

PROCESS FILTRATION / SEPARATION

Filter Press for Ceramic Applications

Industry: Ceramics

Goals: Filtration to dewater clay slurries & slip

Project Overview:

During the process to make clay and ceramic slurries used for the manufacture of dinnerware, insulators, china etc, the clay slurry goes through a dewatering step prior to further processing and molding into the desired form. These slurries are extremely dense and heavy and typically require dewatering at 225 PSI feed pressure to obtain a solid cake. Filter press dewatering is the most recognized method for performing this function. Filter presses are capable of handling the 225 PSI feed pressure. They are able to incorporate necessary accessory systems, such as plate shifters and conveyors to handle the heavy filter cakes and are available with fully automated capabilities.

Critical Issues:

Able to dewater heavy clay & ceramic slurries and slips into a solid filter cake that can be further milled and formed as the process dictates.

Vision for Solution:

- Low pressure (100) or high pressure (225) PSI designs
- Plate shifters designed for heavy dense filter cakes
- Choice of standard recessed, caulked & gasketed or membrane squeeze plates for dewatering optimization
- Special filter cloth selection

Typical Project Scope:

Complete system design
Fabrication / integration
Commissioning & start-up
Detailed design engineering

General Equipment Description:

Equalization & Feed Tanks
PLC Controls & Automation
High pressure – 225 PSI design
Membrane Squeeze Systems
Complete systems with conveyors, drip trays, piping, plate shifters etc.

Special Features:

- Corrosion resistant coatings
- Heavy duty high pressure design
- Wide range of filter cloth media
- Choice of filter plate design & materials



Technical Data:

Application - Clay slurry and slip.

Equipment - Filter Press, either low (100) or high (225) PSI pressure design. Polypropylene, Polypropylene/FRP or KYNAR® filter plates in standard recessed, caulked & gasketed or membrane squeeze design, manual or automated, accessory systems such as conveyors or water squeeze.

Materials of Construction - High pressure, steel frame with various corrosion resistant coatings, Polypropylene, Polypropylene/FRP or KYNAR® filter plates, numerous cloth selections such as polypropylene, polyester, TYVEK®, cotton, nylon, RYTON® etc.

Filtration Data:

Flow Rate ----- 0.1 GPM/sq.ft. to 1.0 GPM/sq.ft.
Suspended Solids - Clay & ceramic solids
Cycle Length ----- 1 hour to 8 hours
Squeeze ----- 85 to 120 lbs / cu. ft.
Cake dryness ----- 50% to 80%