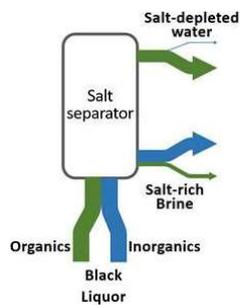


List of Posters

Annual Conference SCCER BIOSWEET Clean Energy from Wood and Biofuels

3 September 2019 | Hochschule Luzern

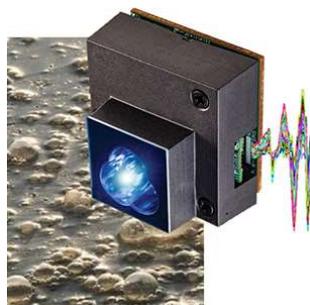


Separation efficiency of salts in black liquor under hydrothermal condition

Na_2S and NaHS were determined as type 1 salts for the first time, and can be efficiently recovered from a salt separator. By adding potassium to shift the phase diagram of sodium salts mixture in black liquor, high salt separation efficiency was achieved.

Poster 
WP1 Biomass to Biogas

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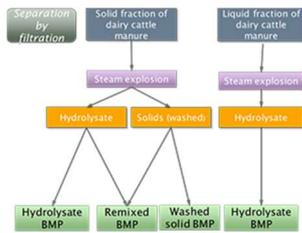


Development of an IR-based and online sensor for AD process monitoring

We aimed at developing an affordable online and IR-based sensor that helps AD monitoring by measuring volatile fatty acids and other parameters.

Poster 
WP1 Biomass to Biogas

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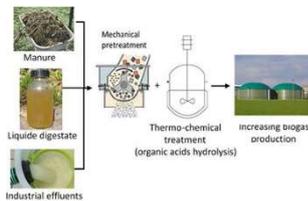


Optimisation and up-scaling of steam explosion pretreatment of cattle manure

Steam explosion increased the methane production rate.

Poster WP1 Biomass to Biogas

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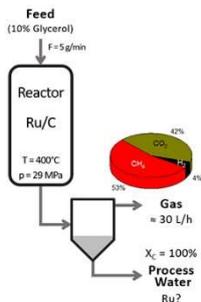


BIOGRIND: combined pre-treatment of fibrous biomass using mechanical grinding and thermal hydrolysis with organic-acids-rich effluents

We aim at increasing biogas production from fibrous biomass with an easy and relative economic technology using thermal energy surplus and by-products from anaerobic digestion and food industry.

Poster WP1 Biomass to Biogas

Elisa Nota
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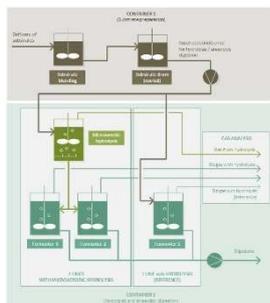


Performance and stability of commercial Ru/C catalysts for the supercritical water gasification of wet biomass to SNG

Ru/C catalysts are known to be stable & efficient methanation (and gasification) catalysts in SCW. However, catalyst deactivation occurs during accelerated ageing. Here we investigate the possible reasons leading to this activity loss.

Poster WP1 Biomass to Biogas

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HYDROFIB: Mikroaerobe Hydrolyse faserreicher Biomasse zur Steigerung der Biogasproduktion

Pilotierungskampagnen zur Erhöhung des Biomethanertrags ausgesuchter Substrate mit grossem nachhaltigen Nutzungspotenzial in der Schweiz: Ein Ansatz zur Steigerung der erneuerbaren Energieproduktion.

Poster WP1 Biomass to Biogas

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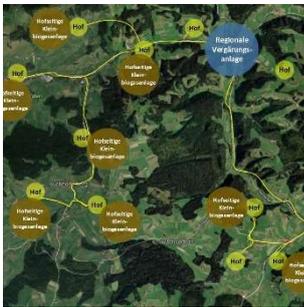
HYKOM: Kombination von Hygienisierung und anaerober Hydrolyse vor der Vergärung

Wissenschaftlich begleitete Demonstration einer zweistufigen Vergärungsanlage zur Stabilisierung und Effizienzsteigerung des Biogasanlagenbetriebs der WIGAKO in Süderen.



Poster X
WP1 Biomass to Biogas

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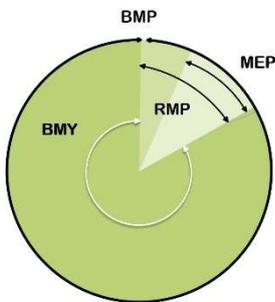


NETZ: Nährstoff- und Energietechnik-Zentrum

Auf der Suche nach einer sinnvollen Kombination von Systemkomponenten und Verfahrensketten zur flächendeckenden Erschließung des ungenutzten, nachhaltigen Energiepotenzials in Hofdüngern und Substraten landwirtschaftlicher Herkunft.

Poster X
WP1 Biomass to Biogas

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RMP: Residual Methane Potential of Swiss Digestate

Finding key approaches to lower greenhouse gas emissions and higher profitability of biogas plants in Switzerland.

Poster X
WP1 Biomass to Biogas

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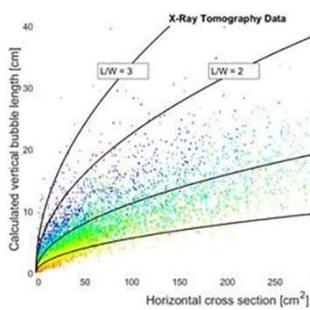


Biogas cleaning to enable the use of fuel cells as small-scale electricity and heat generators

Biogas cleaning solutions and monitoring instruments are tested in real biogas in the field to enable future use of small-scale fuel cells on biogas

Poster X
WP2 Biogas & Wood Gas to Biomethane

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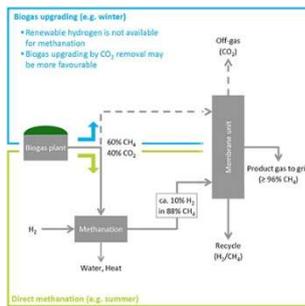


Using Global X-Ray Tomography Data to Evaluate Local Optical Probe Measurements in a Fluidized Bed Methanation Reactor

How to improve optical measurements in fluidized bed methanation reactors by applying findings from X-Ray tomography measurements.

Poster X
WP2 Biogas & Wood Gas to Biomethane

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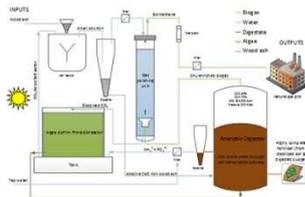


Application of Biogas Upgrading Membranes for Hydrogen Recycle in Power-to-Methane Processes

A systematic study of operation parameters (pressure, temperature, flow rates, gas composition) showed that a commercial biogas upgrading membrane may serve as hydrogen recycling unit in a methanation pilot plant.

Poster X
WP2 Biogas & Wood Gas to Biomethane

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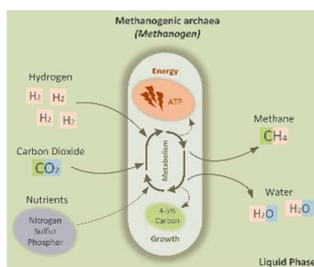


Biogas upgrading via aqueous carbonation using wood ash & algae for liquid regeneration with added-value through improved fertilizer production

Bottom ashes can be used as an alkali agent for improving water scrubbers performances (for biogas upgrade), and can be added to digesters to balance nutrient and pH, to reduce CO₂ levels (through carbonation), while being stabilised and valorised into fertilizer.

Poster X
WP2 Biogas & Wood Gas to Biomethane

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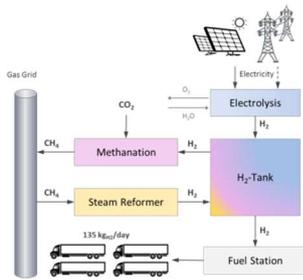


Methanogenesis - A microbial alternative to catalytic methanation

Microbiological methanogenesis is a promising alternative to catalytic methanation. While its potential was discovered in the 1970s, the hydrogen required for the reaction remains a limiting factor in biological systems. Novel bioreactor designs and in-depth kinetic studies can overcome these limitations.

Poster X
WP2 Biogas & Wood Gas to Biomethane

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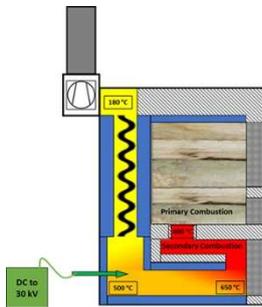


How to Design and Operate a Renewable and Grid-Neutral Hydrogen Production for the Mobility Sector

It is possible to supply twenty delivery vehicles with hydrogen from a grid-neutral plant using a combination of around 3 MW PV and electrolysis for hydrogen production and a suited system for seasonal storage. The latter can be comprised by around 300 kW methanation of surplus hydrogen in summer, storage of methane in the gas grid and methane steam-reforming in winter.

Poster WP2 Biogas & Wood Gas to Biomethane

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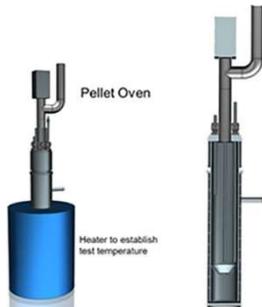


Direct Integration of an Electrostatic Particle Separator into a Wood Boiler

The direct integration of an electrostatic particle separator into a wood boiler is a difficult task in which combustion and electrostatics come together to form a new multiphysical challenge.

Poster WP3 Biomass to Advanced Heat & Power

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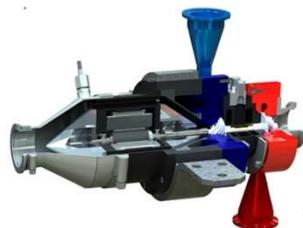


Development of a new low-cost low-emission micro-scale pellet stove with advanced process control

Transient modelling of wood stove based on experimental measurements of single pellet combustion provides the basis for advanced process control and low emissions.

Poster WP3 Biomass to Advanced Heat & Power

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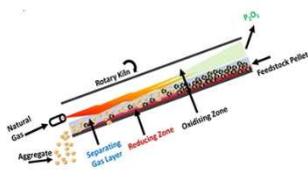


Wood pellet based electricity and heat micro-cogeneration

The distributed co-generation of renewable energy through small size plants for single-family homes enables an efficient use of the limited resource wood.

Poster WP3 Biomass to Advanced Heat & Power

Roger Röthlisberger
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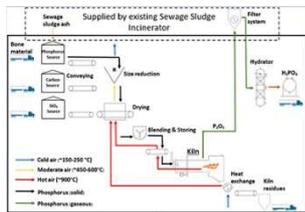


The application of the Improved Hard Process for Phosphorus recovery from waste bio-feedstocks

The Improved Hard Process can be used to recover Phosphorus for high value application from a variety of waste bio-feedstocks.

Poster X
WP3 Biomass to Advanced Heat & Power

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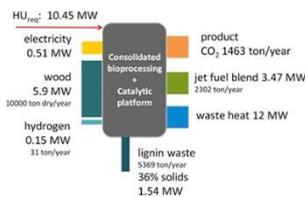


Techno-economic assessment of Phosphorus recovery from waste bio feedstocks using the Improved Hard Process

The preliminary TEA shows substantial gaps between industry and academia for economic evaluation of the IHP.

Poster X
WP3 Biomass to Advanced Heat & Power

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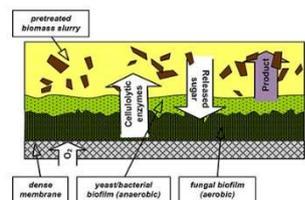
Thermo-environmental evaluation of integrated consolidated bioprocessing and catalytic upgrading of lignocellulosic biomass to produce bio-jet fuel blend

The proposed bio-jet fuel blend prices are higher than the current fossil kerosene market price (1.77 CHF/liter), but in the same order of magnitude as other new bio-based fuels, therefore tax exemptions should be applied to achieve competitive prices.

Poster X
WP4 Biomass to Liquid Fuels

Ayşe Dilan Celebi
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Multispecies Biofilm Membran Prozess für die direkte Fermentation von Cellulose zum Produkt

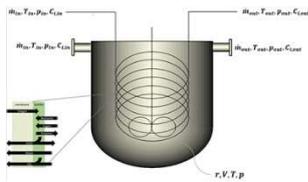


Consolidated Bioprocessing of Lignocellulosic Biomass to Carboxylic Acids by Synthetic Fungal-Bacterial Consortia

Engineering of ecological niches enables the stable cultivation of synthetic microbial consortia.

Poster X
WP4 Biomass to Liquid Fuels

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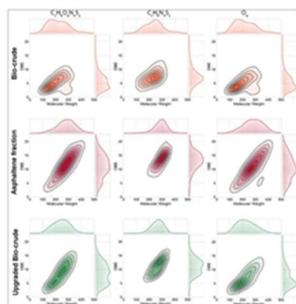


Model-based scale-up of a continuously operated consolidated bioprocess based on a microbial consortium for the production of ethanol

EtOH production by consortium-based consolidated bioprocessing (CBP) offers significant cost savings compared to conventional EtOH production from lignocellulosic biomass. Thus, CBP allows to gain profits at smaller scales making it an promising option for the valorization of Swiss lignocellulose, which is available in excess. However, a deep understanding on a chemical engineering level is necessary to perform the scale-up from 3l reactor volume to 19l and 150l reactor volume (lab scale) and moreover to demonstration, pilot and industrial scale.

Poster **X**
 WP4 Biomass to Liquid Fuels

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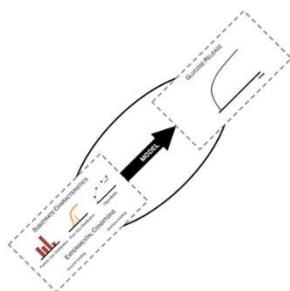


Insight into the Chemical Complexity of Bio-fuels

The implementation of descriptive and differential statistics approach together with non-target data screening and mining techniques are proposed to close the knowledge gap in the assessment of complex data sets produced by high-resolution mass spectrometry in the field of renewable energy science.

Poster **X**
 WP4 Biomass to Liquid Fuels

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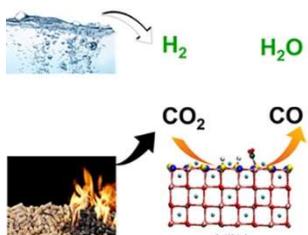


Investigating the impact of substrate morphology on the enzymatic hydrolysis of lignocellulosic biomass

Tailoring enzyme usage and substrate loading to cellulose accessibility is key for a viable usage of lignocellulosic biomass.

Poster **X**
 WP4 Biomass to Liquid Fuels

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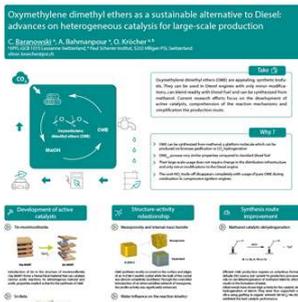


CO₂ recycling from biomass combustion to form syngas through the Reverse Water Gas Shift reaction

We have presented a catalyst for recycling biomass-derived CO₂ to form value-added chemicals.

Poster **X**
 WP4 Biomass to Liquid Fuels

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Oxymethylene dimethyl ethers as a sustainable alternative to Diesel: advances on heterogeneous catalysis for large-scale production

Oxymethylene dimethyl ethers (OME) are appealing, synthetic biofuels. They can be used in Diesel engines with only minor modifications, can blend readily with Diesel fuel and can be synthesized from methanol. Current research efforts focus on the development of active catalysts, comprehension of the reaction mechanisms and simplification the production route.

Poster X
WP4 Biomass to Liquid Fuels

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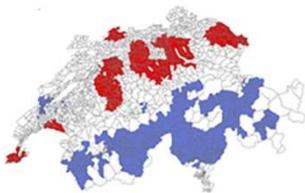


Production of Vanillin from lignocellulosic Biomass

We develop a new route to produce vanillin from the lignin of biomass with high yield and selectivity.

Poster X
WP4 Biomass to Liquid Fuels

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Bioenergy hotspots combined with socio-economic analysis: an important step to support the future energy transition

The results help to find hotspots where future bioenergy projects are best located from a resource and socio-economic view and allow bioenergy promotion strategies tailored to local circumstances.

Poster X
WP5 Biomass and the Energy Transition

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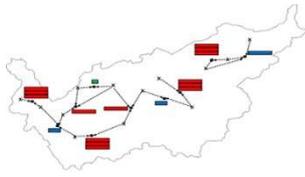


Energy and carbon flows modeling for the Swiss energy transition

The role of carbon is crucial for the defossilization of Switzerland, as it can be used both as a base for power storage but also as a resource for synthetic biofuels and biomaterials.

Poster X
WP5 Biomass and the Energy Transition

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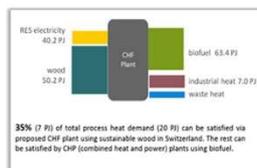


Optimal design of biomass supply chains

The plant size is a crucial parameter as cost minimization favors the use of high capacity plants especially in geographic zones of high biomass availability.

Poster X
WP5 Biomass and the Energy Transition

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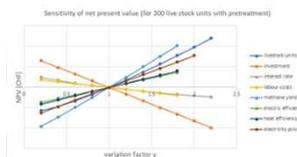
Next generation cogeneration system for industry – Combined heat and fuel plant using biomass resources

Seasonal storage of renewable surplus electricity is possible via the proposed cogeneration system producing biofuels and heat and it may have negative industrial heat price and avoids fossil carbon emissions.

Poster X
WP5 Biomass and the Energy Transition

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Feedstocks	Energy content (PJ)
Forest energy wood	36.1
Industrial wood resources	7.6
Wood from landscape maintenance	4.8
Waste wood	11.7
Total	60.2



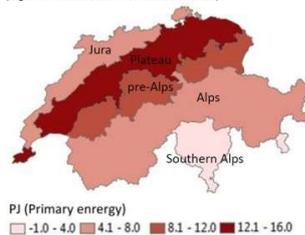
Economic and sensitivity analysis on biogas yields of cow manure

Economic challenges on energy produced by biomass.

Poster X
WP5 Biomass and the Energy Transition

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Regional sustainable potentials in Switzerland (e.g. moderate stock reduction 2017-2026):

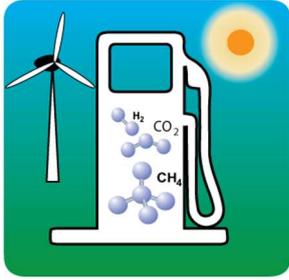


How can forest wood contribute to the energy transition in Switzerland: A regional analysis

Potentials are not stable but dependent on forest management, wood market situation, wood energy prices. The consideration of regional aspects enables an increase in the energetic use of wood fuel from forests. A doubling of today's use can be reached applying best practices in each region.

Poster X
WP5 Biomass and the Energy Transition

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SCCER Joint Activity: White Paper Power to X in Switzerland

The P2X production site, legal clarity and equal treatment of P2X and other storage technologies are decisive for the economic efficiency and necessary for successful promotion in Switzerland.

Poster **X**
WP5 Biomass and the Energy Transition

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