



Waste Oil to Biodiesel

McDonald's Corporation

ISTC's research engineer, Joe Pickowitz, and his team collaborated with the McDonald's Corporation to convert their waste oil to fuel in a demonstration project at McDonald's headquarters in Oak Brook, IL.

ISTC collected waste vegetable oil from McDonald's test kitchens to produce the biodiesel. The fuel was then utilized by McDonald's Corporation for their diesel-powered shuttle vans, which are used to transport McDonald's personnel in the Chicago area from their different corporate locations.

The initial demonstration project was conducted from March 1, 2007, to February 28, 2008. Further collaboration on testing of biodiesel fuels continued until April 30, 2012.



Joe Pickowitz working with the biodiesel pilot plant that was set up at ISTC's testing facilities.

U of I Dining Halls

ISTC is a proud supporter of student research and has collaborated with students from the Illinois Biodiesel Initiative, which is an independent division of the U of I's Engineers without Borders group.

The group's main project, which started in 2005, was to collect waste vegetable oil from campus dining halls every week and convert it into biodiesel. About 600 to 800 gallons of oil and grease from the U of I dining services was converted into biodiesel each month.

This 100% biodiesel was sold to the U of I motor pool to use in university vehicles in a ~25% blend with petroleum diesel. Chemical additives were mixed into the biodiesel to increase its performance in Illinois' cold winters. The performance of the biodiesel under various conditions, as compared to traditional petroleum diesel, was monitored and modified to improve the production process.

The by-product of the biodiesel production, glycerin, was also a valuable material and was used in soap-making research.

Soap from Glycerin, a Biodiesel Byproduct

Members of the Soap Group, a part of the Illinois Biodiesel Initiative, experimented with recipes to create functional and marketable soap from glycerin, a by-product of the reaction that produces biodiesel from waste oils. They produced an improved liquid dish soap that they gave to the Ikenberry Dining Hall in 2012, and they also developed new soaps to sell to other outlets on campus.

The soap did clean the Dining Hall's dishes, but it left behind a residue on the dishes and in the dish-washing machine. The group addressed this concern by testing and reformulating batches of liquid soap for the dining halls to test. The Soap Group prepared other samples for university housing as part of a proposal to replace the hand soap in dormitory bathrooms with a product that is sustainably manufactured on campus.

The Illinois Biodiesel Initiative was housed at ISTC during the research phase of making biodiesel from waste oil and glycerin to soap.



Students collecting waste fry oil from University of Illinois Dining.

Energy

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- Joe Pickowitz



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