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Microwave technology for energy-efficient processing of waste

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Abstract

This paper discusses the potential use of microwave technology as an energy-efficient alternative to current heating technologies employed in the processing and treatment of waste. The process applications considered are the treatment and control of specific and often problematic waste-streams, including scrap tyres and plastics, and the remediation of contaminated land and groundwater. Where appropriate, the paper highlights the technical and economic factors that promote or inhibit the development and application of a specific technology. It is concluded that there is significant potential for microwave technology to be employed as an alternative heating source in the treatment of waste streams and environmental remediation. However, several major limitations prevent these technologies from being widely employed. These include the absence of sufficient data to quantify the dielectric properties of the treated waste streams, and technical difficulties encountered when upgrading successful laboratory or pilot-scale processes to the industrial scale.



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Keywords

Microwaves; Waste treatment; Tyres; Plastics; Contaminated land; Emissions

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