FOREST REFINE PARTNER – CENTRIA UNIVERSITY OF APPLIED SCIENCES

Forest Refine is a cross-border research project between Sweden and Finland about the raw material supply to biorefineries. Forest Refine has seven participating organizations, three from Sweden and four from Finland. This presentation of the participating organizations is about Centria University of Applied Sciences.

CENTRIA – A GENUINELY INTERNATIONAL INSTITUTION

Centria University of Applied Sciences is a multidisciplinary, dynamic and international higher education institution that offers students and staff an environment that is innovative, caring and multicultural. A strong focus on entrepreneurship and excellent connections with the working-life, provide a good basis for combining theoretical knowledge with career skills in a meaningful way. Centria UAS profiles as an international university of applied sciences that encourages innovation and entrepreneurship.

Study options as well as research and development activities of Centria University of Applied Sciences respond to the needs of the business and working life. Centria has three campuses – Kokkola, Pietarsaari and Ylivieska that offer degree programs in technology, business, social services and health care, culture and humanities and education. Centria has about 3000 students and 300 staff. Every year about 500 students are graduated. Teaching languages are Finnish, Swedish and English.

CENTRIA RESEARCH AND DEVELOPMENT

Centria Research and Development is the unit of research, development and further education of the Centria University of Applied Sciencies. The main function of Centria's research and development is to create possibilities for the development of the region's enterprises and communities.

Centria has the use of the knowhow of the whole staff, the laboratory services and the eager students, who significantly complement the experts' work contribution to the profit of the region's entrerprises. Annually Centria participates in more than 100 separate r&d–projects.





CENTRIA IN FOREST REFINE

3. Chemical and physical requirements of the forest biomass to biorefineries, fractionation of biomass, and preparation of bio-chemicals

The purpose is to define the future quality requirements of the forest biomass assortments for various types of biorefineries. The most interesting forest biomass fractions produced and characterized in sub-project 2 will be sampled for laboratory and pilot scale tests to determine their processing properties.

Forest biomass contains mainly of the polymers cellulose, hemicelluloses and lignin. By the fractionation of wood it is possible to separate these main fractions for subsequently hydrolyses and fermentation to e.g. alcohols. The project will make it possible to bring together the different knowledge and technologies of the Finnish and Swedish partners Processum, Centria and Chydenius to evaluate which process is most suitable for fractionation and pre-treatment of the selected biomass assortment.

In Centria we characterize fibre sludge and the wood samples (pine, spruce and birch) sent to us by SLU. We also pretreat and hydrolyze these samples to gain reducing sugars, mainly glucose. This platform chemical can then be converted to more valuable products (chemicals and fuels). Hydrolysis has been done by using conventional acids (sulphuric acid) and enzymes. Ionic liquids has been employed for pretreatment.

AUTHORS

Jana Holm

Centria University of Applied Sciences

jana.holm@centria.fi

Katri Kulkki

Central Ostrobothnia Rural Institute

katri.kulkki@kpedu.fi

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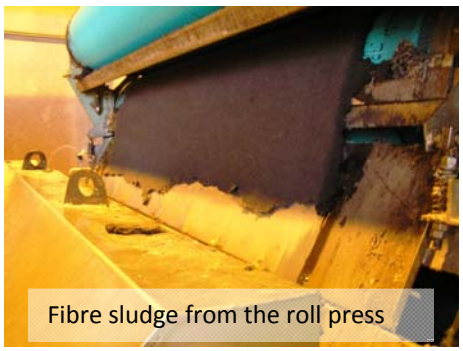

Fibre sludge from the roll press

Grinded fibre sludge

European Union
European Regional Development Fund

Botnia-Atlantica
Cross-border cooperation over mountain and sea

REGION VÄSTERBOTTEN

Länsstyrelsen Västernorrland

Österbottens förbund
Pohjanmaan liitto

KESKI-POHJANMAAN LIITTO