S1.4.4 CONTINUOUS VACUUM FILTRATION TECHNOLOGIES FOR SULFURIC AND HYDROCHLORIC ACID SLURRIES

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This presentation will discuss highly acid chemical process slurries and the useof continuous vacuum filtration technologies for filtration, cake washing and drying. The overall scheme can be used by process engineers to develop optimum continuous vacuum filtration solutions for difficult and toxic slurry applications.

The presentation begins with the basics of continuous vacuum filtration technologies including vacuum drum filters, continuous – indexing vacuum belt filters and rubber belt filters. The application benefits are also described.

In this first process, the precipitated solids are in sulfuric acid slurry. The challenge is to process 2200 kg/hour of dry solids for filtration, counter-current washing and drying in a contained environment. The presentation discusses vacuum process testing in the laboratory as well as the technology evaluation. The presentation continues with the design criteria and installation of the continuous-indexing vacuum belt filter for this process including process parameters.

In this second process, the objective is to process precipitated solids in an hydrochloric acid slurry. The initial lab tests suggested that a continuous-indexing vacuum belt filter would achieve the required cake with a five-stage counter-current washing. The presentation describes the specifications, design criteria and process parameters to achieve the quality in production in a safe and contained operation.

The presentation concludes with a framework for vacuum technology selection and how this can be applied to other toxic and difficult chemical process filtrations.