Novozymes to supply enzymes to St1 Biofuels in Finland

The world's first facility to produce cellulosic ethanol from sawdust will use Novozymes' customized enzymes. With an annual capacity of 10 million liters, the plant represents an expected investment of around €40 million.

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TRADE NEWS

Today, Novozymes announced a deal to supply enzyme technology to a new biorefinery that will be built by St1 Biofuels in Kajaani, Finland. The facility will be co-located at a sawmill site, and will be the first facility in the world to use sawdust from softwood as feedstock to produce cellulosic ethanol at commercial scale. The process uses steam-explosion to open up the cellulosic structures of the sawdust, followed by enzymatic hydrolysis to extract the sugars for ethanol fermentation.

"I am delighted that our enzymes have been chosen for this pioneering project in Finland," says Sebastian Søderberg, Vice President of Biomass Conversion at Novozymes. "It marks an important step for Finland and other countries around the world that have ample softwood supplies."

Cellulosic ethanol made from softwood

The new plant marks the potential for commercial scale production of cellulosic ethanol in regions where plenty of softwood is available, notably the Northern Hemisphere. Softwood comes from trees like pine that have needles instead of leaves.

The plant will initially produce 10 million liters (2.7 million gallons) of cellulosic ethanol per year, but can be scaled up to annual output of 50 to 100 million liters. Total investment is expected to be €40 million of which an investment grant will cover 30%. Construction is scheduled to begin in the second half of 2015, with production expected to start in 2016.

"Northern Europe has a large industrial sector based on forestry, and this opens up many possibilities," Sebastian Søderberg says. "The biomass and specialist knowledge is available here, and the long-term political framework is in place in Finland, which all works together to enable the commercial production of cellulosic ethanol based on softwood."

"I am pleased to have Novozymes as enzyme technology supplier. The collaboration is key in optimizing our production costs that is one of the key elements in commercial cellulosic ethanol production," says Mika Aho, Managing Director at St1 Biofuels.

Investment supports the ambitious targets for biofuels in Finland

The construction of the biorefinery supports Finland's climate and energy strategy. The country has implemented a mandate to increase the share of renewable energy in transport up to 20% by 2020.

The plant will be constructed and operated by St1 Biofuels using the company's proprietary pre-treatment and process technologies called Cellunolix®. It is owned by North European Bio Tech Oy (NEB), and the production capacity of the plant will be leased to North European Oil Trade Oy (NEOT). The Finnish investor, NEB, is an associated company of SOK Corporation and energy company St1 whose purpose is to invest in biofuel production units.

NEOT is sister company to NEB, and it is the most significant independent fuel supply company in the Baltic Sea region. It delivers fuels to major Nordic service station chains – ABC, St1 and Shell – with a total of 1,500 service stations in Finland, Sweden and Norway.

The agreement between St1 Biofuels and Novozymes is not expected to impact Novozymes' financial outlook for 2015.

Facts: The energy in sawdust

Sawdust or wood dust is a by-product of the forestry industry and is composed of fine particles of wood.

With Finland as the home of a major forest industry, the country has an abundance of sawdust. The complex

structure of this biomass contains fermentable sugars which can be used for the production of cellulosic ethanol. This biomass is more difficult to convert into ethanol than traditional starch substrates from grains.

About Novozymes

Novozymes is the world leader in bioinnovation. Together with customers across a broad array of industries we create tomorrow's industrial biosolutions, improving our customers' business and the use of our planet's resources.

With over 700 products used in 130 countries, Novozymes' bioinnovations improve industrial performance and safeguard the world's resources by offering superior and sustainable solutions for tomorrow's ever-changing marketplace. Read more at www.novozymes.com.

About St1 Biofuels

St1 Biofuels Oy was established in 2006 as a subsidiary of St1 Nordic Oy, with the goal of creating a sustainable ethanol production concept that could be widely utilized.

Operating now a number of ethanol plants, St1 Biofuels is a pioneer in waste-based ethanol production. The company delivers biofuel production technology and business services, as well as operates its own ethanol plants. The expertise of St1 Biofuels lies in biochemical processes, technology development, engineering and project delivery. The core principle is to replace fossil fuels in a profitable and sustainable way.

www.st1biofuels.com
www.neot.fi
St1 Biofuels' announcement of the project.