

CHEMPLANT ROTARY DRUM VACUUM FILTERS FOR ALUMINA REFINERIES

Introduction

Chemical Plant and Engineering (Chemplant) is a specialist engineering company involved in the design and manufacture of process equipment for over 50 years. Our product lines include filters (vacuum and pressure), agitators and powder mixers.

Chemplant has a long history of supplying drum filters to the Alumina Industry. The first drum filters were supplied in 1965 to Queensland Alumina which is the largest Alumina Refinery in the world.



Oxalate Seed Filters being loaded out for Worsley Refinery

Product Features

Chemplant has developed many features during the last 40 years to ensure we provide the best performance for Alumina Refineries.

Examples of these features include:

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|---------------------------|---|
| • Flexible Operation | - Adjustable bridge plate in the rotary valve to maximise vacuum time and optimise cake release |
| • Efficient Vacuum System | - Variable speed main drive |
| • Ease of Maintenance | - High efficiency system utilising extensive internal tubing for optimum velocities |
| • Long Life | - Automatic Rotary Control Valve with replacement wear plate |
| | - Wear resistant materials of construction |

Operation

A continuous Rotary Vacuum Filter consists essentially of a cloth-covered drum revolving in a tank filled with the slurry to be filtered. An agitator, oscillating gently back and forth under the drum, keeps the solids in suspension.

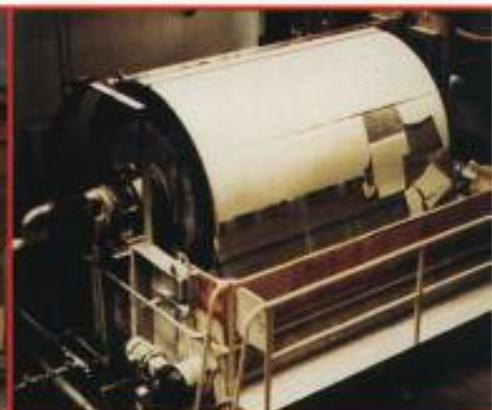
The surface of the drum is divided into shallow compartments which are connected by pipelines to an automatic valve so that the vacuum can be applied individually to each.

As the drum rotates, each compartment goes through the same cycle of operation: filtering, de-watering, and discharging the cake. The cycle is controlled in a repeating sequence by an automatic valve.

A vacuum is applied to the submerged segments which causes the mother liquor to flow through filter cloth, internal piping, and valve, while solids are retained on the outside of the cloth to form the cake.

As sections emerge from the tank, the vacuum dewateres the cake as the drum carries it around to the point of discharge. A washing process can be added after de-watering if required.

When all the mother liquor that the particular filter cake will release has been removed, the automatic valve cuts off the vacuum, and the cake is discharged from the drum.



References

Chemplant has supplied many of the world's leading Alumina refineries.

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| • Queensland Alumina Australia | 4 units | 1965 | Application is Oxalate Seed (Fine Seed) |
| • Worsley, Alumina Australia | 10 units | 1982 - 1998 | Application is Oxalate Seed (Fine Seed) |

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