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PERSPECTIVES FOR ENERGETIC VALORIZATION OF WASTEWATER SEWAGE SLUDGE: THE TURIN CASE

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Abstract

The right individuation of the more convenient solution for final treatment and destination of sewage sludge deriving from wastewater plants, normally after anaerobic digestion process, is a very interesting problem, in accounting of urgent needs for acceptable solutions. The produced sludge, primarily after thermal drying, can be sent to energetic valorization processes as, for example, incineration, gasification and also pyrolysis. In this work we examined the thermal solutions (both direct combustion in incineration plant and gasification), for the sewage sludge deriving from the main Italian wastewater plants (located in the metropolitan area of Turin), from both technological and environmental point of view. The plant actually produces about 100,000 t/y of sludge (38.9% d.s. (dry sludge)), in three main streams: centrifuged sludge, filtered sludge and thermal dried sludge. The water content of the streams is obviously different, while the indicated humidity is a mean value.

In order to propose a solution for sludge valorization, a first analysis was carried out in order to define the main characteristics of the produced sludge (flow rates and composition); afterwards we analyzed in detail the potential plant design solutions, from the technological and the environmental point of view, achieving some perspectives in terms of design data.

Key words: energy recovery, gasification, incineration, pyrolysis, sludge, thermal treatment

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