ELETROSTATIC PRECIPITATORS' RECOVERD FINES UTILIZATION[1]

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Abstract
Iron ore agglomeration is influenced by its size distribution [(1)]. In this work we reused the electrostatic precipitators' recovered fines by using it (dry) for improving the iron ore agglomeration in Pelletizing Drums. Thus we had better agglomeration causing savings in bentonite consumption and we stopped discarding the slurry in the tailing pond.
Key words: Electrostatic precipitators; Agglomeration.

UTILIZAÇÃO DE FINOS RECUPERADOS POR PRECIPITADORES ELETROSTÁTICOS

Resumo
A aglomeração de minérios de ferro é influenciada por sua distribuição granulométrica[(1)]. Neste trabalho, nós reutilizamos os finos recuperados pelos precipitadores eletrostáticos, a seco, para melhorar a aglomeração em tambores de pelotamento.Assim obtivemos melhor aglomeração que acarretou em redução no consumo de bentonita e eliminação do descarte de polpa na barragem de rejeitos.
Palavras-chave: Precipitadores eletrostáticos; Aglomeração.

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1 INTRODUCTION

The majority of iron ores must be ground to a fine particle size to allow the iron oxides they contain to be concentrated, and the concentrate must then be agglomerated back into large enough particles that they can be processed in blast furnaces. The most common agglomeration technique is pelletization, which requires the use of binders to hold the iron oxide grains together so that the agglomerates can be sintered into high-strength pellets.[1] Although bentonite is the most commonly used binder, there are other possibilities for agglomerating iron ore.
In the present work, we used the recovered fines from electrostatic precipitators to improve the bentonite agglomeration capacity.

2 MATERIALS AND METHODS

2.1 Materials

Complete pneumatic transport system, 7 Pelletizing drums and 2 mixers and dust from Electrostatic Precipitators.

2.2 Methodology

Compare results from before and after electrostatic precipitators' dust utilization.

Table 1 Dust from Electrostatic Precipitators - Chemical and Physical analysis.

Fe (%)	SiO2 (%)	Al2O3 (%)	Mn (%)	CaO (%)	LOI (%)	<45µm (%)	Specific Surface ($cm^{2/}g$)
63,2	**3,28**	**0,78**	**0,20**	**1,87**	**3,16**	**89,0**	**2,065**

Source: Fábrica Physical and Chemical Laboratories

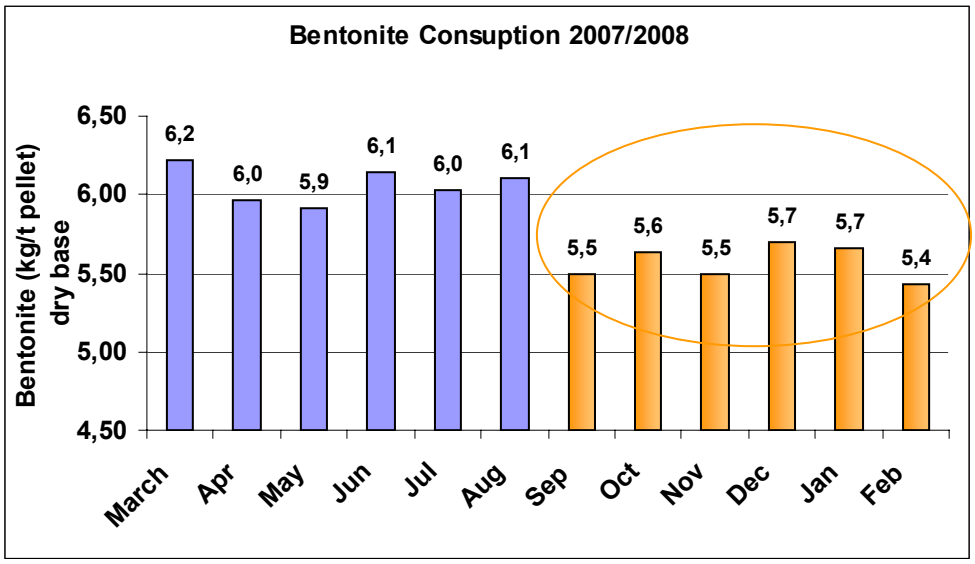
3 RESULTS AND DISCUSSION

3.1 Results

Table 2. Projected savings after 1 year.

Water	**17,000 m^3**
Bentonite	**1,533 t**
Iron Ore (63% Fe)	**34,010 t**
Rejects emissions	**102,029 t**

***Source**: Vale materials consumptions 2007-2008.*



***Source**: Vale materials consumptions 2007-2008.*

Figure 1: Bentonite savings after dust utilization

3.2 Discussion

At the beginning (Sep. 2007) our main goal was to stop discarding slurry in the tailing pond. Six months after electrostatic precipitator's dust utilization we reached your main goal and also improved our process by saving bentonite, Iron Ore and mainly water.

It's important to mention that our pellets quality were maintained since we starting using this new process route.

Other Vale Units are studying the viability of this new process route, so they shall improve their process and reduce the environment impacts so as Fábrica Pelletizing Plant have done since 2007 September.

4 CONCLUSION

Using Electrostatic Precipitator's dust has shown itself as good opportunity for reducing costs in agglomerating process so as for reducing environmental impacts by saving water and eliminating part of palletizing plants waste emissions.

Acknowledgments

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