



RE-DIRECT

The European project RE-DIRECT (Regional Development and Integration of unused biomass wastes as Resources for Circular products and economic Transformation) funded by the Interreg INTERREG North-West Europe (NWE) Programme started in September 2016. In January 2017 the kick-off meeting took place in Bonn where the partnership consisting of experts from different fields (researchers and practitioners) met to plan the first steps for the project implementation.

RE-DIRECT is a holistic approach to promote the efficient use of natural resources and materials by converting residual biomass into carbon products and activated carbon at smart regional decentralised units. The project involves eleven

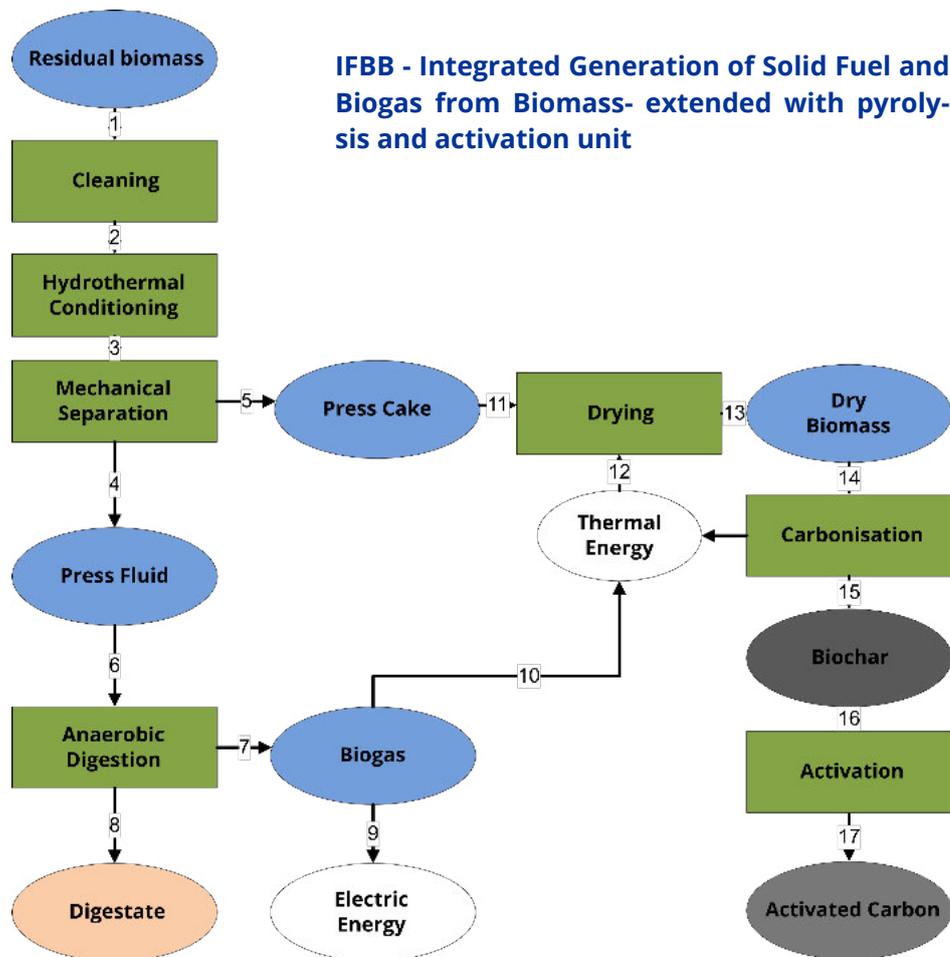
partners from Belgium, Germany, France, Ireland and the United Kingdom who will implement the approach in five urban, semi-urban and rural NWE regions. Each year at least 34 million t of residual biomass from the management of rural landscapes and urban greens in NWE are wasted. On the other hand, there is a growing market for sustainable and decentralised products such as active coal, used in sewage water technologies to clean water polluted with complex chemical substances or antibiotics.

RE-DIRECT will make use of the proven technology named "Integrated Generation of Solid Fuel and Biogas from Biomass (IFBB)" to convert 20.000t of unused biomass in a circular economy approach into region-specific carbon products,

among them activated carbon. To reach this aim, the IFBB concept has to be amended by a novel pyrolysis and activation unit. This will be achieved in the project lifetime by communities of regional and interregional stakeholders (biomass waste producers, industries, SMEs, NGOs, researchers and other interest groups) who explore, develop and manage region-specific product portfolios and create economic value chains in the framework of transferrable "integrated biomass concepts". The project will develop one large-scale investment for a biochar and activated carbon production at a urban biomass conversion centre in Germany and one smaller conversion plant on farm-scale in Wales.

Lille Seminar

The Seminar for approved projects held in Lille (France) on December 8th and 9th, 2016, was the first opportunity for all project partners and the Joint Secretariat to meet in person. This opportunity was used by almost all project partners. 81 persons from all approved projects



IFBB - Integrated Generation of Solid Fuel and Biogas from Biomass- extended with pyrolysis and activation unit

joint the seminar, among them ten RE-DIRECT participants. The Joint Secretariat (JS) congratulated all approved projects and handed over the signed subsidy contract. Frank Hensgen from the Lead Partner (University of Kassel in Germany) received the



Frank Hensgen in Lille

contract for the RE-DIRECT project. The seminar provided important information on administration and communication related matters in the projects financed by the INTERREG NWE Programme.

First experiments in Kassel

In November 2016, the first experiments for RE-DIRECT were conducted on the technical optimisation of the IFBB technology for use in the RE-DIRECT context. While in the previous projects PRO-

GRASS, COMBINE and DANUBENERGY a solid fuel was the end product of the technology, now in RE-DIRECT the end product is activated carbon - a product with a much higher economic value. Thus, the University of Kassel aims to increase the effectiveness of the IFBB system to produce a press cake with a better chemical quality to produce a high quality activated carbon. To this end, all process steps of the IFBB (biomass cleaning, hydrothermal conditioning and mechanical dehydration)



Collection of biomass

are in the focus of optimisation measures. The first pre-tests investigated the use of an additional cold water cleaning step and the effect of a prolonged contact time between material and water in the hydrothermal conditioning. First results indicate that both measures lead to an increased quality of the press cake. Two Bachelor students expressed their interest to choose the Integrated Generation of Solid Fuel and Biogas from Biomass (IFBB) Technique as their topic for the Bachelor-Thesis.

Visit to PYREG

The highlight of the kick-off meeting was the visit to PYREG in Dörth, Germany. PYREG is a German manufacturer of small decentralised dry carbonisation units and is

one of the potential manufacturers for the investments during the project. The existing PYREG plant, the PYREG 500, can convert approx. 1400 t of biomass per year into 300 t of bio-char. In addition, it delivers 150 kW of thermal energy. The technique used is a continuous process of dry carbonisation. The biomass is heated up to 550-600°C in a low oxygen surrounding and gasified. The gases are burned in a FLOX (flameless oxidation) combustion chamber, without the formation of tars and condensates. An intensive discussion about the possibility to include an activation step into the existing PYREG 500 plant followed. The result was that the PYREG company will very likely be able to include an activation step into their

plant design. Contact details were exchanged so that the project partners responsible for the investments could stay in contact with PYREG. Future collaboration during the project is envisaged in form of investment plans and joint research activities.

All project participants were impressed by the presentation about the PYREG technology to convert biomass to charcoal.

Biomass portfolios

The project partners started their investigations of regionally available biomass and relevant stakeholders. The result will be regional biomass portfolios that include technical, economical and legal aspects for all biomass types. Important and relevant stakeholders in

the fields of residual biomass handling, transport and storage, water treatment, administration and politics will be identified, contacted and informed.

Contact

University of Kassel

Faculty of Organic Agricultural Sciences
Department of Grassland Science and Renewable Plant Resources

Dr. Frank Hensgen
Steinstr. 19
D-37213 Witzenhausen

phone:
+ 49 5542 98 1245
email:
hensgen@uni-kassel.de



Excursion to PYREG