

FACT SHEET

Company Launched: May 2008

Headquarters: Itasca, Illinois

Management Team:

President & CEO - Joe Skurla

Vice President of Business Development – Vonnie Estes

Vice President of Commercial & Public Affairs – Jack Huttner

Vice President of Engineering – Georg Anderl

DuPont Danisco Cellulosic Ethanol LLC is dedicated to the development and commercialization of cellulosic ethanol. DDCE brings together two leaders in the field – DuPont and Genencor, a division of Danisco – to bring integrated cellulosic ethanol technology solutions to the market. The company’s mission is to accelerate the development of commercial scale biorefineries, create value for the renewable fuels and agricultural industries and lead the way toward a low-carbon economy.

The Integrated Solution

How do you break down the rigid structures that give plants the ability to survive the environmental changes of seasons and severe weather? How do you do this at a price point that is comparable to existing biofuels today?

The joint venture between DuPont and the Genencor division of Danisco is answering these questions and will deliver integrated cellulosic ethanol technology packages worldwide utilizing regional cellulosic biomass feedstock to offer the most cost effective and efficient technology with the smallest environmental footprint.

The successful deployment of cellulosic technology to produce ethanol requires step-changes in the full value chain of producing ethanol. From collection, transportation and storage on the front end to the steps needed to breakdown the sugars in rigid plant structures into usable sugars to the fermentation technology that will create the ethanol – all steps must be integrated to deliver non-food derived biofuels to the market.

Here’s how it is being done:

The joint venture combines DuPont expertise in integrated biorefinery design, engineering, pretreatment, and dual sugar fermentation with Genencor expertise in biomass enzyme and low-cost enzyme production. The integrated cellulosic ethanol technology system includes:

Pretreatment of biomass substrate to separate the lignin from the plant's cellulose backbone to provide access to the cellulose for further processing. DuPont has developed a pretreatment technology through its collaboration with the US Department of Energy National Renewable Energy Lab (NREL) that is a proprietary mild alkaline process that allows for lower cost of capital than other pretreatments and will now be utilized by the joint venture. Work is ongoing to optimize this pretreatment technology for other cellulosic feedstocks.

A process called **enzymatic hydrolysis** to convert the cellulosic materials to fermentable sugars. The pioneering research programs of Danisco's Genencor division have resulted in powerful enzyme complexes that deliver a 30-fold decrease in enzyme costs. These breakthroughs are helping to overcome the challenges of time, cost, and flexibility to breakdown a variety of cellulosic substrates, such as corn fractions and switchgrass. This is a key strength of the new joint venture.

A novel technology also developed through the DuPont-NREL collaboration to **ferment** the sugars to make high concentrations of cellulosic ethanol. DuPont has created a unique ethanologen for the production of cellulosic ethanol using a proprietary biocatalyst based on *Zymomonas mobilis*. The ability to convert both sugars into high yields of ethanol with fewer byproducts is a key value differentiator for the joint venture's cellulosic technology.

The technology being developed by DDCE will utilize a low cost, non-food carbon source to increase the biofuel outputs per acre while lowering the greenhouse gas impact of transportation fuels. While the drivers for biofuels are global, each market will use different crop inputs and may have different product and/or infrastructure needs. As a result, the joint venture will adapt the science to the need in each region.

Biofuels is just one part of the solution needed to reduce global reliance on petroleum and improve the effects the human race has on climate change. Other solutions will also help to solve these problems. DDCE is committed to delivering the best cellulosic technology package to global markets to contribute to these solutions today.

For more information: www.ddce.com