

Hydrothermal carbonisation

HTC (Hydrothermal carbonisation)

Hydrothermal carbonisation is a technique by which a moist biomass can be processed to a more valuable material. The process involves heating the biomass for several hours in an aqueous solution to 200-250°C under high pressure to avoid boiling. Chemical additives, such as acid or alkali for pH-adjustment, or catalysts, can be added.

HTC has gained a wide interest as a method for upgrading various low-value streams, e.g. industrial waste of biological origin, to an attractive biofuel material. Not only does the HTC technique lead to increased carbon content and heating value of the stream; it also allows the user to improve its composition by controlling the distribution of some unwanted non-process elements. This way, the biofuel material can be adapted to a particular combustion unit.

HTC applications for your pulp mill

The most interesting application of HTC technique in a pulp mill is treatment of **biosludge** from the effluent treatment plant. Although rich in combustible material, biosludge often has high moisture content and poor dewatering properties. After HTC, sludge becomes more compact and easier to dewater; the content of chlorine and alkali metals decreases making it more suitable for combustion in both bark and recovery boilers.

Other potential application areas include treatment of **bark** for other uses than bark boiler fuel and upgrading **wood yard residues** to valuable solid fuels.



Parr reactor at Innventia



Sludge sample after HTC treatment

HTC experiments at Innventia

Our HTC experiments are conducted in a pressurized stirred 3.75 L vessel unit from Parr Instrument Company. Biosludge or other material supplied by your mill is diluted or dewatered to a slurry and heated to 200-250°C for 1-8 hours, and then cooled and filtered.

Both the filter cake and the filtrate liquor are thoroughly analysed with respect to filtration and dewatering properties, carbon and other elements content, and heating value. The results, combined with Innventia's mill modelling skills will help you assess if the HTC technique is an interesting option for your mill.

Please contact us for a discussion about how we may help you!

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