MINIMIZING PRESSURE FILTER PLUGGING

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Plugging of White Liquor and Weak Wash Pressure Filters – Causes and Prevention

Tubular backpulse pressure filters are commonly used in Kraft mills for clarification of white liquor and weak wash. Unscheduled filter replacement due to plugging is a significant expense and may result in mill downtime. Acid washing of filters is commonly used but is not always effective. The goal of this course is to reduce the frequency of filter acid washes and to significantly reduce unscheduled filter replacement.

This course looks at the factors that can lead to increased pressure drop and plugging in pressure filters and options for prevention. The course is based on completed mill projects aimed at understanding filter plugging mechanisms and optimizing cleaning procedures. I published the only information on this topic available in the technical literature (Taylor et al., 2008, 2011).

The following items are covered:

- Review of plugging mechanisms in pressure filters (case studies).
  - Normal operation
  - Plugging due to unfavorable particle size distribution
  - Acid-soluble versus acid-insoluble filter plugging mechanisms
  - Plugging from carbon/soot buildup from dregs
  - Plugging by elemental sulfur formation (from sulfide oxidation)
  - Plugging due to impurities in purchased lime
  - Plugging caused by the acid washing procedure (this is common)
  - Plugging by silica precipitation
- How the acid washing procedure can cause irreversible filter plugging.
- Best practices for acid washing of pressure filters.
- Suggested practices for pressure filter operation.

Reference:

TAYLOR, K., ADDERLY, R. and BAXTER, G., "Tubular Backpulse Pressure Filters: Identification of Acid-Insoluble Filter Plugging Compounds and Optimization of Acid Washing Procedures", Best Mill Paper, PAPTAC Pacific Coast Branch Conference, April 18-19, 2008. Presented at PACWEST, June 18-21, 2008.

TAYLOR, K., ADDERLY, R. and BAXTER, G., “Identification of Acid-insoluble Filter-plugging Compounds and Optimal Acid-washing Procedures for Tubular Backpulse Pressure Filters”, *Tappi Journal*, 10(1), 17-23 (January, 2011).

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