



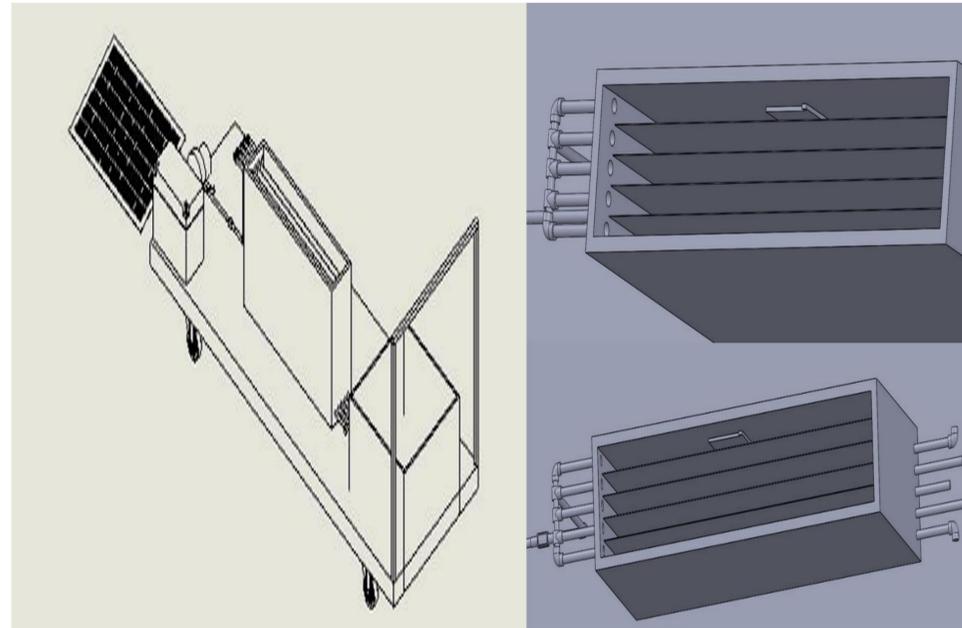
A Solar Powered Electrodesialysis Reversal Desalination Unit (SEDR)



Team#13 members

| Dr. Naveed Iqbal | Coach |
|---------------------------|-------|
| Muhammed Alshamlan | CHE |
| Fadhlallah Alshikhmubarak | EE |
| Adnan Alibrahim | ME |
| Hashim Alsadah | ME |
| Hussain Alsafwani | CHE |

3D Design



Problem Statement

The purpose of this multidisciplinary project is to design a portable desalination system that will be used in rural areas, off grid communities and local farms to supply fresh water, the system must integrate between Electrodesialysis Reversal Desalination and Renewable Energy

Constraints

- Budget of 6000 SAR
- Space Limit – portability
- Power Efficiency 500 W
- Safety Regulation and compliance

Specifications

- Production 100-150 liter per day
- Solar Power 30 W for 12 hr
- Power Consumption 10-40 W/L
- Membrane Layers 2 pairs
- Target size 1.5 m³
- Water quality within pH 7-8

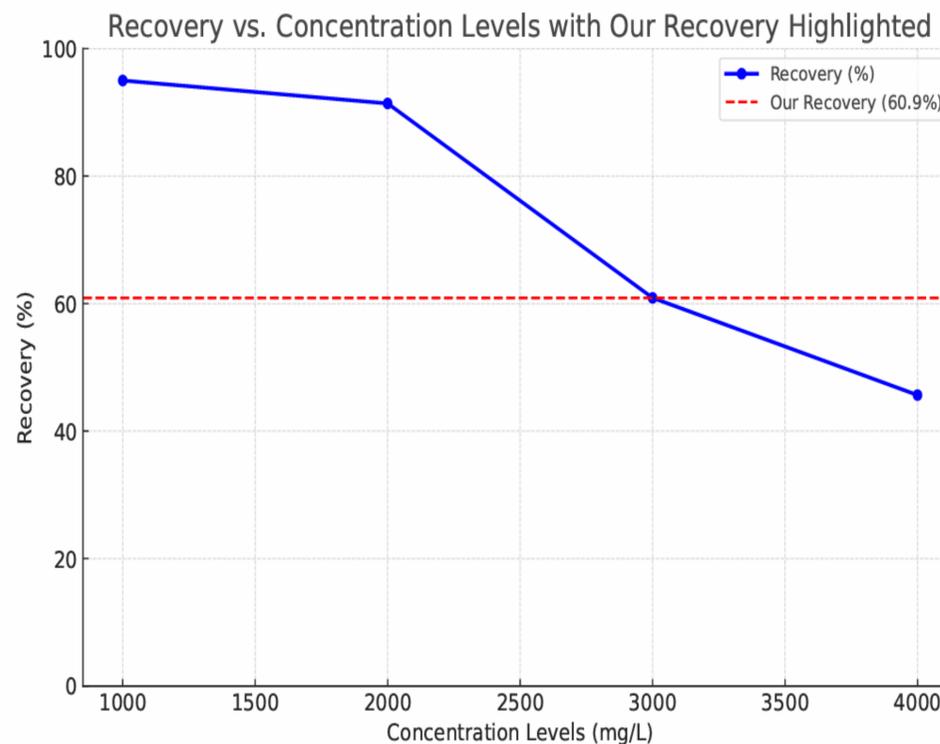
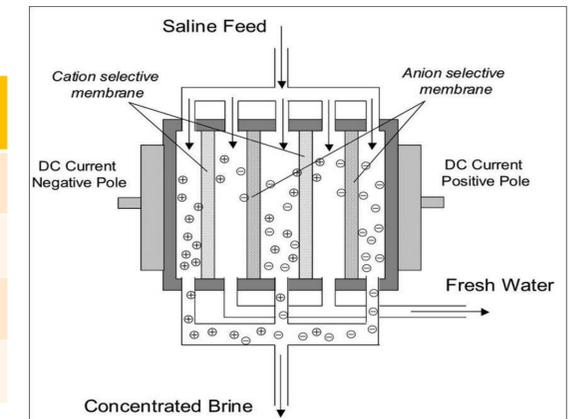
Cost

Through utilizing the budget by carefully selecting the needed material and components. The team was able to create the system by half of it, almost 3000 SAR was spent to construct the SEDR system.

| System | Costs |
|------------|------------|
| Electrical | 1027 SAR |
| Flow | 320.41 SAR |
| EDR unit | 1547.45 |
| | 2894.5 SAR |

Novelty & Creativity

Integrating Solar energy with emerging Desalination methods to create a portable system using ion exchange membranes that allow ion transfer through cation/anion alternately.



Multidisciplinary Roles

