



Solenis Innovation Enables Plant to Increase Alumina Production by 200 Tons Per Day

Zalta™ VM1120 Viscosity Modifier

Customer Overview:

- Segment: Mining
- Product(s): Alumina
- Location: Jamaica

Application Overview:

- Type: Viscosity Modification
- Equipment: Red Mud Circuit
- Target production: 1800 tpd alumina

Existing Treatment:

Anionic Flocculant

Problem Summary:

This mine had a recent change in ore bodies which contain less available alumina and more iron oxides that have a negative effect on the clarification circuit. This caused the red mud circuit to become a process bottleneck. Increasing throughput and improving the ability to concentrate the red mud in this section of the refinery would result in an increase in alumina production, energy savings and decrease sodium hydroxide losses.

The ability to process bauxite with higher gangue materials is becoming more and more important in the alumina industry. The higher mud loads created by the higher gangue results in lower sedimentation rates and reduced washing efficiencies resulting in lower throughputs and increased alumina and soda losses. Controlling soda losses is a big factor in maintaining profitability in the Bayer process. The bottleneck can be reduced by increasing the red mud slurry solids.

Customer Objectives:

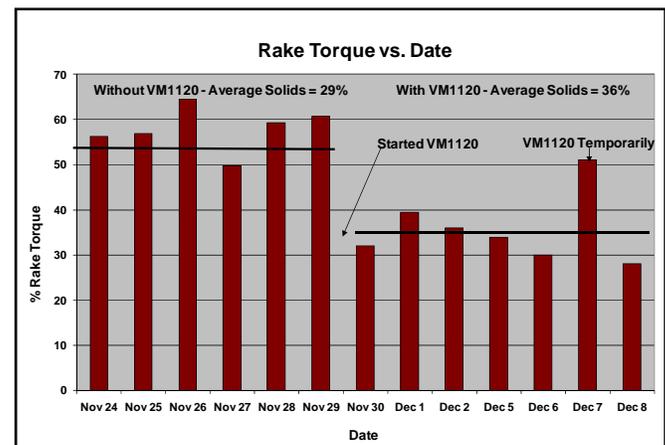
- Increase red mud slurry solids
- Decrease red mud slurry viscosity
- Maintain ability to pump the red mud slurry to lake
- Maintain red mud lake properties (no negative impact on mud stacking or drying)
- Increase alumina production
- Reduce soda losses

- Reduce energy use

Solenis Solution:

Solenis was selected to work with the Red Mud Circuit Manager to design and implement a chemical feed program that would allow them to meet their objectives. Solenis recommendations and actions were as follows:

- Performed testing and recommended the use of Zalta™ VM1120 viscosity modifier in conjunction with an anionic flocculant
- Designed a PLC controlled feed system to feed the proper amount of chemical based on various inputs
- Recommended a “Best Practice” feed strategy including feed point selection, dilution rate and product dosage
- Supplied manpower during equipment installation
- Trial monitoring to ensure success and benefits documented



Zalta VM1120 reduced the rake torque which allowed the plant to increase slurry solids.

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Customer Benefits:

- Slurry solids increased a minimum of 20%
- Rake torque reduced by 40%
- The increased slurry solids being pumped at the same rate from the thickener will allow an additional 200 tpd of mud to be processed
- Maintained ability to pump the higher solids slurry with no issues
- No negative impacts on red mud lake
- Provided them with the opportunity to increase their plant production
- Reduced soda losses by greater than 10%
- Provided energy savings by operating at reduced pump amps

Conclusion:

Zalta™ VM1120 viscosity modifier provided the plant with the opportunity to increase alumina production by 200 tpd, increasing plant revenues by over \$20 million per year.



Zalta VM1120 maintained the red mud slurry flow characteristics at increased slurry solids.