



NC CLEAN ENERGY TECHNOLOGY CENTER

Economic Development & Clean Transportation

NOVOZYMES

A NORTH CAROLINA CLEAN
TRANSPORTATION SUCCESS
STORY

Company Spotlight

Novozymes is the world leader in research, development and manufacture of enzymes for the conventional and advanced biofuels industries. The company's biotechnology helps convert renewable feedstocks, such as corn cobs/stalks, wheat straw, energy grasses, sugarcane stalks, corn, sorghum, wood chips, waste grease and even municipal solid waste into clean burning renewable fuel. Novozymes houses a center of excellence for biofuel research at its North American headquarters in Franklinton.

Bioenergy is the largest research effort in the company's history with 150 scientists allocated globally. The company's technology has enabled the world's first commercial cellulosic ethanol

Organization Details

Opened	1979
Locations	Franklinton, NC
Primary Business	Enzyme and Microbial research, development, and manufacturing.
R & D	Increasing the efficiencies and yield of corn ethanol and cellulosic ethanol
Employees	536 in NC
2013 Sales	\$2.13 billion



US Dept of Agriculture Secretary Tom Vilsack and Novozymes President, Americas, Adam Monroe poses in front of the Novozymes Zymobile, an E85 flex-fuel Dodge Charger.

plant to open in 2013, and helped significantly improve the efficiency of conventional biofuel manufacturing.

Novozymes opened its doors in 1979 in Franklinton, NC. The company actually dates back to 1941 where it patented its first enzyme near Copenhagen, Denmark. Novozymes is primarily engaged in enzyme and microbial research, development, and manufacturing for more than 40 different industries including bioenergy, food, feed, detergents, brewing, baking and more. In North Carolina alone, the company employs nearly 536 employees.

The two core focus areas for Novozymes' research are corn ethanol and cellulosic ethanol. Novozymes works to increase the amount of sugars that can be converted from plants into fuel. Its latest products launched in 2013, (Avantec, Spirizyme, Achieve and Olexa), help increase corn ethanol yield up to 5% and corn oil extraction by 13%, while saving 8% energy. The company has also improved the efficiencies in cellulosic ethanol production by 20-fold over the past several years.

Outlook

Novozymes' vision is to ensure the right balance between better business, cleaner environment, and better lives. The multinational company is looking to the future by innovating sustainable biotechnology solutions to the world's most pressing problems such as reduction of CO2 emissions from transportation.

Novozymes believes the country will benefit from an increased use of renewable fuels in our cars and trucks. Renewable fuel reduces dependence on fossil fuels, creates jobs and economic opportunity across rural America, and reduces greenhouse gas emissions. In order to move the country toward higher blends of biofuels, Congress enacted the Renewable Fuel Standard (RFS) in 2007. To date, the RFS has built a conventional biofuel industry employing 400,000, contributing \$44 billion to the nation's GDP and helping reduce CO2 emissions by up to 60% and particulates by 50% versus gasoline. Biofuels currently comprise ten percent of the country's fuel supply.

The advanced biofuels industry is commercializing now with several plants opening in 2014-15. This new industry has the ability to create an additional 800,000 jobs nationally and add \$95 billion to our GDP. Per the RFS, the entire biofuel industry is targeted to produce 36 billion gallons of fuel by 2022, which equals roughly 25% of our nation's fuel supply.



Novozymes employs 150 scientists globally to research and develop world-leading enzymes for converting biomass to conventional and advanced biofuels.



“Novozymes continues to drive innovation for conventional biofuels, improving yields and reducing raw material inputs and energy savings in the production process. We’ve also continued to improve technology for advanced biofuels resulting in a 20-fold gain in efficiency and enabling the commercialization of this new industry.”

-Adam Monroe

President, Novozymes Americas

Clean Fuels Advanced Technology Project 2013-2015

The Clean Fuel Advanced Technology (CFAT) project is currently in a third phase of support from the N.C. Department of Transportation with \$6.2 million in federal Congestion Mitigation Air Quality (CMAQ) funding.

CFAT is focused on reducing transportation related emissions in the 24 North Carolina counties that have air quality concerns and are listed as non-attainment or maintenance status for national air quality standards. The 2013 to 2015 project is funded by the N.C. Department of Transportation and covers three broad areas: education and outreach, project funding, and recognition of exemplary activities.

The N.C. Clean Energy Technology Center has teamed up with the Centralina Clean Fuels Coalition, the Triangle Clean Cities Coalition, Piedmont Triad Regional Council, Upper Coastal Plain Council of Governments and Kerr-Tar Council of Governments on education and outreach activities throughout the state. These partners are available to speak about clean transportation technologies and practices at local events.

Contact

NC Clean Energy Technology Center
Clean Transportation Program
cleantransportation@ncsu.edu

This document is supported through the Clean Fuel Advanced Technology project with funding from the N.C. Department of Transportation.