

Raymond® Cage Mill Flash Drying System

For gypsum processing

- Disintegrates and agitates material
- Improves drying by increasing surface area, turbulence and retention time
- Accepts a wide range of material size and moisture conditions
- Heavy-duty design for non-stop 24 hour operation
- Rotor mounts on retractable carriage and includes replaceable blades



The Raymond® Cage Mill Flash Drying system is designed for dry and deagglomerate materials that do not require size reduction. The cage mill is a low energy consumption unit that increases drying performance resulting in improved product quality.

Raymond® Cage Mill

The cage design consists of an agitator type rotor enclosed in a welded steel housing with carbon steel liners and a tangential outlet. The rotor and blade assembly utilizes sets of variable length carbon steel bars arranged and welded concentrically on a steel spider.

The cage mill housing is provided with bolted and machined gas and dust tight flanged joints. The v-belt driven mill is supplied with heavy-duty roller bearings that allow for trouble free, smooth operation under the high temperature conditions the mill experiences.

Raymond® Cage Mill Flash Drying System

The cage mill flash drying system design consists principally of a feed conveyor, cage mill, air heater, cyclone, dust collector and system fan along with the connective ductwork to incorporate these components into a complete system.

Principle of operation

The processed material is discharged from the silo into the feed conveyor then to the inlet of the cage mill flash dryer. After the material enters the mill, it is vigorously agitated while being combined with hot gas from the air heater creating turbulence and retention time for more efficient drying. The system's high thermal efficiency occurs from a high temperature differential between the inlet and vent temperatures. The short retention time in the hot zone results in lower product temperatures compared to other dryer methods, reducing the heat losses to the product, and lowers the risk of calcining during the drying phase. The circular motion of the rotor helps direct the feed into the drying column then into the primary collector where the drying process is completed.

Calcining system feed preparation

Feed stock metering from the silo results in a more consistent feed to the flash calcining system. It improves control of the calcining process by smoothing out temperature swings which can occur with the variable feed temperatures and moistures these types of materials can experience. The improved feed consistency prevents sudden swings in feed moisture from causing fluctuations in stucco combined water which can cause problems on the boardline.

A primary cyclone and/or baghouse collects the product while a system fan serves as the primary air mover. The dried synthetic gypsum is discharged into a material handling system for transport into a feed silo located ahead of the calcining system.

Typical Capacities Raymond® Cage Mill Flash Drying System

Cyclone Size	Airflow	Approx. Heat Input	Approx. Power Required	Max H ₂ O Evaporation
3	1700 ft ³ /min	1085 mbtu/hr	12 kW	700 lb/hr
4	3000 ft ³ /min	1860 mbtu/hr	18 kW	1200 lb/hr
5	4700 ft ³ /min	2945 mbtu/hr	28 kW	1900 lb/hr
6	6800 ft ³ /min	4185 mbtu/hr	38 kW	2700 lb/hr
7	9200 ft ³ /min	5735 mbtu/hr	52 kW	3700 lb/hr
8	12000 ft ³ /min	7440 mbtu/hr	66 kW	4800 lb/hr
9	15000 ft ³ /min	9300 mbtu/hr	81 kW	6000 lb/hr
10	19000 ft ³ /min	11025 mbtu/hr	99 kW	7500 lb/hr
12	27000 ft ³ /min	17050 mbtu/hr	143 kW	11000 lb/hr
14	37000 ft ³ /min	23250 mbtu/hr	198 kW	15000 lb/hr
16	48000 ft ³ /min	29450 mbtu/hr	237 kW	19000 lb/hr
18	61000 ft ³ /min	37200 mbtu/hr	294 kW	24000 lb/hr
20	75000 ft ³ /min	46500 mbtu/hr	367 kW	30000 lb/hr
22	90000 ft ³ /min	55800 mbtu/hr	432 kW	36000 lb/hr

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