

DOS (Druckverlust und Oberflächenbestimmung von Schüttgütern)

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Background

The combustion of biogenic residues as well as waste materials is a common disposal and power supply concept.

All porous materials, but also heaps like bulk material, are interspersed with numerous hollows.

The combustion depends, just like most of the other chemical reactions, on the surface area for the material and heat transfer compared to its volume.

For this reason, the external surface is of great importance. The reactive surface has a direct influence on the combustion.

For example, the combustion rate is reduced by small specific surfaces.

There are already procedures for identifying the reactive surface, but here the surface is calculated from the surface chemistry, which holds fluctuations and uncertainties. For this reason, the ITC is developing a new procedure to measure the specific surface of heterogeneous materials mixtures.



Figure 1: Bulk material wood chips

Source: KIT

DOS

With the facility DOS (Druck- und Oberflächenbestimmung von Schüttgütern) the pressure drop of bulk material at different volume flows, as well as the porosity of the bulk material is identified with a self-developed procedure.

From these two parameters, the reactive surface of the bulk material is determined.

The facility DOS consists of two components. The pressure drop is measured by a manometer in a cylindrical construction, which contains the bulk material. The volume flow is led through two feed through the bulk material and is set via rotameter.

The porosity is identified by a pycnometer. For the measurements, the materials must be available in a bulkable state. A schematic structure of the pressure drop measurement is portrayed in figure 2.

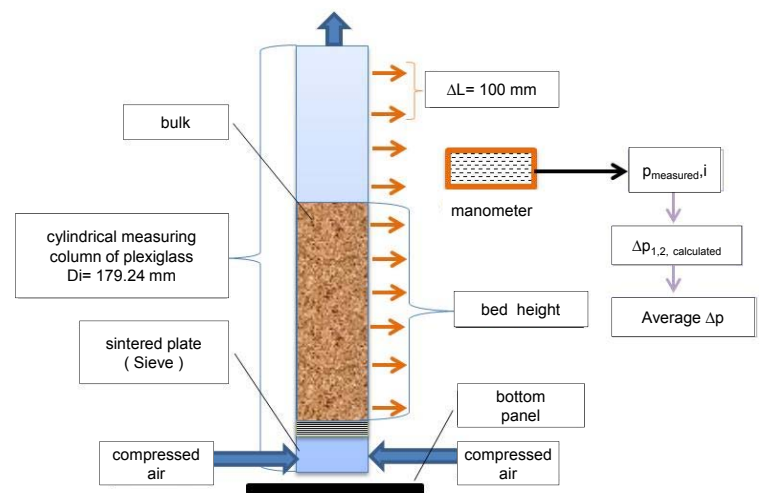


Figure 2: Schematic structure of the pressure drop measurement with DOS

Source: KIT

For further information go to:
<https://www.itc.kit.edu/>



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