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NUMERICAL SIMULATION OF A TWO-PHASE FLOW IN A JET MILL EJECTOR WITH AN ADDITIONAL ENERGY SUPPLY

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New approaches to the preparation and processing of raw materials in the process of jet grinding are gaining more and more importance. This is due to the need to increase the efficiency of grinding and reduce the energy consumption of the equipment, increase its reliability and service life, and expand the possibility of using the jet mill in various industries. All this determines the importance of developing and implementing new approaches to two-phase flow organization in the channels of a jet mill. The goal of this work is to investigate a method for improving two-phase flow organization in the gas jet mill tracts. Numerical studies of a two-phase flow in the ejector of a jet mill showed the advisability of using an additional energy supply through the walls of the accelerating tube of the ejector to increase the efficiency of its operation. Controlling the gas flows in the mill ejector by using the energy of additional gas flows allows one to speed up the main flow at the exit of the ejector accelerating tube and form a protective layer around the tube walls to prevent their wear. The installation of a conical nozzle at the end of the accelerating tube prevents flow separation and vortex formation and provides a uniform velocity distribution at the ejector exit. The paper presents new solutions and recommendations on improving the efficiency of two-phase flow organization in the ducts of a gas jet mill. The scientific significance of the results lies in the development of a gas-dynamic method for controlling the gas flows in the jet mill tracts, which provides a uniform acceleration of the bulk material particles and reduces mill wear. The practical significance lies in the development of recommendations on increasing the efficiency of two-phase flow organization in the gas jet mill tracts. The results may be used in mining, metal manufacture, construction, the chemical and the food industry, and agriculture, and they will be employed in further development of scientific fundamentals of gas jet mill improvement. .

Keywords: *jet mill ejector, control of two-phase flows, numerical studies, improvement of efficiency of jet grinding.*

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