THERMAL TREATMENT AS A ONE SOLUTIONFOR SUSTAINABLE WASTE MANAGEMENT

Aleksandar JOVOVIĆ, Dušan TODOROVIĆ

[1]*University of Belgrade, Faculty of Mechanical Engineering, Kraljice Marije 16, Belgrade, Serbia*
✉ *ajovovic@mas.bg.ac.rs*

ABSTRACT

Implementation of EU regulations during construction of new and maintenance of existing waste dumps, coupled with difficulties associated with expansion of existing disposal sites and selection of new disposal locations, impose the need for different waste treatment technologies to be used and applied as one of the measures in complex waste management chain. Solid waste management comprises integrated systems for management of wastes, including waste reduction, collection, transport, recycling, energy recovery, treatment and disposal in the most economical way consistent with the protection of public health and the natural environment. Waste to energy plants, based on their technical features, are very similar with thermal power and district heated plants.

Now, number of thermal waste treatment facilities is growing having in mind that thermal treatment is officially recognized as one of the efficient climate change mitigation measures. It goes without saying that only modern, highly efficient facilities are qualified to be considered as proper global CO_2 emission reduction technology.

However, waste is today rarely incinerated without appropriate pre-treatment, where particular attention is given to solid recovery fuels – SRF. These fuels represent dry fraction of municipal and industrial solid waste, with commonly added synthetic materials and removal of any form of chlorine. Production and quality of SRF are fully defined by related technical standards. Use of SRF is highly important in cement and energy generation industries, where SRFs are used as additional fuels. The following are some representative examples:

- TPP RWE Gerstein (brown and bituminous coal fired plant), 220 kt/a
- TPP Vattenfall Jänschwalde (lignite fired plant), 400 kt/a
- TPP RWE Berrenrath (lignite fired plant) 70 kt/a
- Large number of cement kilns in Germany, 900 - 1200 kt/a per kiln
- CHP plant, Neumünster, 150 kt/a.

In developed countries, cement and lime furnaces are common used for co-combustion of waste or are fully reconstructed to be used for hazardous waste treatment.

Large number of thermal treatment facilities built to date and quite considerable number of those planned to be constructed in the near future, as well as positive experiences related to the use of certain waste types in cement plants, indicate that considered waste removal technology is financially and

environmentally acceptable. It is therefore concluded that thermal treatment facilities and their possible implementation in urban areas should be given more attention. However, the following should be kept in mind:

- It is necessary to facilitate development and proper regulation of national waste market in a manner that will encourage legal flows of waste and prevent illegal waste trade and traffic;
- Heaving in mind the absence of clearly defined procedures that would address and regulate waste utilization, treatment and end-of-waste issues, it is necessary to make the best efforts to further develop related national legislation;
- It is necessary to improve awareness and participation of broader population in all phases of waste management decision making processes, primarily through greater engagement of professional organizations (ISWA, national WM associations, engineering chambers, standardization offices and similar), academia, non-governmental sector etc.

***Keywords**:* municipal waste, industrial waste, thermal treatment, SRF