Award-Winning Student Design Could Generate Alternative Energy Using Food Waste | College of Engineering

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News Release — LOGAN, UTAH, Oct. 23, 2018 — Utah State University students created an award-winning design that helps one of Utah's wastewater treatment facilities increase the use of renewable energy using food waste as a biofuel feedstock.

A team of civil and environmental engineering students at Utah State University’s College of Engineering took home a national award last week for optimizing the performance of Utah’s Central Valley Water Reclamation Facility anaerobic digestion system, increasing biogas production, and increasing the volume of food waste the facility treats.

The USU student chapter of the Water Environment Association of Utah wowed a panel of judges at the largest water conference in the nation on September 30th, in New Orleans, LA, and tied with the University of South Florida for second place in the wastewater design category.

Faculty adviser Ryan Dupont said the team recommended upgrades that were focused on improving the performance of the facility’s anaerobic digestion system and increasing biogas production. Additionally, the team recommended the plant construct a new, larger food waste handling facility that could process significantly larger volumes of food waste daily.

Design team leader Dominique Bertrand said they were able to increase the amount of biogas that is produced in two ways: First, by increasing the available capacity by reconfiguring digestion equipment. Second, by increasing the volume of food waste the facility accepts per day.

Food waste is more energy rich than municipal wastewater. Which means that food waste, when anaerobically digested, will be able to produce more methane gas. The methane gas is then processed by the facility’s cogeneration system and is converted into energy.

“We modeled design alternatives that we thought were viable and performed cost analysis on them,” said Bertrand. “We used the results from our model and the cost analysis to determine if the design alternative was worth pursuing further.”

Dupont says the students predict that 280,000 gallons a day of food waste could be directly converted into methane and power. The students estimated they could generate around $600,000 of revenue from selling the excess power back to the grid.

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