

# Feasibility of Waste Heat Recovery from Waste Sludge in Paper & Pulp Industry: The Economical Use of Energy Resources

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## **ABSTRACT**

The cardinal change in the world market for energy resources during the last 10 years requires the reoptimization of the entire energy economy and requires that great attention to be paid to increasing the efficiency of using energy resources and thus to reducing their consumption.

Production of sludge as waste in pulp and paper plants can be considered as one of the serious environmental problems that have to be solved. While land filling is not a suitable solution from the environmental & energy recovery point of view, thermal treatment proved to be the most appropriate one. This paper describes an efficient way of processing sludge including waste-to-energy aspects and attention is focused on the performance of the energy recovery. The retrofit has been realized in two stages. The waste sludge is burnt in a multiple hearth incinerator with a fluidized-bed chamber. The different stage of retrofit, can be characterized as a "waste-to-energy" one, where heat from flue gas was utilized for generating the steam, drying the sludge, pre-heating air for combustion and fluidization and preheating water for steam generation. Off-gas cleaning system consists of a filter for particulate removal and a three-stage scrubber system is attached for cleaner stack.

**Keywords:** *Waste heat recovery; Pulp and paper plant; Thermal disposal of waste; Waste to energy; Multiple hearth incinerator with a fluidized-bed chamber*