

ABSTRACT ECO BIO CONGRES – ELSEVIER MARCH 2016 - ROTTERDAM

Title:

Secondary resource upcycling and energy recovery from bio-waste

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Abstract

This biobased business case shows how recovering both energy and resources from bio-waste is already a reality in the Netherlands. AVR, a market leading Energy from Waste (EfW) company, is upcycling seemingly non-recyclable bio-waste in both bio- and technical lifecycles: well controlled energy recovery allows for upcycling the best of the rest.

At the end of the paper recycling cascade, paper sludge from tissue paper production is a significant worldwide waste management challenge. It consists of lignin-celluloses fibers saturated with water and mingled with mineral fillers, whiteners and inks from the former lives of the recycled paper. This finds its way to the Thermal Conversion Installation (TCI) owned and operated by AVR.

The conversion process in the TCI processes 20 tons per hour, recovering heat from fibers while preserving the valuable minerals. AVR's site in Duiven, close to the German border, serves front-end customers in both countries, who can't store and process their residual sludge themselves.

After a careful blend of different customers' sludge, it is pelletized and injected to a fluidized bed at a well-controlled temperature. The exothermic reaction allows for its 25 tons per hour steam boiler to produce high pressure steam. This energy is delivered to thousands of households by means of a 5MW turbine and Arnhem's district heating network.

On the flue gases, the mineral product from the sludge, called TopCrete®, is carried up and out of the boiler with 5 tons per hour, into product transportation tubes. Collected in product silo's, back-end customers from there take over. They apply TopCrete® as a reactive binder in ground and construction works and on top of those external markets, as desulphurizing sorbent in AVR's flue gas cleaning, it is reducing operating and maintenance costs in boilers for (bio-)energy from waste.