



## *Symposium Summary*

### **Alumina and Bauxite**

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Studies were reported of bauxite activation by mechanical and thermal methods in intense magnetic field, but no commercial application has yet emerged beyond the well known grinding of the bauxite. Subject to the alumina-silica ratio (A/S) in Diasporic bauxite, various processes such as Bayer, dressing Bayer, sintering, mixed combination and serial combination processes are operated in China. Due to local differences in raw material (soda, limestone and bauxite) and fuel (mostly coal) cost, each process can be justified to be the most economic option.

The tragic and fatal incident of red mud residue storage pond failure at Ajka, Hungary, in October 2010 has reinforced the focus on safe and effective management of storage areas globally. With 3,000 million ton estimated bauxite residue storage by end of 2010, and growing by approximately 120 million tpy, several current and best practices of bauxite residue management were presented, including two case studies. Red mud pressure filtration, producing a filter cake with up to 75% solids, and improved flocculants in red mud washers, increasing the underflow solids density, are some of the technologies that represent elements of coming best practices to be tailor made to each individual bauxite source and its red mud deposit.

Being a complex and low grade ore for extraction of iron, aluminium and titanium, red mud has to compete with other low cost materials in a multitude of applications. This more often than not turns out to be economically unfavorable. Never the less, the most promising utilizations and focus areas for research were presented and discussed. Precipitation of boehmite, mixing uniformity in seed precipitation tank and upgrade of the precipitation area at ETI Aluminium, Turkey, was the subject of the papers covering the Bayer precipitation area. The latest generation fabric filters available for controlling particulate emissions from calciner stacks offers more cost effective solutions by using 10m long filter bags.

With alumina dust being included in the SGA produced, excess content of  $\text{Na}_2\text{O}$  and  $\text{CaO}$  in SGA requires more aluminium flouride to neutralize the effect on bath chemistry at the smelter, resulting in the generation of excess bath to be disposed off by the smelter. The economics and potential solutions were presented and discussed.

In China, local shortage of bauxite has made large quantities of coal fly ash from coal-fired power plants rich in  $\text{Al}_2\text{O}_3$  a potential new raw material source for alumina refineries. Extracting alumina from coal fly ash using the acid sintering-leaching process was reported.

Several options for joint ventures in the aluminum industry that have been tried were also presented and discussed.

“Alumina Refinery Water Management: When Zero Discharge Just Isn’t Feasible” by Lucy Martin and Steven Howard, Bechtel Australia, was named best paper in the 2011 Alumina and Bauxite Symposium.

—Submitted by Benny E Raahauge