



NEWAPP

‘New technological applications for wet biomass waste stream products’
 Collective Research Project supported by the European Union under the 7th Framework Programme
 Duration: 30 months, starting in autumn 2013

About 120 to 140 million tons of bio-waste are produced every year in the EU. This corresponds to almost 300 kg of bio-waste produced per citizen per year. These wet biomass waste streams, i.e. wet agricultural residues, wet municipal waste such as foliage, grass or food waste, are abundantly available. Their disposal and recycling becomes increasingly difficult since energy efficient, environmentally sound and economically viable processes hardly exist.

Project idea

The existing treatment methods for these wet biomass waste streams are mainly incineration or landfilling: 67% of the waste is disposed of in these ways. A small amount is composted, digested anaerobically or used as animal fodder. However, the most extended methods are not the most appropriate.

NEWAPP aims at developing an alternative cost- and resource-efficient and environmentally sound way of dealing with wet biomass waste through HTC (hydrothermal carbonisation) technology.

The concept behind NEWAPP is that wet biomass can be a resource more

than a waste, and does not need to be disposed of in the costly and inefficient way it is nowadays. The alternative introduced by NEWAPP is to create a continuous system which will allow to recover carbon in an energy efficient HTC process, producing valuable products.

HTC consists in applying high temperatures and pressures to biomass in the presence of water, which results in two main products: a coal-like product (hydrochar) and water-soluble products. This process allows converting different biomass streams, such as waste, into fuels and other products of industrial interest (catalysers, soil remediation products, adsorbents).

NEWAPP will focus on green waste, agricultural waste, municipal solid waste, waste from food processing industry and waste from markets.

Project procedure

NEWAPP will gather researchers, industrial associations and SMEs from different EU countries to assess the requirements and constraints in the use of wet biomass with HTC, analyse the potentials of the different wet biomass streams for using them for HTC, perform intensive testing with this innovative system technology for the production of HTC products, while improving the efficiency of the process and launch a standardization process for the two most promising waste streams to foster commercial applications. The stipulated time frame is 30 months. The diverse activities and tasks will be divided into 8 work packages (WP) which are closely interconnected.

The research work will start in WP1





Project partners

1. Agencia Estatal Consejo Superior de Investigaciones Cientificas (CSIC)
2. Association of cities and regions for recycling and sustainable resource management (ACR+)
3. Bundesverband Sekundärrohstoffe und Entsorgung (bvse)
4. Danmarks Tekniske Universitet (DTU)
5. Ingelia S.L.
6. Terra Preta (TP)
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Project coordinator

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2.580.061 €

EU contribution

1.756.000 €

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with the screening of available wet biomass streams. In WP2 innovative processes for wet biomass reuse will be developed. WP3 will aim at testing, monitoring and optimizing these processes. In WP4 the technologies will be assessed and a business plan will be developed. Demonstration activities of WP5 will illustrate in practice the technology to the stakeholders. WP6 will entail the training activities aimed at transferring the knowledge generated to SMEs and their partners. WP7 will deal with the dissemination tasks necessary to raise awareness on the knowledge generated, while WP8 comprises the project management.

Expected results

NEWAPP aims to increase the amount of bio-waste diverted from landfill and incineration into high value products that can be used as fuel, activated carbons for water treatment, soil remediation, carbon sequestration schemes and other applications. To achieve this, NEWAPP will focus on (1) Developing a new technical utilisation pathway for turning bio-waste into high value products; (2) Exploring what different products can be obtained from the selected waste streams after the HTC process; (3) Standardisation (development of quality and safety standards) and (4) Techniques for added value of HTC products.

Conclusions

HTC is a potential solution for wet biomass waste streams. Most of these biomass streams are not being valorised because current processes (e.g. pyrolysis and torrefaction) require them to be dried, thus consuming large amount of energy. On the contrary, HTC reaction occurs in water, making feasible to transform these wet biomass into a coal-like product in an energetically efficient way.

With the success of NEWAPP, the process will be of great industrial interest and benefit the waste management, renewable energies and chemical industries and maybe beyond – not only on European but also on global level.

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