

Team 3: Micro Anaerobic Digester for Waypoint Spirits Distillery

Sponsored by: Waypoint Spirits
Sponsor Advisor: Michael Curtis



Daniel Denyer, Elizabeth Burgess, Brianna Church, Jeff Rothstein



Waypoint Spirits is a start-up craft micro-distillery located in Bloomfield, CT. Dedicated to supplying hand-crafted and high quality distilled spirits, Waypoint mashes, ferments, distills, and flavors its products on site, creating a unique product, and with it, a unique waste. Along with providing high-quality craft spirits, Waypoint is dedicated to sustainability. From using locally sourced grains to using green energy for their building, they are looking to reduce their carbon footprint and reduce energy costs at the same time. Our design goal is to utilize the nutrient-rich waste produced onsite in a small scale anaerobic digestion process which can produce usable by-products. Anaerobic digestion produces methane gas which can then be used to supplement their current natural gas stream feeding their boiler. After digestion, the solid waste can then be sold to local farmers as fertilizer.

This project requires testing and analysis of waste samples to determine its compatibility with a digester and its potential to produce a significant amount of methane gas. Next, the available water quality analyses of the Waypoint waste stream are matched to a microdigester with design specifications that fit the parameters. Preliminary designs of the infeed system of the waste into the digester as well as a design for the infeed of the methane into the boiler are made. Treatment of the gas for the removal of unwanted impurities is also accounted for in this plan. Using the estimation of methane production, information on the microdigester, and necessary design modifications, a cost-benefit analysis was done to estimate a return on investment of the project. Based on the cost-benefit analysis, Waypoint will purchase the microdigester, implement our input designs, and begin facilitating the digestion process. Overall, our project entails testing the waste in order to choose a compatible microdigester, designing a transport network to carry the waste and digestion byproducts, and designing a methane cleaning system with a reasonable rate of return for Waypoint Distillery.

