Registration Form

TEAM INFORMATION

Team Name/Project Title: Team 4 – Solar Desalination and Water Purification

Department: Mechanical Engineering

Faculty Advisor(s): Dr. Peter Jenkins and Leila Tolderlund

Team Members: Jason Brown, Adam Fetty, Jerad Keller, Julie Starr

PROJECT INFORMATION

Description:

The desalination and water purification unit utilizes solar, thermodynamic, and electrical systems to produce freshwater for small-scale usage for third-world countries, disaster relief, and military.

Abstract:

The demand for freshwater is a growing concern in today’s world; however, water purification systems provide efficient, reliable sources of freshwater, a vital element for societal sustainability. The desalination process in this design eliminates salt in the water, and the distillation process removes contaminants simultaneously. Utilizing PV panels and batteries to harvest the natural energy emitted from the sun, electrical energy is converted to heat energy to vaporize the saltwater which is then condensed into purified water. The system design is portable, modular, sustainable, environmentally conscientious, and affordable, producing a freshwater source at an individual or small-group level. This system can be utilized for disaster relief, droughts, third-world countries, military, and plant/crop nourishment. Renewable energy is utilized to produce a natural resource mandatory for the perpetuation of humanity. This project encompasses multiple engineering disciplines: mechanical engineering is utilized for the thermodynamic and functional aspects and electrical engineering principles are implemented for the induction coil, battery system, and PV panels. The goal is to produce at least one gallon of freshwater per day (10 hours of sunlight) under ideal conditions. This project, when completed, will aid in a solution to the global droughts and shortages of clean water because it relies on ocean water as the input, not precipitation. The solar desalination and water purification system for this project is truly innovative, and the desire to provide society with a means of pure freshwater has driven the team to fabricate an ingenious, robust system.