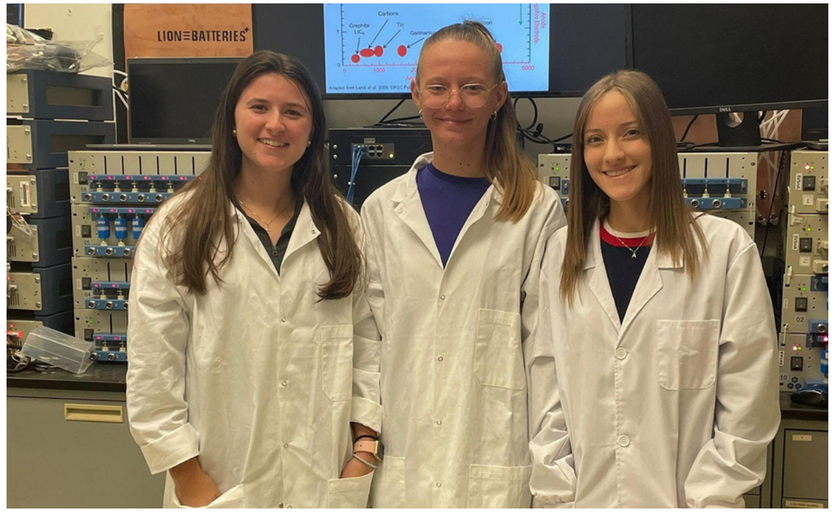
SEAWATER BATTERY: THE NEXT GENERATION OF RENEWABLE ENERGY STORAGE

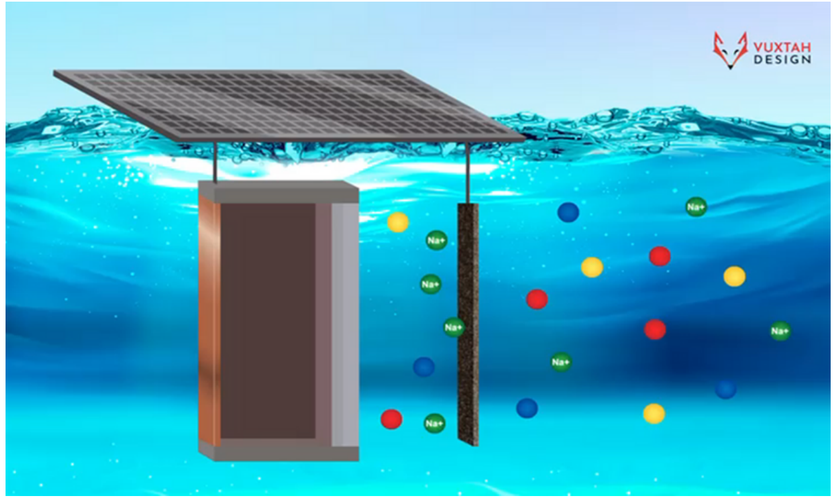
PROBLEM STATEMENT

Energy is at the core of modern society, but it comes with a cost. About 6.5 billion tons of carbon emissions are produced in the United States each year with electricity accounting for 25% of emissions. Governments, businesses, and communities are joining the "Net-Zero World Initiative" by switching to renewable energy sources. Lithium-ion batteries are commonly incorporated; however, they contain heavy metals and flammable liquids, an exponential rise in demand has led to overconsumption, and raw materials are sourced from unethical mining in disadvantaged communities. It's time to start finding an alternative to current lithium-ion battery technology.

MISSION STATEMENT

As technology and research evolve, solutions for environmental challenges surface organically. Our team is part of 13% of women in mechanical engineering directly propelling the industry to discover more future-ready solutions by our soul contribution in diversity and perspective. We commit to supporting the mission towards an environmentally cleaner future, today.





FIU Engineering & Computing

BATTERY RESEARCH LABORATORY

Our group is developing a seawater battery for future renewable energy applications. Seawater batteries store energy using the chemical bonds in sodium. During charge, sodium ions are extracted from seawater and transported to the anode through a solid electrolyte. At the anode, ions are reduced into sodium metal. During discharge, the sodium metal is oxidized and transported back to the cathode. This movement of electrons generates a current which can power devices, buildings, and entire cities.

Pictured below is a poof of concept prototype.