

SOLUTION:

RAW MATERIAL FEEDERS

Raw Material

Raw material grinding is one of the core operations in a cement plant. Today, vertical roller mills (VRM's) are the preferred choice in most of North America. Along with clinker/finish grinding, raw material grinding is typically the biggest user of electrical energy with gearboxes approaching 5000-HP. Sizing for 500-1000 TPH is becoming common.

An overlooked part of the mill system is the feeding device that gets the limestone and other materials into the mill in a steady manner. Today, the majority of the raw mills in North America are fed with a large capacity rotary feeder. Referred to by the European mill manufacturers as a "rotary sluice", the rotary feeder has a pair of important functions in an efficient raw milling operation.

First is maintaining efficient feed rates. In most operations, a variable speed belt pulls raw materials from storage and the belt speed establishes the basic tonnage rate into the mill. The rotary feeder fine-tunes this feed rate by discharging a known volume each revolution and operating at a known speed. Good feeding leads to a uniform bed-depth in the VRM, which leads to effective, uniform grinding. Reduced grinding bed thickness can lead to excessive vibrations in the mill itself.

The second function of the raw material rotary is to act as an airlock to minimize external or false air introduction into the mill and fan. The objective is two-fold: to create conditions inside the mill for efficient, uniform grinding and to minimize fan horsepower.

Two years of operation between rebuilds

Most competitive raw material feeders require either a modest or major rebuild during every annual outage. The Precision PMCA raw material feeders have stretched this to two years for every customer. In fact, we believe that three years of operation between rebuilds is possible under the right conditions.

Avoiding the cost of a rebuild every year is a significant cost savings. Equally important to the team at the plant is reducing the complexity of the outage. Skipping a feeder removal and reinstallation every other year is one less major effort to plan and execute.

Reduced false air induction

Separator horsepower and power consumption are expensive and minimizing false air intrusion through the raw material feeder can be a big help. Precision's manufacturing processes allow us to build PMCA feeders with rotor-to-barrel clearance of 0.045" to 0.075" per side, depending on the size of the feeder. In comparison to the much wider gap on competitive feeders, the tight clearance reduces false air by thousands of cubic feet per minute.

In addition to better kilowatt-per-ton performance, the reduced false air with a PMCA feeder should result in more uniform grinding and an improved particle size distribution. Excessive false air contributes to increased turbulence in the mill; reducing this turbulence will allow for improved process control and consistent particle size distribution.

Low or no recurring maintenance

PMCA feeders are designed for very low maintenance. There are no adjustable rotor tips, flap diverters, removable sides, or other maintenance-intensive items to worry about. It is really as simple as install it, start it up, and run it. Precision recommends a bi-monthly lubrication of the bearings and, if possible, a semi-annual inspection of the wear plates. Otherwise little attention should be necessary.



PRECISION

PRECISION MACHINE & MANUFACTURING, INC.

RAW MATERIALS FEEDER

PMCA ROTARY FEEDER

TRI-BRAZE

Barrels and rotors manufactured of Tri-Braze for maximum abrasion-resistance and long-life.

NORD DRIVE

Integrated Nord shaft-mounted or flange-mounted drive package with torque-limiting clutch.

ENDBELL PORTS

Available hot-air / hot-gas endbell ports and hollow-core rotors to help minimize material build-up in the rotor.

TRANSITIONS

Available upper and/or lower transitions to facilitate slide-out / slide-in replacement of competition feeders.



SIX-VANE ROTORS

Six-vane rotors with rounded pockets to minimize build-up... even with wet raw materials.



FEEDER

PMCA-35

up to 175 TPH

PMCA-48

up to 400 TPH

PMCA-60

up to 800 TPH

PMCA-72

up to 1250 TP