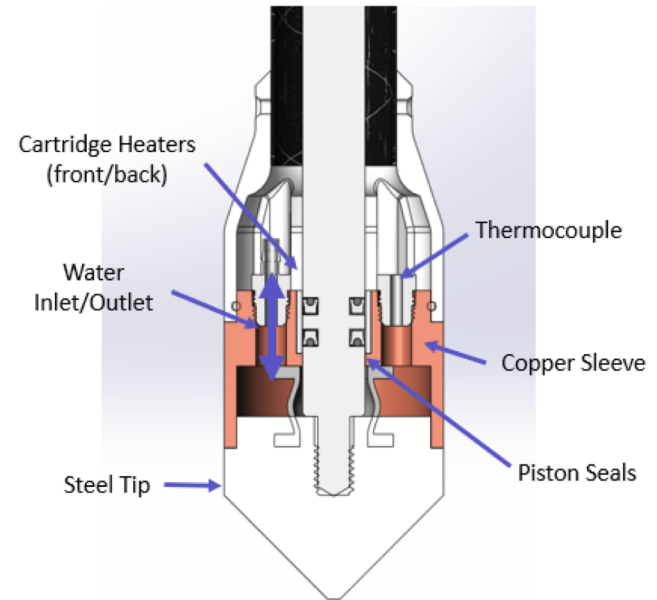
## Cons:

- High energy demands
- Slow rate of production



# Cone Penetrometer

- All in one drilling, heating, extracting and prospecting probe
- Remains sealed while drilling to protect internal devices, opens up to melt ice And extract water
- Non-rotating hammer drill



# A.P.E.S

- Mass: 37.3 KG (lightest in competition)
- Max Power: 1 KW
- Max Depth: 1 M
- Max Rate of Production: 2L/hour
- Max Storage Capacity: 10L
- Max Rate of Penetration: 0.25M/hour

