

Biorefinery Solutions

By Lund University and Graz University of Technology

Lignocellulose - A cost-efficient feedstock for production of an environmentally friendly portfolio of value-added products, heat, and power. In collaboration with world-leading research institutions, we offer integrated biorefinery solutions - from biomass to products - with optimized unit operations and techno-economic evaluations of the production chain design.

1. Pretreatment and Fractionation

Optimized pretreatment is essential for efficient saccharification of the lignocellulosic carbohydrates and has a direct influence on the efficiencies of the unit operations downstream of the pretreatment step.



acib offers... core expertise for optimizing the pretreatment of a broad scope of raw materials and full access to both batch and continuous steam pretreatment at process development scale at Lund University.

2. Enzymatic Hydrolysis

The enzymatic hydrolysis is the heart of the biorefinery process. Based on the high specificity and mild reaction conditions, a sugar platform with high sugar yields and low toxicities can be obtained.



acib offers... optimization of enzymatic hydrolysis using commercial and in-house produced enzyme mixtures, which are tailor made for the efficient hydrolysis of the feedstock at hand.

3. Fermentative Conversion

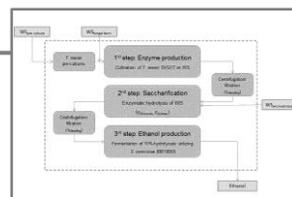
For efficient conversion of the sugar platform to value-added products, the fermenting organism must be highly robust and capable to convert all provided sugars at high yields and productivities.



acib offers... fermentation of the sugar platform to bioethanol as model compound using a genetically-optimized and pentose-fermenting *Saccharomyces cerevisiae* strain developed at Graz University of Technology.

4. Integration and Techno-Economic Evaluation

Because the single unit operations are highly intertwined, it is important to optimize the biorefinery process in an integrative approach already at an early stage of development.



acib offers... mass-balance based process analysis, optimized production chain designs, scale-up from lab-scale to process development scale, techno-economic evaluation, and system integration.

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Core expertise and assets:

- Process Development Unit for biorefinery processes
- Expertise in Europe's leading group in pretreatment, process integration and techno-economic evaluation of 2nd generation bioethanol processes
- Expertise in production and application of enzymes in industrial processes