RAYMOND®
FLASH DRYING SYSTEM

With a 130 years of experience, Raymond Bartlett Snow thermal products have successfully provided solutions in heat transfer applications for industries worldwide.

ADVANTAGES

- High thermal efficiency and low power requirements.
- Low capital costs compared to other types of dryers.
- Minimum floor space required.
- Wide range of capacities from pounds to tons per hour.
- Instantaneous moisture removal.
- Rugged, trouble free, low maintenance equipment.
- Safe operation due to only a small quantity of material processed at a time.
- Instant and accurate control of final product moisture.

Proven Equipment for Your Drying Needs

Raymond Flash Drying Systems are simple to operate and well known for their high on-line availability for tough applications involving fine, non-metallic, low to moderately abrasive, sticky and heat sensitive materials. They are proven in a variety of industries worldwide including chemical, petrochemical, ceramic, pharmaceutical, food, fertilizer, plastics and many others.

Flash Drying Process
Flash Drying is the rapid removal of moisture from mesh and micron sized solids which release moisture easily, primarly as surface water. The wet material is dried by conveying it in a high velocity hot air stream. The short retention time in a flash drying system provides for maximum control of product quality.

Several factors influence the evaporation of moisture during flash drying:

Moisture dispersion - filter cakes and feed with sticky consistencies can be conditioned for more effective drying by back mixing with dried product.

Particle size - moisture dispersion is a function of particle size and shape. The smaller the particle the more rapid the moisture removal. Applications requiring simultaneous grinding and drying are particularly suitable to the flash drying process.

Temperature differential - high inlet temperatures can be utilized in a flash dryer since the drying occurs quickly and the material is removed from the hot gas stream before it reaches the wet bulb temperature of the conveying gas.

Agitation - rapid drying also results from the agitation and turbulence of the particles. High gas velocities in the flash dryer accomplish this. In a system incorporating disintegration, the mill contributes to the agitation. The vapor film is continuously swept away from the moist particles making drying practically instantaneous.

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The essential components of a basic flash drying system are an air heater, feeder to introduce the wet material into the system at a controlled rate, cyclone collector, secondary dust collector, vent fan and necessary connective duct work.

The heating medium is typically products of combustion from a gas or oil burner, mixed with tempering air to achieve inlet temperatures of up to 1300°F (750°C). Designs using other indirect heat transfer mediums such as thermal fluids and electrical heating elements are also available. Some portion of the heated gases can be recirculated for increased thermal efficiency.

Flash drying can be simultaneously combined with other functions such as pulverizing, separation, classifying and conveying for utilization in additional process applications.

Cage mill flash dryers are designed to bring wet, lumpy, and dispersable products into contact with a high velocity hot gas stream. The agitation and turbulence created by the cage mill provides for effective deagglomeration, dispersal, and drying of lumpy material. The technology is appropriate for applications involving fine or lumpy friable material, low product temperatures, surface moisture, and retention times for drying of a few seconds. With conditioning mixers, applications involving filter cakes, sludges, and slurriers can also be handled.

Imp mill flash dryers are used when size reduction of the process material is required. The rotating high speed hammer mill provides for the grinding action that results in particle size reduction and assists in bringing internal moisture to the surface. Convection heat transfer is dominant, with conduction and radiation effects minimal. The technology is particulary suited for applications involving lumpy or course material that is low to mildly abrasive, internal or unbound moisture, low product temperature, and retention times for drying of a few seconds.

Cyclone Size	Airflow ft^3/min	Approx Heat Input MBtu/hr.	Approx. Pwr. Req. kW	Max H2O Evap. lb/hr.	Approx. Height	Approx Width	Approx Weight (lbs)
3	1,700	1,085	12	700	30'-6"	24'-3"	12,000
4	3,000	1,860	18	1,200	33'-9"	27'-1"	17,000
5	4,700	2,945	28	1,900	36'-3"	28'-4"	21,000
6	6,800	4,185	38	2,700	39'-6"	30'-9"	28,000
7	9,200	5,735	52	3,700	41'-9"	32'-3"	32,000
8	12,000	7,400	66	4,800	47'-0"	33'-11“	37,000
9	15,000	9,300	81	6,000	51'-3"	36'-8"	44,000
10	19,000	11,025	99	7,500	52'-3"	37'-8"	51,000
12	27,000	17,050	143	11,000	58'-6"	40'-4"	64,000
14	37,000	23,250	198	15,000	65'-4"	43'-4"	74,000
16	48,000	29,450	237	19,000	73'-4"	45'-6"	87,000
18	61,000	37,200	294	24,000	83'-0"	49'-6"	116,000
20	75,000	46,500	367	30,000	92'-6"	53'-8"	125,000
22	90,000	55,800	432	36,000	102'-6"	57'-10"	135,000
24	110,000	67,000	550	44,000	110'	61'	150,000

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