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Opportunities for thermal waste treatment

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Waste is constantly increased in the world and has been tightly associated with growth both in terms of number of people and in terms of industrial and economic growth. However, waste can be regarded as a resource and as depletion of natural resources and higher demand on energy utilization is a reality several opportunities arise. Among those are of course the traditional sorting and recycling options but also options regarding energy recovery. Waste combustion (incineration) has been a practice for more than a century. It faces difficulties with low efficiency for waste to power processes due the inhomogeneity of the feedstock and the corrosiveness. This has led to improvements in the technology including: New materials, combination with gas turbines, advanced superheating and better presorting. Apart from the energy efficiency improvements, other options exist to reach a more sustainable handling regarding the inorganic fraction. Today, this fraction is mainly put on landfills but by utilizing the increased concentrations of key elements in the ashes it is possible to start new processes mainly by leaching and separation. Gasification is a new opportunity that can lead to better efficiencies for both these aspects. The power production can be improved by utilization of gas boilers with higher steam temperatures and pressures or by gas turbines. Besides, the condition in the gasifier prevents the inorganic material to oxidize and might even reduce already formed oxides which make the materials more attractive. Several new commercial plants are now erected or under construction.

Biography

Tobias Richards is a Professor in Energy Recovery at University of Borås since 2010. He has a PhD in Chemical Engineering from Chalmers University of Technology and made his Postdoctoral studies at University of Maine within the college of Engineering. He has published more than 30 papers in reputed journals and is the Editor of a new book in the area of waste treatment (*Resource Recovery to Approach Zero Municipal Waste*). During fall 2014, he was a Visiting Professor at University of California, Berkeley.

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