

The Possibility of Replacement of Hydrocyclone D6 instand of D10 for Propose of Increasing of Recovery in Production Line at Chadermaloo Iron Ore Company, Iran

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Abstract

The aim of this study was to know the possibility of replacement of slim hydro cyclone D6 in stand of hydrocyclones D10 in the production line of Chadermaloo iron ore. In order to increasing recovery of hyderocyclones a series of test were carried out with apex 22 and 40 for hydrocyclone of D6 and D10 respectively. It was notice that the cutoff of D6 was less than D10. The best result was obtained from test apex D10=apexD6= 40mm.

The difference between cut off these two cyclones were more then 2.5 micron. In addition the amount of overflow west was 7.5 % less in composition with D10. The result showed that under similar condition the separation cutoff and overflow waste reduces significantly.

Keywords: Iron ore, Hydrocyclone, Cutoff, Recovery, and Chadermaloo.

INTRODUCTION

Chadormaloo is one of the most important iron ore mines in Iran which is located in yard province. This mine has a mineral processing plant with three lines. Each line has one semi autogenously mill (SAG mill) with about 400 t/h capacity. A gyratory crusher feeds these three SAG mills.

The Chadermaloo iron mine with 400 mil m/t is one of the biggest iron deposits in Iran. The Run of mine ore after comminuting (gyratory crasher) and homagenation the production has been lead to each of the production line which will be link to a semi Autogenously ball mill /the production will be feed for magnetic separator the concentrate obtained in this stage (partially magnetite) after reaching to the perfect grain size separation due to comminution they will be introduce to ball mill in a close circuit, the production obtained from ball mill will proceed to magnetic separator with low intensity, the tailing obtained from all stages a long with desliming by a Hydro cyclone, than subjected to up grinding by a magnetic separator.

The concentration obtained from this stage could be reach to operate grain size by applying the ball mill in closed circuit on production line the production could be clean by low intensity magnetic. The sum of all the stages could be desliming by a series of hydro cyclone the could be subjected for upgrading by a magnetic separator the tailing from this step could be added to tailing of first stage which contained the hematite. The feed could be subjected to a grain size for propose of increasing the grade of hematite by the tailing from this stage along with tailing of first stage including Hematite would be applying a series of screening analyzing, in propose of increasing of grade of Hematite, before interducing in magnetic separator by high intensity. Using of high magnetic separation, the concentration obtained from this stage could be phosphorous decreasing until iron grade could be

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experimental work for proposed of hydro cyclone slim D10 could be replaced by D6 hydro cyclone (Apatite) a series of experiment total four test has been carried out, in first two test apex of hydro cyclone for apatite separation was 22 mm (table - 1) and in second two test the apex of hydro cyclone was 40 mm for apatite separation, (table - 2).

CONCLUSIONS

- 1) During the experiment work the cutoff of d6 were less than d10
- 2) The best result obtained from test could be test No3 (apex d10 = apex d6 = 40mm) it was noticed that the cutoff of d6 was less than d10. The difference between cutoffs these two cyclones were more than 2.5%. Micron. In addition the amount of over flow wet was 7.5% less in composition with d10.

Chadormaloo is one of the most important iron ore mines in Iran which is located in yard province. This mine has a mineral processing semi autogenously mill SAG mill with about 400 t/h capacity.

A gyratory crusher feeds these three SAG mills.

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