

FGD Forced Oxidation Mechanism A Pilot Plant Case Study

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ABSTRACT

This is an accounting of an unsuccessful attempt to scale up an EIMCO Oxillizer design to induce air into a sulfite slurry without blowers. The 350 HP prototype oxidizer was brought on-line in 2002 at the WKE Reid/Green station to oxidize a controlled feed of calcium sulfites from the plant thickener underflow. The paper relates how the production of high quality gypsum was readily achieved and processed on site. It also presents the results of the numerous trials for batch and continuous mode of operation, and discusses in some detail several unsuccessful attempts to increase the unit oxidation rate to an acceptable level. Critical design shortcomings are discussed, and a general discussion of issues effecting cost is also included. The author relates what effect the design changes had on the oxidation rate and how the knowledge was used to develop a successful oxidizer design in 2003.

The discussion also details the key considerations of feed slurry conditioning and how they relate to the overall process control. Some attention is given to the parameters for controlling the oxidation process and how they are affected by the ever varying feed chemistry. Additional information is included on how an alternative feed source was developed to eliminate the use of sulfuric acid for pH control, a major cost roadblock.

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