OTTO VON GUERICKE UNIVERSITÄT MAGDEBURG

WORKGROUP FOR MULTIPHAS FLOWS

Classification

Air classification methods are suitable for grain size analysis and classification within the range of approximately 1 - 100 µm. T importance of the method results from the facts that on the one hand the particle size distribution of numerous industrial dusts l in this range and that on the other hand the dispersion size is determined directly by the behaviour of the particles in the g carried condition. The method of analysis could also be used alternatively to sedimentation, if no suitable sedimentation liquid w found for the product in which it remains insoluble and which has a smaller density.

The method of air classification can be realized favourably in a centrifugal air classifyer according to the principle of a centrifu The feed will be separated at an exactly defined separation limit into coarse and fine material in such an apparatus. T separation limit can be changed by change of the flow conditions in the separator, so that a particle size distribution can determined.

The inertia forces and turbulence intensities in the air classifyer lie in the order of magnitude of most technical dust separators, that a good comparability of the results of analysis with the results of the plant is ensured. Therefore, powdered materials w different densities, which have identical particle characteristics during analyses in the separator, will be equally separated example by a dynamic dust separator. That is the reason why fractional separation efficiencies of dust separators can represented by an aerodynamic particle diameter in a favourable way, which was determined by means of an air classifyi analysis. If the knowledge of the grain size in form of the Stokes' diameter was important in another connection, this diame could be calculated in accordance with the following relationship:

$d_0=d_1/rho_p\text{^}0.5$

d_0 - Stokes diameter

d_1 - equivalent diameter for particles of the density 1 g/cm^3

rho_p - particle density

Air classifiers can be used effectively for the production of particle fractions. Thereby, quantities can be classified which a sufficient for small scale technical plants, too.

In-house separators:

- Laboratory centrifugal air classifier Bahco
- Laboratory zigzag air classifier Alpine