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Transforming biochar into fuel gas

New process taps the energy potential provided by biogenic residues

Until now it has been difficult to utilise the energy provided by biogenic residues resulting from landscape management waste products, garden waste and similar materials from agriculture, horticulture and food production. This is due to their high moisture content and inhomogeneous composition. In a new process, these materials are first converted into biochar and then into a fuel gas for driving an engine-operated CHP unit. The BINE-Projektinfo brochure entitled “Syngas from biocoals” (04/2017) presents the plants. These utilise a new entrained-flow gasifier that has been specially developed for small units.

The organic waste is converted using the hydrothermal carbonisation process (HTC). This works with pressure and heat in order to replicate the natural carbonisation process of biomass. This creates a high-quality biochar, whose calorific value is 70% higher than that of the starting materials. It is ground for the subsequent gasification process. The biochar dust starting material is then converted in the entrained-flow gasifier into a carbon monoxide- and hydrogen-containing fuel gas that is suitable for driving engine-operated CHP units. The HTC plant and the entrained-flow gasifier have successfully completed testing on a pilot scale.

The developers are currently working on improving the process economically. Approaches include the future utilisation of waste heat from the processes and automating the process to a greater extent. The research project was led by SunCoal Industries GmbH in cooperation with the Technical University of Munich.

The BINE-Projektinfo brochure, which can be obtained free of charge from the BINE Information Service at FIZ Karlsruhe, is available online at www.bine.info or by calling +49 (0)228 92379-0. The brochure cover and additional image material are also available for download on this web portal in the press section.

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