

Biochemical Valorization of Renewable Resources: Designing Aspects of a Multipurpose Demonstration Plant

A multipurpose demonstration plant currently in planning in Straubing aims to enable customers to demonstrate their innovative processes of industrial biotechnology and to transfer the results from the laboratory to an industrial scale. The goal of the envisioned facility is the valorization of sustainable feedstock like lignocellulosic biomass, e.g. wood, straw, grasses, bagasse but also of residue streams of food and agricultural industry, e.g. sour whey, potato liquor or bakery waste applying biochemical methods. The design concept of a multipurpose demonstration plant has to take a high level of flexibility into account to realize the widest possible range of processes. Modular and flexible equipment with wide operation windows is needed. Within the scope of a student thesis (BA/MA/Project Work) a case-study-based selection of meaningful valorization routes of sustainable feedstock is to be conceptualized. Based on these routes, the conceptual design of the processing equipment with special emphasis on the downstream processing is required. Among other tasks, this work will typically include the following parts:

- Literature based research on selected products based on biomass and using biochemical methods
- Identification of the key valorization routes for sustainable feedstock
- Conduction, analysis and interpretation of case studies
- Calculation of mass and utility balances
- Preparation of a written report & presentation of the results

The following knowledge is of great importance for a successful execution of this thesis:

- Understanding of the principals of industrial bio, food and/or chemical technology
- Understanding of unit operations applied in downstream processing

This thesis will be a theoretical work of conceptual nature without any laboratory experiments. The supervision of the thesis will be in cooperation with an external partner (BioCampus Straubing GmbH). Due to the ongoing corona situation, the work will be conducted remotely without any on-site presence. This thesis can be executed either in German or in English. The exact focus, content and time of the thesis will be specified in advance.

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