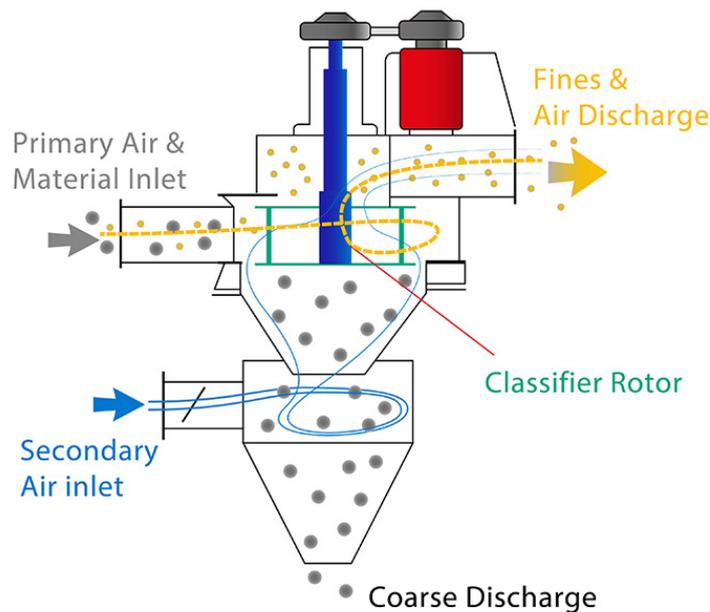


Parametric study of a classifying rotor

Continuum Technology EOOD is the leading producer of milling and classification equipment on the Balkans. The Company is based in Plovdiv, Bulgaria.

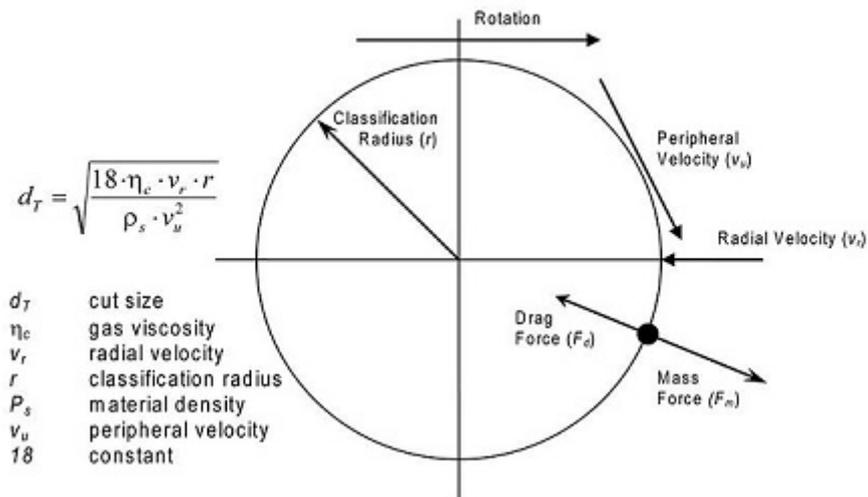
The air classification process is of critical importance for many grinding operations. In general, the overall energy consumption for grinding can be reduced drastically, if classification efficiency is high. Furthermore, the production capacity can be significantly increased, which for many applications is even more important than energy savings. When air classification is only considered to produce different size fractions without grinding, high efficiency will be even more important to provide products of required particle size distribution. Often, different size fractions are required, which have a specific particle size distribution curve. Efficient classification is of critical importance in such applications.



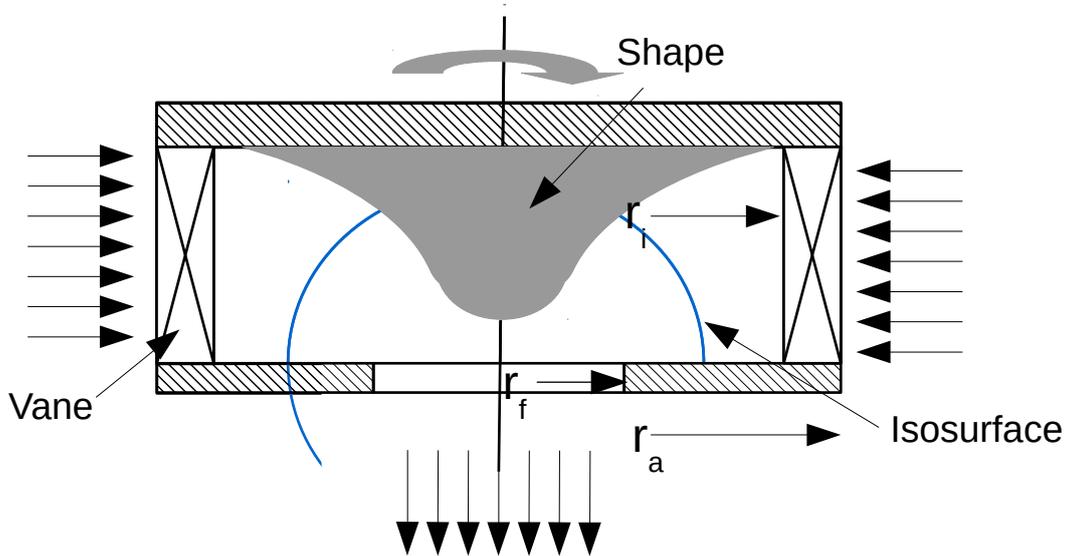
For the need of classification a special machines called dynamic air classifiers were developed. After entering the machine, the classifying air flows through the classifying rotor in centripetal direction. In the process, the classifying rotor extracts the fines from the feed material. The coarse material is rejected by the classifying rotor. Product fineness is controlled by adjustment of the classifier rotor speed and airflow.



Based on the physical model of classification in vaned rotors, the fundamental difference between the exclusive use of a forced vortex flow (i.e. classification at the outer edge of the vanes) and the combined use of forced vortex/free vortex flow (i.e. classification in the interior vane free area) is derived.



To increase inner classification of a rotor an inner shape is introduced which leads to spherical isosurfaces of constant velocity.



Aim of the study is to describe the geometric shape with a suitable mathematical function. A possible approximation of the shape could be a gaussian bell. Furthermore the shape should be optimized in terms of its effect on separation efficiency.

The parameters considered in the study are the rotor diameter, height and inner shape. A The rotor's vanes are factored in by their length and height.

Topics of interest

- range of fineness (separation efficiency)
- sharpness of cut