



Small Scale Pre-Processing Unit

Springboard Biodiesel

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PROJECT OVERVIEW

The purpose of this project was to design a machine that would be able to pre-process waste vegetable to turn into higher quality biodiesel

Project Requirements:

- Reduce Water Content
- Processing Capacity
- Coarse Filtration
- Meets Material Cost Limit
- Single Supply Voltage
- Mobile
- Operator Safe
- Stable

The Problem:

The machines at Springboard Biodiesel can only accept oils that have a water content of no more than 0.5% water by volume. The higher the water content, the more waste product (glycerin) is produced.

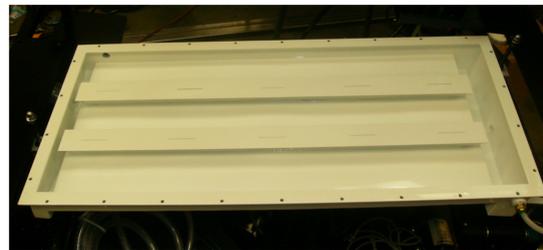


HOW IT WORKS

Waste vegetable oil is pumped into a four gallon heated tank. Oil from the tank is pumped in based upon internal float switch sensors controlling when the pump will turn on or off. The outlet is controlled by a thermostat that will release the oil when it reaches a certain temperature.



The oil passes through a 300 micron filter into a vacuum heating chamber where it will flow across until it drains into a final reservoir tank .



This reservoir tank contains a submersible pump controlled by a float switch that will control when the processed oil will be released.



Testing Water Content

The oil produced by this machine should contain less than or equal to .15% water by volume. The Sandy Brae test will be used because it is widely known, accurate, and is an easier method to test water content in oil. Mixing the oil with calcium hydride and a petroleum solvent the capsule will read a pressure that corresponds to the water content.



Current Method



Waste vegetable oil is stored while the oil and water diffuse by gravity. This process may take weeks.

Project Outlook

This machine will process waste vegetable oil faster than the current method while providing higher quality oil. This pre-processed oil will increase the output of biodiesel and generate more profit.

Suggestions For Future