

Dutch Sustainable Development BV (DSD)

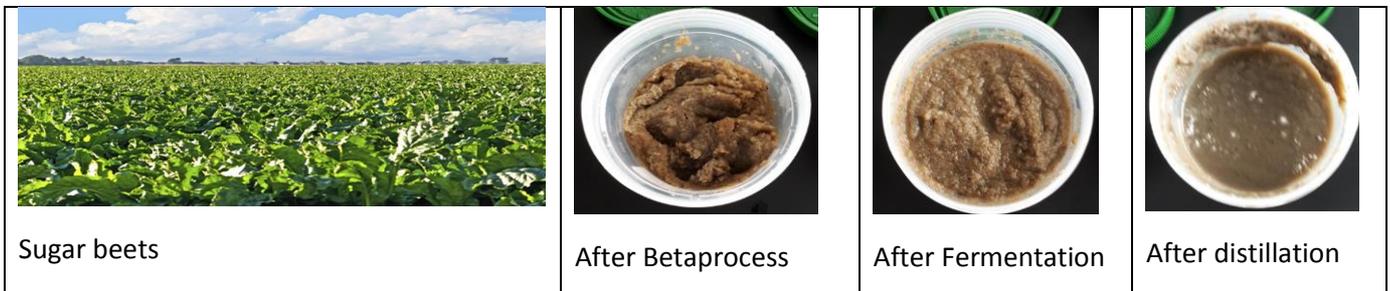
General

DSD has developed a revolutionary innovation to connect agriculture and chemistry. The concept consists of a bio-refining method, in which crops (now mainly sugar beets) are rapidly converted into useful raw materials. This process (Direct Processing with Betaprocess) is faster and more efficient than the current processing methods. This year, a comprehensive trial and testing program will be completed, confirming the acquired lab and trial results in an up scaled semi-commercial environment (resulting in a newly to construct demoplant). In this way, the company obtains sufficient substantiated analyzes to achieve market introduction.

For the market introduction and desirable growth of the business model, on short notice, there is the need to attract growth capital. DSD would like to connect one or more investors to the company, which can find themselves in the mission and vision of our company. The combined growth capital gives the company the opportunity to grow and develop further.

Mission and vision

DSD wants to become an important player in the definition, establishment and formation of the green economy and contribute to the sustainability of our society. DSD's concepts generate high-quality products for the agro and chemical sector based on agricultural and horticultural crops. The concepts create added value for farmers and growers, a vital countryside and offers opportunities for small-scale bio-refinery close at or by the farm (reduction transport distances).



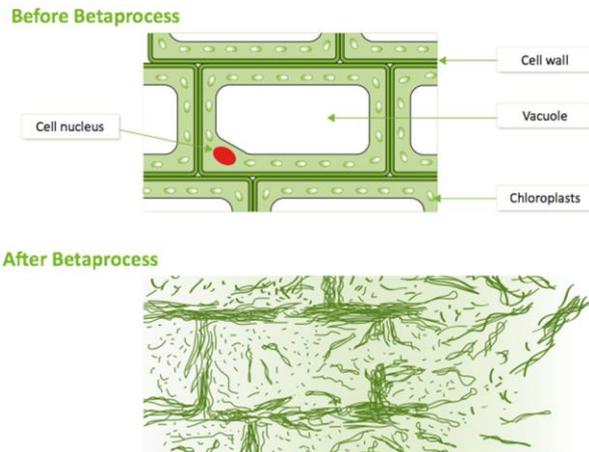
Technology

Improving the sustainable society is important for government and companies. The overall aim is to support the development of cleaner and renewable sources. Especially the right way for the utilization, conversion of resources in a circular way. The use of biomass is an interesting option, because of the worldwide availability of the biomass. It also can be produced and consumed on a CO₂-neutral basis. Sugar beet is seen as the most attractive Biobased crop: for the impact as soil improver, higher yield of the other rotation crops and for a stable farmers income.

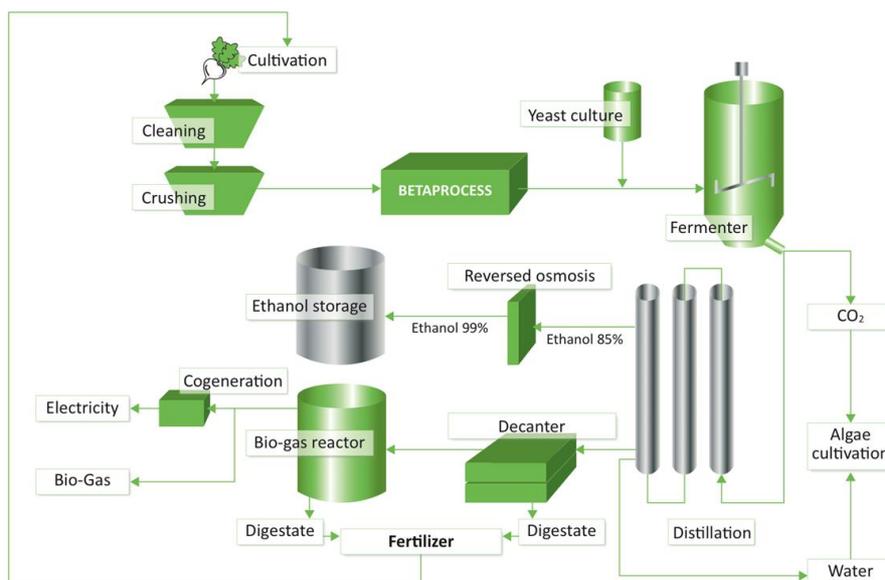
The transition is deployed from fossil industries into more biobased chemical industries. Research found several critical points in the regular work process of conversion of the sugar beet into (food grade) bio-ethanol. Feedstock flexibility, CAPEX, OPEX, High Water Usage, Waste/residues and Robustness could improve in the work process. DSD invested to solve these problems and optimize the process, including an attractive cost price.



The aim of DSD is to integrate a new biomass pretreatment (Betaprocess) liberating sugars for processing. In the pilot installation at the ACRRES location (part of WUR) in Lelystad (the Netherlands) sugar beet was treated and the released sugars were fermented (2 x 1,5 m3 capacity) into ethanol.

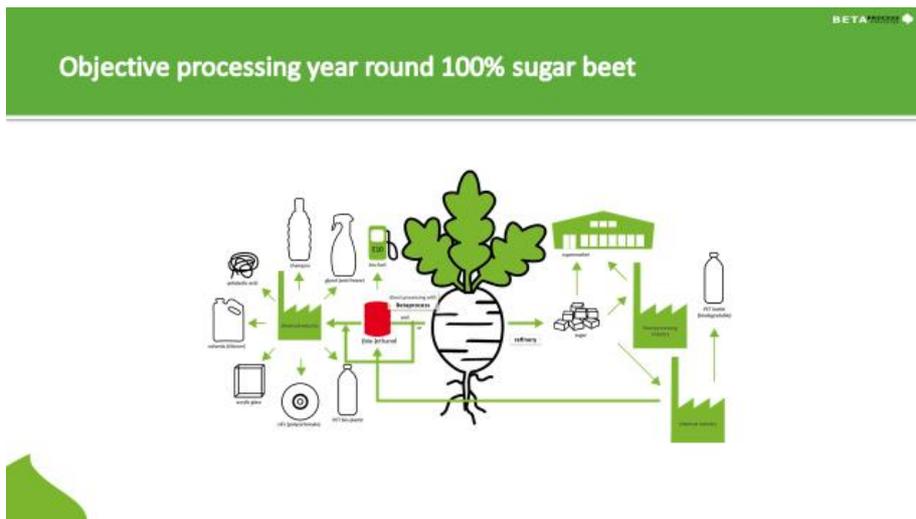


The pilot installation in Lelystad provided data for the design of a demonstration and / or commercial plant to produce ethanol from biomass, such as sugar beet, corn kernels and sweet sorghum. DSD has developed this Direct Processing concept with Betaprocess (vacuum extrusion) technology. The initial technological line includes three sections: 1) pretreatment with a raw material reception and preparation area, a raw material washing section, the slicing section, the Betaprocess section and the alcohol 2) fermentation and 3) distillation section.



Market

A recent market development is the so-called Biobased Economy (BBE) as part of the circular economy. The company's concept brings the BBE one step closer. The concept produces high-quality products from green raw materials, initially bioethanol, but also fermentable sugars and several other feedstocks for further processing into green chemicals.



In addition to the high-quality products, energy is produced at the end of the process, in the form of biogas. Using this energy for the next process creates a closed circuit without residues.

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