

Production of Activated Carbon out of Municipal Wood Residues – Researching a Local Closed Cycle in Tyrolean Communities

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Abstract

Wood gas power plants are primarily used to provide renewable energy. When gasifying wood, including residual wood from the municipal environment, powdered carbon is also a by-product. Depending on the gasifying process and the quality of the carbon, this by-product can be currently used as an additive for liquid manure treatment (odor reduction), as a soil improver, but also for the stabilization of biological processes (biogas and digester gas processes).

To improve the value of this by-product out of the floating fixed bed gasification system of SynCraft Engineering, the research center “Josef Ressel Center for production of activated carbon out of municipal residues” was established in cooperation with the public utility service companies of the Tyrolean municipalities Innsbruck, Schwaz and Telfs. The main scope of the research center is to use local wood residues (such as untreated waste wood, tree cuttings etc.) for the production of power, heat and activated carbon. The activated carbon should be designed mainly for the use in the local waste water treatment plants for several applications, such as sludge stabilization in the anaerobic digester, improvement of sludge dewatering but also for the 4th treatment step to remove micropollutants from the waste water. Another researched application is the use of the powdered carbon in public green spaces, on the one hand to improve the nutrition- and water-support of the plants and on the other hand also as adsorbent for pollutants from traffic areas (like oil, fuel and heavy metal particles from vehicles).

The overall goal with the developments is to use local resources for the production of energy and a valuable by-product, which is used also locally to create a closed material loop in the participating municipalities.