

„Grüne Bioraffinerie – Gras, ein Rohstoff mit Zukunft“ Die Demonstrationsanlage in Utzenaich

Green Biorefinery Utzenaich – From Demonstration Towards Commercialization

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DRIVING FORCE GREEN BIOREFINERY

In the coming years many of European pasture land will not be used for milk and beef production.



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THE PRINCIPAL CONCEPT

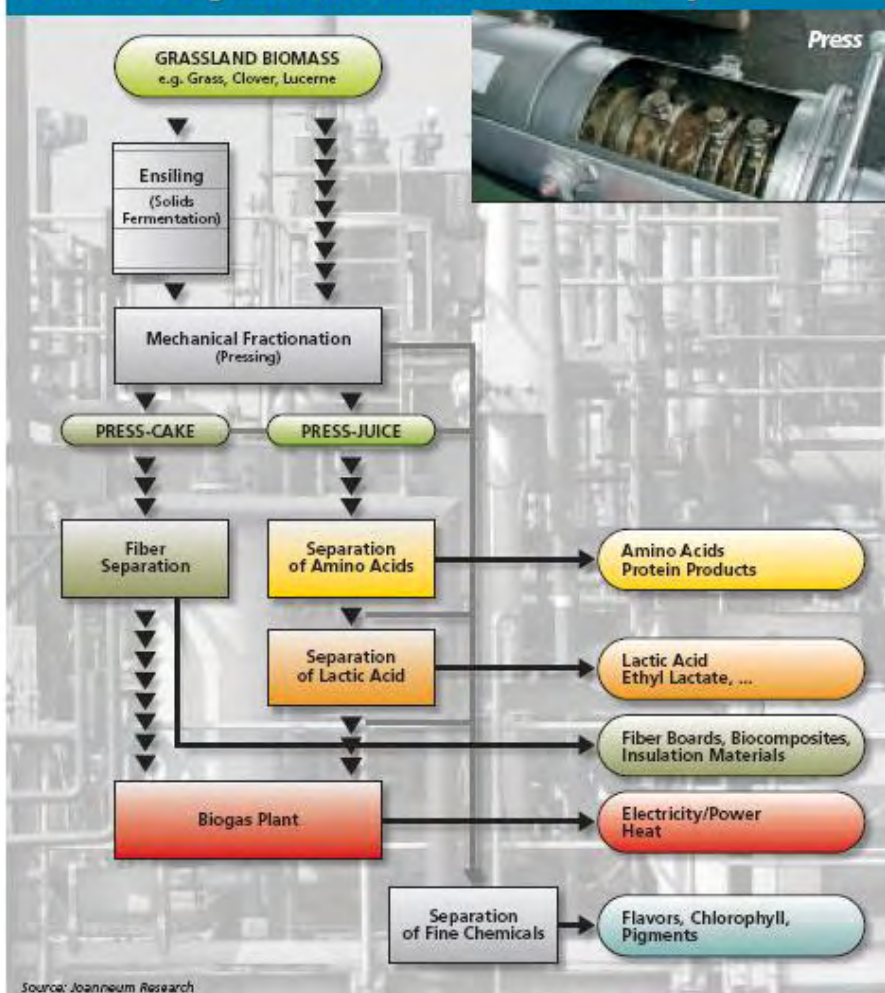
The Austrian Green Biorefinery concept utilizes solid state fermentation (ensilaging) to meet two goals:

- to generate a storable raw material for a continuous industrial process
- to convert green biomass into valuable substances such as amino acids, lactic acid, free sugars and sulphates as saleable products

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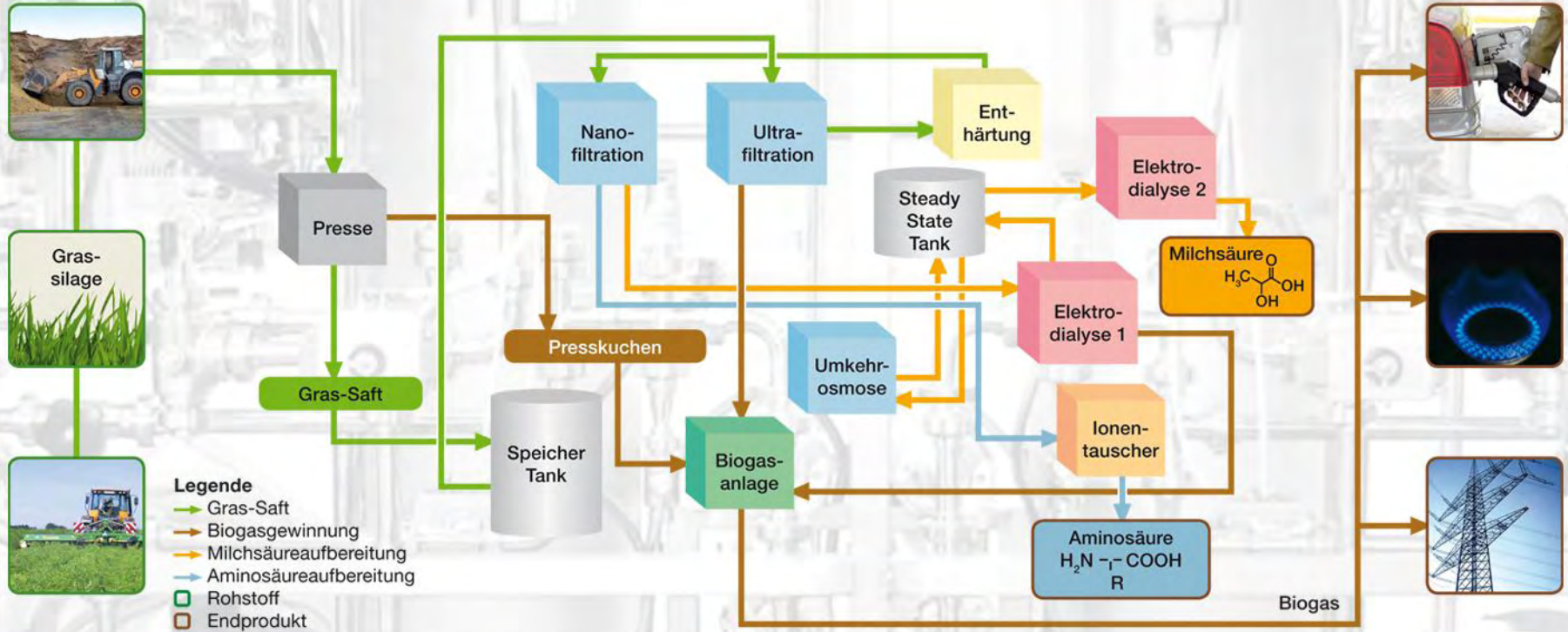
Functional Diagram of the Austrian Green Biorefinery



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Schema der Grünen Bioraffinerie Utzenaich



Rohstoff: Grassilage mit einer durchschnittlichen Trockensubstanz von 30 %

Pressung: bis zu 4 Tonnen Silage pro Stunde

Saftaufbereitung: 100 – 400 Liter Gras-Saft pro Stunde

Produktion: 6 – 12 kg Aminosäure pro Stunde, 12 – 16 kg Milchsäure pro Stunde

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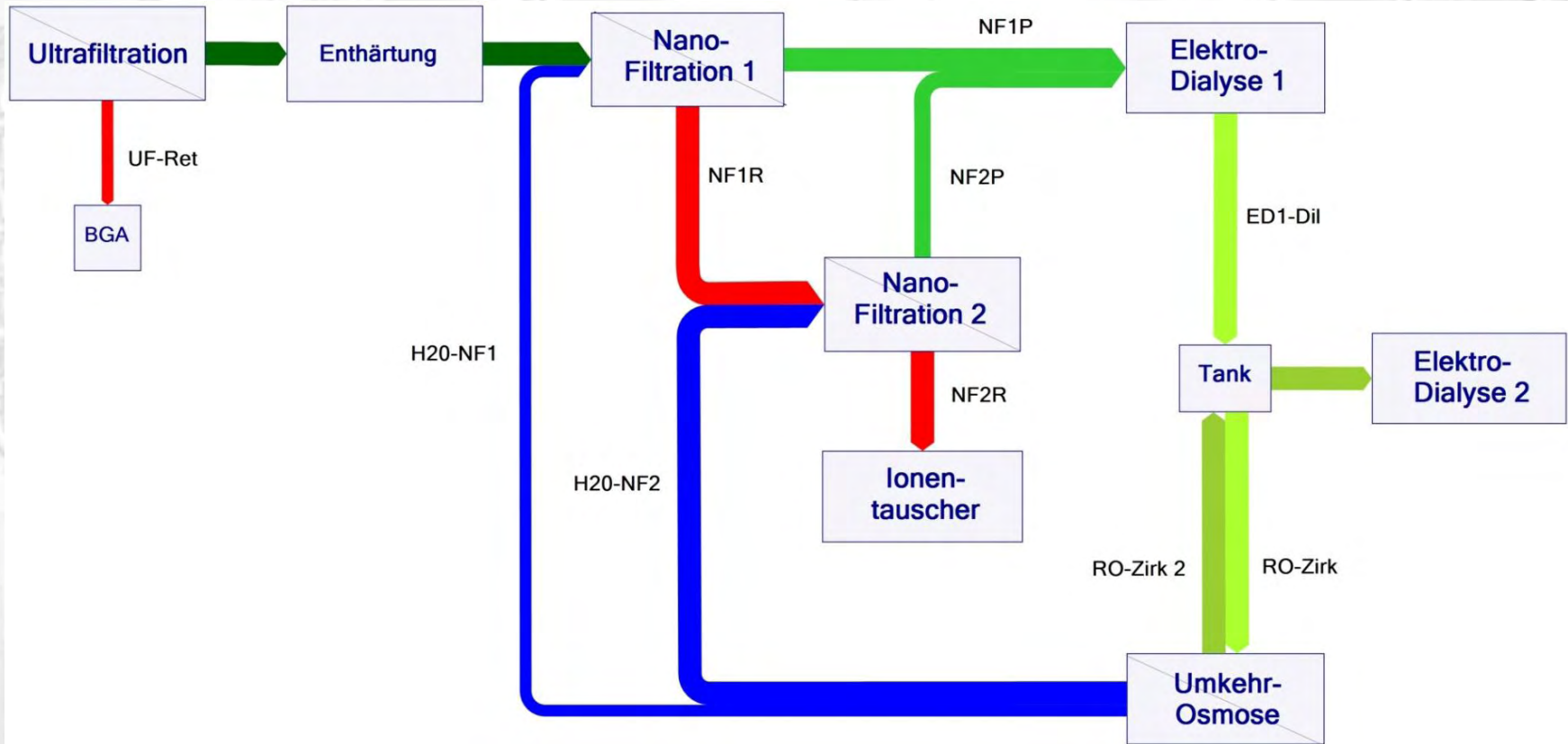
Separation

- Silagebales á 900 kg
- Traunsteinsilo
- Screw press
- 300 - 500 l liquor per bale
 - 35-40 g/l lactic acid
 - 20-25 g/l Amino
- Press cake: Substrate for biogasplant



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The original process flow of the membrane plants



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○ IT - Process

- Ion-change cascade
 - 5 Columns in serie
 - Cation-exchange resin
- Batch process
 - Charging
 - Eluation
 - Regeneration
- Yield IT-Prozess
up to 98 %



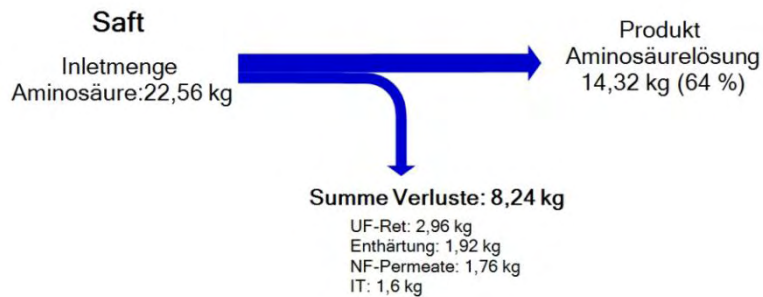
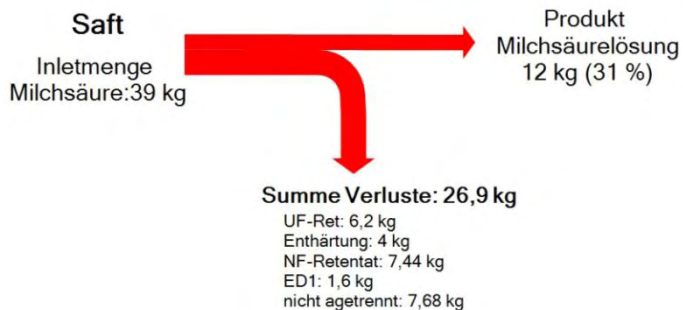
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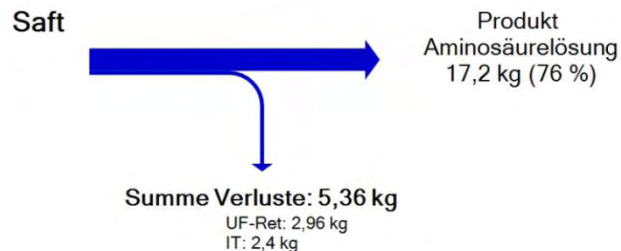
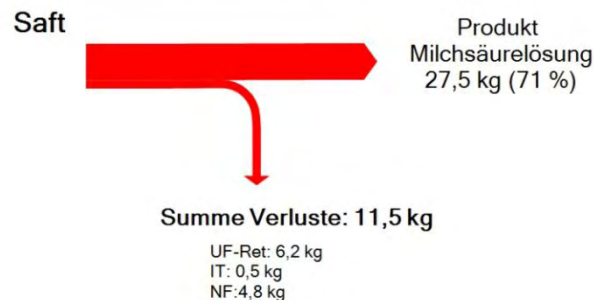
Results from Demoplant

Comparison of the process alternatives

Basisprozess



vereinfachte Verschaltung



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The combination of decentralized and centralized production

At biogas plants juice will be separated from the press-cake, by using a new developed feeder module and screw press.

The press-cake is used in the biogas-plant, with up to 90 % of the biogas output compared to the not separated grass-silage.

The juice is ultrafiltrated and concentrated up to 50 % DS.

The concentrated juice is brought to the central refinery to produce

- amino-acids
- lactic acid
- monomer sugars
- sulphates

for the world-market.

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The steps to commercialization

Based on the results of the new process design the technology was sold to a German start-up company working in the field of biomass utilization for energy and industrial products (www.biofabrik.com).

On 21th of August 2013 a marketing contract was concluded between Biofabrik and Beckmann-Kenko, a world wide operating trading company, specialized in „hard to find chemicals“

On 5th of September 2013 a eco-innovation proposal under the leadership of Energie Institut an der JKU with Biofabrik and Agro Capital as partners was submitted.

Since 14th of October 2013 the reconstruction of the plant in Utzenaich has started to increase the capacity up to 300 kg mixed amino-acids per day.

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Further R&D

At the moment two projects financed in the program “Intelligente Produktion” are running.

One (High grade additives) is dealing with the upgrading of the amino-acids product whereas in the other project (GreenSaferSolvent) a new technology for the production of ethyllactate is investigated.

Both projects run under the leadership of Joanneum research.

In September 2013 a proposal for the project AMINOMAX was submitted to the Call Produktion der Zukunft. Aim of this project is to increase the amino-acids yield by introducing physical and biochemical methods.

Leader of this project is Energieinstitut an der JKU Linz.



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