



Keynote Session	Leading Pilot Facilities for the Bioeconomy (Pilots4U)
Title	Operation of a pilot scale biorefinery producing renewable methane using biogenic CO <sub>2</sub> and value adding by-products from side streams
Company	DBFZ Deutsches Biomasseforschungszentrum gemeinnützige GmbH
Speaker	Philipp Knötig
Keywords feedstock (max 2)	Advanced, REDIIANNEXIXA
Keywords technology (max 2)	Integrated Biorefinery
Keywords End-Product (max 2)	Methane, By-Products
<b>Abstract:</b>	
<p>We demonstrate the feasibility of a fully integrated, continuously operating biorefinery. Its state of the art and innovative processes-methanation, anaerobic digestion, hydrothermal treatment, and multiple separation units-are mostly interconnected and form a unified system. The plant is extensively monitored, providing rich data. It processes substrates listed under RED II ANNEX IX A to produce renewable methane from biogenic CO<sub>2</sub> and generate valuable by products from side streams.</p> <p>Currently, a mixture of wheat straw and cattle manure is processed. At peak operation, around 1 t/week of fresh material is fed into the plant, which creates 21–28 m<sup>3</sup>/week of biogas, with a composition of approx. 50–55 % CH<sub>4</sub>, 45–50 % CO<sub>2</sub>, 250–500 ppm H<sub>2</sub>S. In the methanation stage CO<sub>2</sub> conversion is at 98 %. Due to N<sub>2</sub> contamination, the product gas contains 90 % renewable methane; future campaigns are expected to reach 95–99 %. Beyond methane, the system also produces digestate derived by products, fertilizer and hydrochar. The pilot plant data supports economic and ecological assessments. Initial results suggest that this concept-in a commercial scale-could be competitive within the German fuel market. In addition, this concept could offer a flexible solution, enabling the dynamic shift between energy production in response to market demand, and seamlessly transitioning to chemical production when electricity and thus hydrogen prices are favourable.</p> <p>More infos at: <a href="http://www.dbfz.de/pilot-sbg">www.dbfz.de/pilot-sbg</a></p>	