Karlsruhe Institute of Technology

Institute for Technical Chemistry, (ITC)
Combustion Technology

Project KK („Kaninchenkot“)

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Objective

On behalf of TT-SIUS Technologie Transfer the waste product “rabbit faeces” was investigated by the Institute for Technical Chemistry (ITC) at the Karlsruhe Institute of Technology with regard to the combustion behaviour inside a fixed-bed reactor. It should be assessed whether and under what conditions a thermal utilization of rabbit faeces is suitable.

Figure 1: waste rabbits droppings
Source:: KIT

Figure 2: burned rabbit droppings
Source: KIT

Realization

The experimental investigations for the characterization of the combustion properties of solid fuels (summarized in the service package FuBE) are done inside the fixed-bed reactor KLEAA of the Institute for Technical Chemistry (ITC) at the Karlsruhe Institute of Technology.
Fube is a service package, by which a comprehensive fuel characterization including the determination of the combustion behaviour can be done.

Results

In the performed experiment, no stationary operating conditions could be accomplished, because it was not possible to ignite or burn the fuel without further measures.
After the primary air was preheated and primary air inlet was increased, the burnup could be accomplished after a long test duration of 2.5 hours
In order to make a quantitative and reproducible statement about the operation of an industrial grate firing, further investigations inside the fixed-bed reactor, for example with dried rabbit manure or pellets or rather primary air preheating from the beginning of the investigations and with various primary air volume flows would be useful.
Furthermore, mineralogical investigations of the ashes are necessary, because compared to wood chips rabbit faeces contain higher content of chlorine, sulphur, nitrogen and alkalis, so during the combustion process a higher slag formation in combination with a higher corrosion potential is expected.

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