

Microwave Induced Pyrolysis of Sewage Sludge

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Sewage sludge contains, similarly to most organic waste a considerable proportion of degradable substances and thus it is a valuable source that may be recovered in the form of a valuable product. This paper deals with microwave pyrolysis as technology which features considerably time and energy savings compared to conventional pyrolysis and achieves results comparable with conventional pyrolysis. Sewage sludge microwave-induced pyrolysis reduces its volume by up to 80%, the resulting product is a porous carbonaceous product (BICOAL-BIOCHAR), fuel gases and liquids.

Wet sewage sludges from different waste water treatment plants were dried and pyrolyzed at pilot scale, using a BIONIC microwave pyrolysis unit. The gases obtained from these pyrolysis experiments were analysed and compared with those from a conventional pyrolysis employing an electrical furnace. The results help to explain the complex mechanisms that take place during the pyrolysis of sewage sludge. This process produces a considerable amount of gases with potential value as fuels due to the fact that they have relatively high calorific values. Upon comparing the two pyrolysis processes, it was found that microwave pyrolysis takes a much shorter time than when using the electrical furnace. It was also found, that microwave pyrolysis generates different composition of gas than conventional pyrolysis.