IMPACT GRINDING ROCKS
Problems and prospects

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The grinding process is widely used for the enrichment and reprocessing of materials in the mining, chemical and metallurgical industries. The smaller the size of the material, the better the beneficial agent is disclosed and the easier it will highlight it from the rock.

For grinding of a wide range of materials with initial (source) particle size of 8 (10) mm, various methods of destruction: the static load - crushing, splitting, fracture, abrasion and shearing pieces, and under dynamic loads - impact crushing and grinding. To reduce the size of the material disc attritors and vibratory mechanical mortar [1] dry milling is usually carried out by using disintegrants dismembrators and [2]. Shredders of different designs form a very large class of machines and are used in many fields of technology. They provide high chemical purity of samples and have a high durability.

Well established in the processing of solid crystalline structure or similar impact grinding method used in the disintegrator

Lack of domestic manufacturers and designs, and consequently, the need to purchase imported shredders and quickly wear working bodies (rotors, fingers, CDs) was a stimulus for the development of design chopper closest analogue is a disintegrator.

Table 1

Characteristics of crushers and grinders [2]

Type Fashion	**Feature boot**	**process**
Hammermill small model	Inclined hopper	free kick
Hammer crusher with constricted blow	Vertical hopper	constricted kick
Reversible Hammermill	Vertical hopper	constricted kick
hammer Crusher a movable wall	Inclined hopper	constricted and free kick
disintegrator	Inclined hopper	
Flowing	Vertical hopper	

Equipment selection is advantageously carried out by means of simulation, which gives reason to confirm or refute the accepted scheme without expensive experiments with real model installation. By varying the parameters within the specified limits may set the grinding efficiency, adding to the calculations for determining the dispersion and grinding performance. Calculations allow to rationalize the design of the boot node chopper. Integrating Writing equations to determine the relative velocity of the particles and the length of its trajectory to assess the method of grinding abrasion. With an increase in the angular velocity of the rotor increases, the

collision energy of the particle with the hammer. On the other hand, increases (theory turbomachinery - linearly) the air flow in the passage, and hence the probability of passing debris through the unstressed external rows of rotor channels. For a particle size of 200 microns or less, this probability is already quite large. In addition, under the action of two opposing trends can be expected of an optimal rotor speed (for the design) granulometric composition of the product.

Tabl 2

wool-speed of spherical particles (m/s)

Particle diameter , 10^{-6}m	**experiment**	**by Stokes' law**
10	$3{,}06\cdot10^{-3}$	$3{,}06\cdot10^{-3}$
20	$1{,}2\cdot10^{-2}$	$1{,}2\cdot10^{-2}$
40	$4{,}8\cdot10^{-2}$	$5{,}0\cdot10^{-2}$
100	$2{,}46\cdot10^{-1}$	$2{,}5\cdot10^{-1}$
400	1,57	4,83

Table. 2 shows the experimental and calculated according to Stokes' law Withania velocities of particles of different sizes density of 1000 kg / m 3 in air at a temperature of 20 ° C and a pressure of 100 kPa [3]. Casts doubt on the validity of the experimental results for particles with a diameter of 400 microns.

In steady motion of a particle when it falls in a serene environment, Withania speed can be calculated according to the formula proposed by Samsonov VT [4] = vB 0,0556ρchda2g / η-1, where ρch density of particle material, kg / m 3; VB Withania speed particles, m / s; g is the acceleration due to gravity, kg / m 2; η the viscosity of air, kg • s / m 2. The behavior of the ore particles in the forward moving air stream in the enrichment devices studied in [5].

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