Green Technology Accelerator Center

New York State Pollution Prevention Institute (NYSP2I) helps companies accelerate their introduction of green technologies into the market by identifying emerging market opportunities and providing assistance in a variety of areas.

epiphergy

Food Waste to Fuel

Client

Epiphergy, LLC (Pittsford, NY) has developed and demonstrated a unique (patent-pending) bioprocess that enables the conversion ("upcycling") of a wide variety of compostable materials and organic wastes, including food/beverage waste, into ethanol fuel, animal feed and organic fertilizer.

Opportunity Areas

Epiphergy's waste to energy technology produces valuable biofuels and secondary products while providing significant environmental benefits. This is achieved by redirecting landfill waste, thereby avoiding carbon and greenhouse gas emissions. The fuel produced by Epiphergy's process can be *carbon negative*, meaning that the net carbon emissions are less than zero. Epiphergy plans to construct three new "upcycling" facilities in the Rochester, NY region and create approximately 40 direct, full-time jobs.

Objectives

Epiphergy requested that NYSP2I's Green Technology Accelerator Center evaluate their pilot process to determine the ethanol producing capability and the environmental impact of the process. NYSP2I structured the project to document the process yields, identify improvements, accelerate commercialization opportunities, market expansion and job creation.

Work Performed

NYSP2I engineers mapped Epiphergy's pilot process, documenting energy use and mass balance while processing over six tons of solid and liquid food waste products. The engineers further analyzed the chemistry at various process stages, including the feedstock, ethanol and co-products produced. Subsequent environmental assessment included a calculation of the carbon impact of the observed pilot process.

Results

- Epiphergy's process to "upcycle" solid and liquid organic waste streams is a promising technology that was observed to provide significant environmental benefits during the pilot process.
- Ethanol produced from food waste using Epiphergy's pilot process was determined to be *"carbon negative"*. This ethanol production process represents a significant reduction in Green House Gas (GHG) emissions as compared to landfilling the food waste material.
- Ethanol produced using Epiphergy's pilot-scale process achieved net GHG reductions as compared to the production of both corn based ethanol and gasoline.
- Energy efficiency improvements identified by NYSP2I will further increase the net ethanol production and commercialization potential of the bioprocess.