BIOLYFE Newsletter - Issue 9
July 2012

The BioLYFE project

The BIOLYFE project aims at improving critical steps of the second generation bioethanol production process and at demonstrating the whole supply chain, from feedstock sourcing via fuel production to product utilisation. The main result will be the construction of an efficient second generation industrial demonstration unit with an annual output of about 40,000 tons of lignocellulosic bioethanol.

Please see www.biolyfe.eu for more information.

BIOLYFE is co-funded by the European Commission in the 7th Framework Programme (Project No. FP7-239204). Project duration is four years and activities started in January 2010.

In this Newsletter

In this BIOLYFE newsletter issue, we would like to provide brief information on the opening ceremony of the new fuel station in Tortona, Italy, where it was possible to fuel vehicles with the new 'green' gasoline. In addition, you will find information on the latest Novozymes innovation - Cellic CTec3 enzymes. Latest events and information on related projects is also provided in this newsletter issue.

From the field to the wheel: bio-gasoline available at the new fuel station

On 7th June 2012, the official opening of the new fuel station took place in Tortona, Italy. The opening of the fuel station is an important step towards the comprehensive concept 'from the field to the wheel' and is a real alternative to traditional fossil fuel.

The ceremony was organized under the BioLYFE project. Mayor of Tortona Mr. Massimo Berruti and Research & Development Director of Mossi & Ghisolfi Group Mr. Dario Giordano attended the opening event. It was possible to fuel Flex-Fuel vehicles with two types of blended gasoline: E10 (a mix of gasoline with 10% of bioethanol) and E85 (a mix of gasoline with 85% bioethanol).

Official opening of the new fuel station in Tortona, Italy

The second generation bioethanol is a renewable fuel obtained from lignocellulosic feedstock not impacting the agricultural food chain and helping to reduce the CO_2 emissions. The second generation bioethanol will be soon produced in the Crescentino plant which is currently under construction and will start operation in late 2012. It will be the world's first commercial plant producing second generation bioethanol. Mossi&Ghisolfi Group will apply its technology in the bioethanol production process.

Donation of Flexi-Fuel car to the city of Tortona, Italy

During the inauguration ceremony, Mossi&Ghisolfi Group donated a Flexi-Fuel car (an alternative fuel vehicle with an internal combustion engine designed to run on more than one fuel, usually gasoline blended with ethanol) to the city of Tortona. Other three Flexi-Fuel cars will be used by the Group to advertise the product and demonstrate the benefits of PROESA ® technology for the production of second generation bioethanol.

Flexi-Fuel car at the new fuel station

'Sustainable chemistry is the future of our company and a real opportunity for economic revitalization of the country' - said the Research & Development Director of Mossi&Ghisolfi Group Mr. Dario Giordano. 'Today, thanks to research we have an economically and socially sustainable alternative to oil. We should firmly believe and bet on the Italian green economy focusing on research to provide sustainable solutions'.

For more information please contact the project coordinator:

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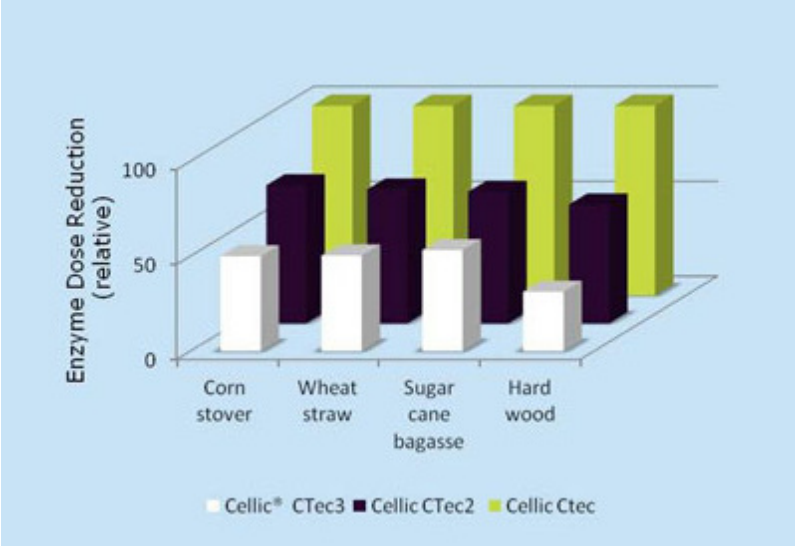
Novozymes issues Cellic CTec3

Cellic CTec3 is a cellulase and hemicellulase complex that allows a cost-efficient conversion of pretreated lignocellulosic materials to fermentable sugars. The benefits of Cellic CTec3 are the following:

- Reduction in the total cost of ethanol production
- Optimization of the conversion processes: increasing biomass to sugar conversion, decreasing enzyme dosing, increasing total solids loading, reducing hydrolysis time and the severity of pretreatment

Cellic CTec3 contains proficient cellulase components boosted by proprietary enzyme activities, including advanced GH61 compounds, improved ß-glucosidases as well as a new array of hemicellulase activities, which together allows the conversion efficiency of Cellic TCec3 to be improved by at least 1.5 times over Cellic CTec2.

Using Cellic CTec3 you need 5 times less enzymes than standard biomass degrading enzymes. Optimal performance of Cellic CTec3 occurs at a temperature range of 50-55 ℃ and at pH 4.75-5.25. The optimal conditions can vary with specific pretreated substrates and process conditions (e.g. solids content and hydrolysis time). For best product performance, Cellic CTec3 should be stored at cool temperatures in closed containers protected from sunlight. The product has been formulated for optimal storage stability, however enzymes gradually lose their activity over time. The recommended storage conditions are 0-10 ℃ (32-50 ℉). Prolonged storage time and/or adverse conditions such as higher temperature may lead to a higher dosage requirement.



Enzyme dosage reduction by Novozymes Cellic CTec3

For more information please visit Novozymes website http://bioenergy.novozymes.com

20th European Biomass Conference and Exhibition

The 20th European Biomass Conference and Exhibition ended on Friday, June 22, 2012. Conference General Chairman, Dr.-Ing. B. Krautkremer from Fraunhofer Institute IWES, Head of Bioenergy System Technology concluded at the EU BC&E Closing Session: 'Biomass is multi-usable for energy as well as for materials. The technologies are quite advanced and the industry well-established. Biomass will obviously play a key role towards a sustainable supply'.

The Conference Programme was defined and structured under the guidance of the Technical Programme Coordination group: Dr. Heinz Ossenbrink, Dr. David Baxter and Dr. Jean-Francois Dallemand, all from the European Commission, DG Joint Research Centre. Dr. David Baxter highlighted in his summary: 'Biomass conversion technologies have progressed rapidly in the last year. In some cases technologies have made giant steps forward and expect to achieve commercial reality well within the next 5 years, way ahead of the 2020 target in Europe. The best example of the latter is lignocelluloses ethanol where commercial-scale plants are already under construction. This is not to say there are many challenges and R+D will be needed for a long time to come.'

BioLYFE project stand at the 20th European Biomass Conference and Exhibition, project coordinator Arianna Giovannini

The BioLYFE project had a stand at the Exhibition and presented two posters in the Poster Area on 'Measurements of rheological properties of Arundo Donax suspensions and enzymatic hydrolyzates' and on 'Bioethanol production in yeast co-cultures in presence of adsorbents: preliminary results'. In addition, the project coordinator chaired a workshop 'Towards Lignocellulosic Ethanol Deployment'.

For more information on the event please visit the conference website www.conference-biomass.com

NEMO Project – Flyers available on Exploitable Results

In the EU-funded NEMO project, 19 partners from R&D and industry are working on the development of technological improvements for the production of ethanol from lignocellulosic feedstocks such as wheat straw, giant reed (*Arundo donax*), and spruce wood.

The three major project objectives are the discovery and optimization of new cellulases and hemicellulases, the development of robust, co-fermenting yeast strains, and the integration of novel enzymes and microbes into optimized production process configurations.
Recently, several flyers have been elaborated presenting Exploitable Results developed by partners of the NEMO consortium, namely on 'industrial yeast strains fermenting C6 and C5 sugars', 'specific Xylose and Arabinose transporters', 'novel hemicellulases', 'Overexpression of the S. cerevisiae gene MCR1 in cell factory(ies)', 'improved processes for the hydrolysis of pelletized biomass', and 'engineered thermostable cellobiohydrolases'.
If you are interested in receiving the NEMO Exploitation Flyers, please contact WIP (rainer.janssen@wip-munich.de) or the NEMO coordinator Prof. Merja Penttilä from VTT (merja.penttila@vtt.fi). Visit the project website at http://nemo.vtt.fi.

Upcoming events

Biofuels 2012, 17-19 October 2012, Amsterdam, the Netherlands

http://www.wraconferences.com/biofuels-2012-7th-annual-meeting/s4/a277/

13th International Congress on Yeasts, 26-30 August 2012, Madison, Wisconsin, USA

http://conferencing.uwex.edu/conferences/icy2012/