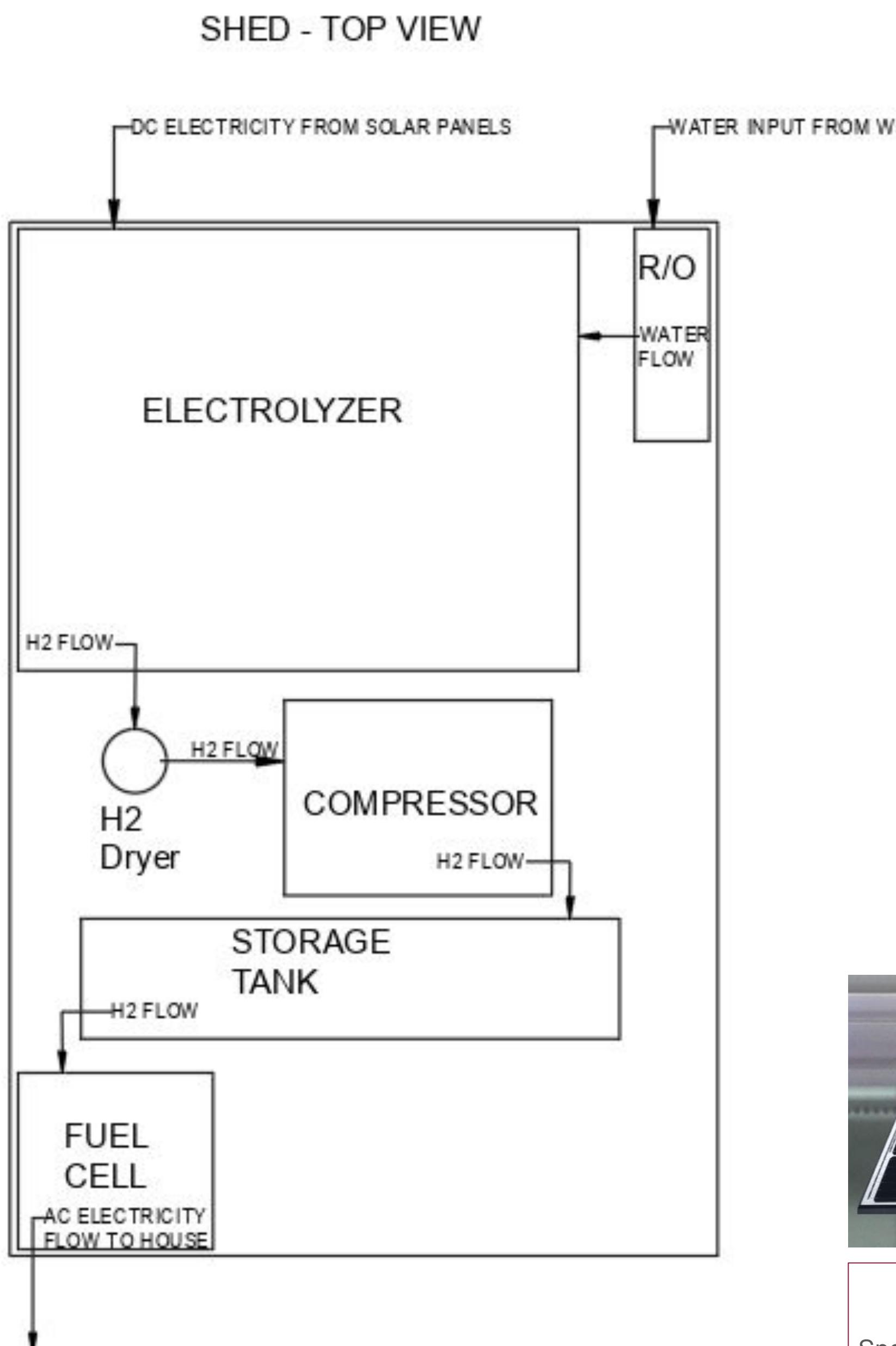


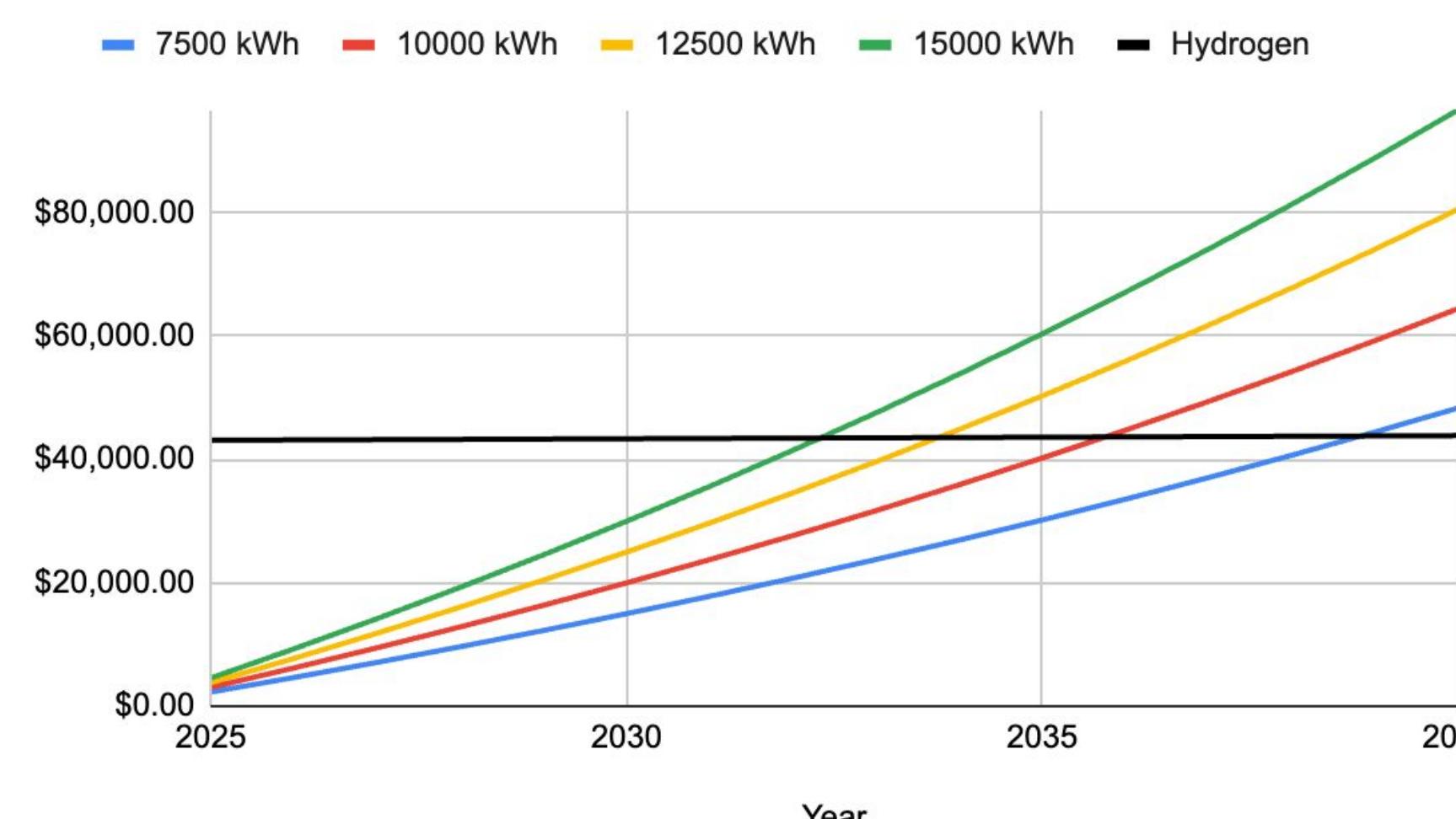
Team 31: Hydrogen Powered Microgrid With Integrated Fuel Cell



Introduction

- Combination of 100% renewable energy sources
- Off-grid

Total Grid Cost vs. Total System Cost Over Time



Components



Solar panel from Q Cells

Specs:
AC:
366VA at peak output power
349VA at max continuous output power
240-264 nominal voltage range
Power factor: 0.85 leading to 0.85 lagging
Efficiency: 22.5%
Amount: 25 panels in the array



S20 Electrolyzer from Nel

Specs:
Nominal production rate is: 530L/hr of hydrogen
Power consumption is 6.1kWh
Purity is 99.99%
Electrolyte is a proton exchange membrane



Compressor from Nova Swiss

Specs:
Power consumption: 2.2kW
Suction pressure:
min. 20 bar / max. 200 bar
Discharge pressure:
Max: 1,000/3,000 bar



Storage Tanks from Steelhead companies

Specs:
Type 3 or 4 tank
Operating Pressure: 550 bar
Volume: 23,000L for Hydrogen storage
Diameter: 17.12"
Length: 40"



Fuel Cell from Horizon fuel cells

Specs:
Cell Type: Proton Exchange membrane
48 Cells
Rated Power: 2kW
Performance is 28.8V at 70A
Efficiency is 40% at 28.8V

Conclusion

- Safe
- Sustainable
- Economic
- Energy Independence