



ANALYSIS OF THE IMPROVED T-SHIRT DESIGN OF BALL MILL DRUMS.

Abdullayev Sardor Husniddinovich

Turdiev Sardor

Akbar Zhuraev

Abdullaev Sayyor

Navoi State University of Mining and Technologies, Navoi, Uzbekistan

Annotation. *In this scientific paper, a significant role in the study of the main causes of factors affecting the failure of ball mills is played by the rate of slip on the surfaces of coatings at the expense of the friction forces that occur between the coating and the load current. Changing the slip rate has a major effect on the quality characteristics of the decay processes that determine the decay intensity. A change in the value of a certain pressure mainly only leads to a change in the intensity of Decay. The decay of Mill drum protectors will have different values depending on the location of the covers. In addition, this article shows the types of ore milling mills operating in hydrometallurgical plants under the Navoi mining and Metallurgical Combine JSC and their share, failure cases and coating failures.*

Keywords: *ball mill, plating, coefficient, failure, efficiency, size, working member, improved, base, durability, working duration, element, bulge, lifters.*

Ключевые слова: *шаровая мельница, покрытие, коэффициент, отказ, эффективность, размер, рабочий орган, усовершенствованный, основание, долговечность, продолжительность работы, элемент, выпуклость, лифтеры.*



For the purpose of studying the operating mode of the mill, the speed of rotation of the drum, the forces affecting the coatings and the factors affecting their decay, the workshops of the 2nd hydrometallurgical plant owned by the Navoi mining and Metallurgical Combine JSC with the MMs were selected as the object of research. The plant has a total of 33 MMS type Mills with 27 MMS-7000x2300 and 6 MMS-9000x3000 Mills. The capacity of the workshops is 53 million tons of ore per year.

In order to improve mill productivity, improve the efficiency of primary milling and reduce the timing of interruptions, rubber metal coatings made in India were installed and tested in self-propelled Mills of the MMS-7000x2300 type. When using rubber metal coatings, the following disadvantages were identified: the high degree of decay of the risers, the observation of a fracture condition in the coatings, the formation of deformation in the drum during the movement of the load. It can be seen from this that the MMs-7000x2300 self-propelled mill under study shows that the use of rubber metal coatings is ineffective. Research has shown that changes in their elements during the use of self-propelled mill drum coatings have been found to change the friction forces acting on them and increase the quality of milling and the duration of the coating's operation cycle.

The energy loss of a mill working with eroded coatings during the milling process will be 25-30% higher than a mill where new coatings are installed. The operation practice of the MMs-7000x2300 self-propelled mill has shown that due to the decay of its coatings, interruptions last for almost 10 days, and the productivity of the mill decreases by 20-22% in exchange for the decay of coatings and their replacement with a new one.

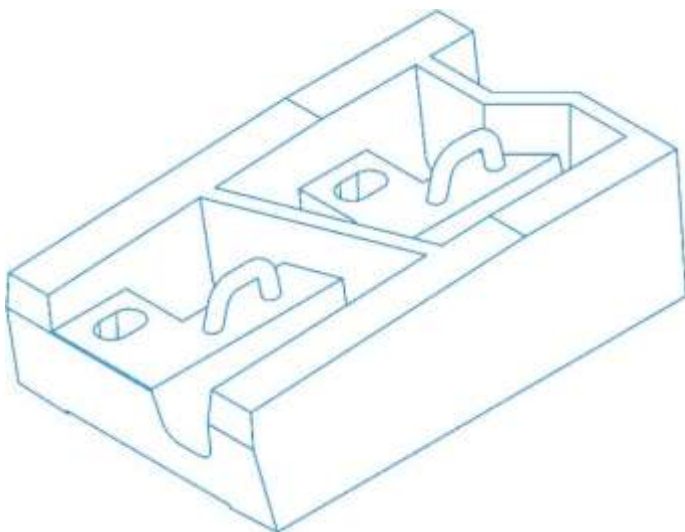


Figure 1. Overview of the coating of the cylindrical part of the MMS-7000x2300 mill drum

There are currently several types of ball mill drum covers, and the standard manufactured coating shown in Figure 1 above is used for the cylindrical part of the MMS-7000x2300 mill drum in all hydrometallurgical plants under Navoi Mining Metallurgical Combine JSC.

The cylindrical part of the mill drum as well as the hole (hatch) in the cylindrical part of the drum as a solution to the problem in the covers, at the cost of changing the height of the transverse bulge in the middle part of the cover from 165 mm to 95 mm, as well as increasing their resistance to decay by removing, it was found that the efficiency of milling operations of ball mills could be improved, and improved types of coating structures were developed.

In the process of operation of standard coatings on the cylindrical part of the mill drum as well as the hole (hatch) in the cylindrical part of the drum, the penetration of metal spheres and rocks between its ribs caused slip and friction forces to occur, which led to a deterioration in the quality of milling and a decrease in the efficiency of the mill.



The improved cladding structure differs from the previous cladding structure in that it has no ribs and the size of the relief in the middle of the cladding, giving it a bar-like appearance. The material of the improved cladding was left unchanged, namely, it is made of steel grade 110G13L.

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