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Ore and Material Dressing

Grinding operation while preparing mineral raw materials for dressing is the most power-consuming. It determines the quality of final concentrate : the part of unexposed aggregation which decreases efficiency and makes difficult the process of mineral dressing. Under percussion action to mineral destruction takes place along microfractures. The most effective percussion method of mineral destruction in grinding mills and breaking machines has great reserves: improving index of traditional dressing methods and increasing productivity of dressing equipment, possibility of using gravitation dressing methods, etc. At present time different methods of ore and material dressing are applied. Increasing product size resulting in better mineral exposing under percussion grinding and decreasing amount of silts allows to use gravitation processes at the first stage of ore dressing. It makes ore processing cheaper.

Gravitation dressing is mineral segregation in density. Different methods of this type of dressing are based on various rates of particle movement within water and air environment under gravitation or centrifugal forces. Only a half of total number of minerals is processed by gravitation methods.

Dressing in cone and jet separators is a method of gravitation mineral segregation introduced into industry recently. Countercurrent gravitation units are used for coal dressing lately. The construction of these units are comparatively simple. They have high productivity and are used when the content of heavy fractions in raw feedstock is substantial.

Radiometric dressing is based on difference in mineral capability of emit, reflect and absorb radioactive radiation. There are 20 methods of radiometric dressing at current time. Almost all of them are applied in industry. Radiometric dressing is cheaper than gravitation, magnetic and electrical one . It enables significantly reduce the demands for content of useful component in raw material.

Electrical separation is segregation of loose fine-grained minerals and materials (abrasives, industrial wastes, etc) in electrical field of separator. Under electrical separation particles depending on electrical properties, chemical composition, size, and density get various electrical charges and are sorted in bin. There are different types of electrical separation. They are electrostatic , coronal, friction- adhesive, fluidized-electrostatic and combined.