



DUAL-FLOW ROTARY DRYERS

6 Models to Choose



THE MOST PRACTICAL & ECONOMICAL MEANS OF MINERALS PROCESSING & RECOVERY

- SIX MODELS TO CHOOSE, WITH CAPACITY RANGE OF 1 TON/HOUR UP TO 10 TONS/HOUR.
- LOWEST OWNERSHIP COST, ECONOMICAL OPERATION AND LOW MAINTENANCE COST.
- MAXIMUM HEAT TRANSFER FOR EVERY CUBIC FEET OF DRYING, MINIMUM HEAT LOSS.
- FULL AND EFFICIENT CONTROL OF GAS-TEMPERATURE, AIR EXHUST AND MATERIAL LOGISTICS, RESULTS IN MAJOR SAVINGS.
- COMPACT DESIGN, DOUBLE-SHELL DRUM CONSTRUCTION, RESULTS IN REDUCED HEAT LOSS, LONGER HOT GASES CONTACT WITH MATERIAL, SHORTER RETENTION TIME THAN ANY DRYER IN THE MARKET.
- LOWEST FUEL COSTS AND HIGHEST POSSIBLE THERMAL EFFICIENCY IN COMPARISON TO OTHER DIRECT OR INDIRECT DRYERS.

APPLICATION

DOVE Dual-Flow Rotary Dryers are designed to dry high moisture contents granular material efficiently and economically. DOVE Rotary Dryers are configured for high speed economical drying operations Minimize dusting, save floor space and yield better end products. Dove Dual - Flow Rotary Dryers are used for wide variety of applications:

● METAL AND MINING INDUSTRIES

Tin, Iron, Copper, Mineral sands, Tantalite, Ilmentite, Wolframite, Columbite, Monazite, Garnet, Zircon, Scheelite, Rutile and other metals concentrates and minerals. Materials for powder metallurgy (Powder), Coal, Cokes, Quicklime, Sulfur, Phosphor (Powder), Fluorescent substance (Powder), Cast dust, Steel shot (granule) minerals, etc.

● CERAMIC & CHEMICAL INDUSTRIES

Silica sand, Beach sand, Ceramic (powder, Glass (powder), Foundry sand, Quartz powder, Kaolin powder, Synthetic resins (pellet, beads, powder), Wood powder, Graphite (powder), Rubber filter (powder), Silica (powder), Phosphate, Fertilizer, Sulfur, Phosphor (powder), Fluorescent substance (powder), etc.

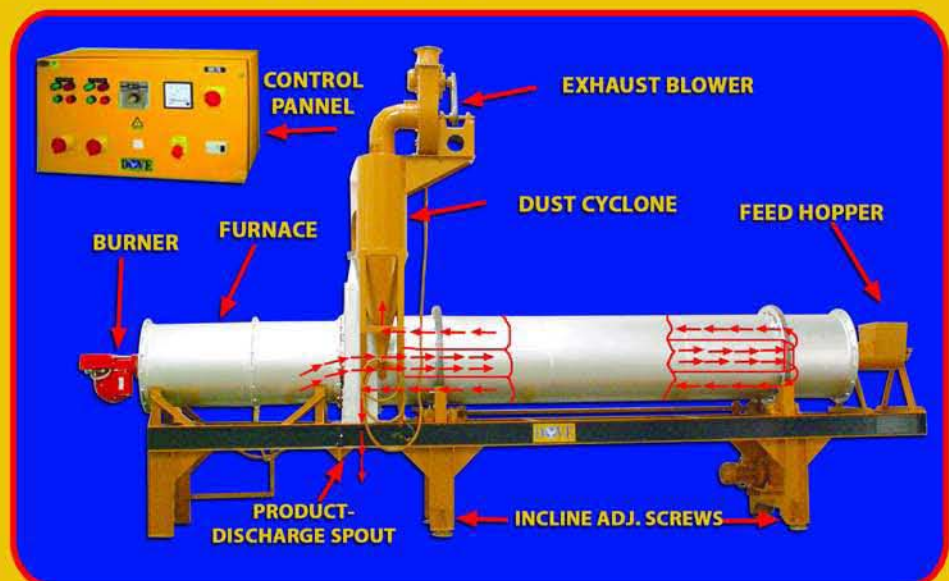
PRINCIPLE OF OPERATION

DOVE Rotary Dryers utilize the semi - direct - heat transfer principle, which allows indirect heating by radiant means and direct heating by hot gases. The concentric steel shells are designed, in order to allow the hot gases from the combustion chamber travel the full length of the inner shell and return between the two shells, as indicated by the arrows. This dual - flow principle, prevents any direct flame contact with the feed material.

In operation, feed enters at the displacement feeder of the outer shell, which is lifted by the flights specifically constructed on the outer shell, showered through the stream of hot gases onto the radiant ribbed outer surface of the inner shell, which hold for a while in contact with this hot surface, and then showered through the stream of hot gases onto the radiant ribbed outer surface of the inner shell, which hold for a while in contact with this hot surface, and then showered again through the gas stream onto the outer shell.

This cycle is repeated many times during the passage and through every revolution of the shell. Dry materials are discharged at furnace end through the discharge spout, while saturated gas is exhausted immediately from the evaporating zone.

This unique design utilizes heat supply more completely and efficiently than other single shell dryers, both on basis of the enclosure of the shell, which decreases radiation losses, as well as the longest time that the hot gases are in contact with material surface to be dried. Thus, DOVE Rotary Dryers have the lowest fuel costs and highest possible thermal efficiency in comparison to other direct or indirect dryers and in addition can also be used to dry material that should not be subjected to the high temperature, so prevailing in direct heat single shell machine.



DESIGN FEATURES

The Dual – Flow Rotary Dryer consists mainly of a rotary drying shell, combustion chamber, exhaust chamber and frame structure.

A DRYING SHELL

Consists of concentric high grade steel tubes, with the outer shell being lined with flights specifically constructed to pour the feed over the radiant inner shell, while presenting a curtain to the hot gases. The drum is revolved on one – piece steel wheel, which rides on hardened steel rollers, supported on heavy – duty roller bearings. The trunnion rollers are driven by chain and sprocket drive through a geared-motor, which is mounted on integral steel base. Gear and pinion drive is furnished for 48" (1219 mm) diameter shell dryer.

B COMBUSTION CHAMBER

Is heavy gauge rolled high grade steel plate lined with high temperature reinforced refractory. It is equipped with adjustable secondary air inlets and a removable access cover. The combustion chamber is removable from the frame, in order to facilitate refractory maintenance.

C FRAME STRUCTURE

The heavy duty structural steel frame is rigidly cross braced and welded, in order to form a sturdy, one piece frame. The frame is provided with adjustable feet, for varying slope.

D STANDARD FITTINGS

The dryers are furnished complete with oil burner, primary air blower, automatic temperature control, indicating pyrometer, positive displacement feeder, and control panel, which operates from an AC electrical supply. Pushbutton motor starters are configured for the main drive, exhaust blower, and oil burner.

E DURABLE LIGHT WEIGHT CONSTRUCTION

Compact design and double-shell drum construction, insures strength and rigidity. The efficiency of heat transfer in the dryer permits the use of a drum one-half to two-thirds the length of conventional drums, permitting a shorter retention period, and often assuring a 50 percent saving in valuable floor space. This shorter drum construction also reduces overall expansion and contraction.

F EXHAUST CHAMBER

Is incorporated with the dust collecting cyclone and an exhaust blower. The Horse Power varies with different model.

G ECONOMICAL OPERATION

Maximum heat transfer for every cubic feet of drying, minimum heat losses, control of gas temperature, air exhaust and conditions of material travel, permits exact amount of hot gases to be used, which in turn saves the cost of hot gas in excessive amounts.

H LOW MAINTENANCE COSTS

The Dryer revolves at a slower speed than other dryers, and hence allows the feed material to agitate more gently and the rotating components are subject to less fraction, less wear, which results in savings in maintenance costs. Every component parts from drive to discharge, is built for long trouble-free operation, and continuous service duty.

I EFFICIENT HEAT TRANSFER

Material is continuously exposed to the maximum drying effect of the hot gases, throughout the full length of the drum. Material passes through the drum in a gentle agitated mass. Each particle is exposed to the same contact with the hot gases, and each particle is carried forward at the same rate of travel.

The concentric firetube design, allows hot gases travels twice through the shell, thus reduce heat losses and allows longer time for the hot gases to be in contact with the material surface to be heated. Heated air that has been rendered less active, by having given up a part of its thermal energy, through contact with moisture and material, is exhausted immediately, before it can drop in temperature, to the point where some of the vapor would condense.

J LONG SERVICE LIFE

The dryer is built for continuous service duty. There are no moving parts within the shell, nothing to get out of order, and practically no wear from the abrasive action of material. Every detail of design, both structurally and mechanically, conforms strictly with finest engineering practice. From drive to discharge, the dryer is built for long and trouble-free operation.

CAPACITY & THROUGHPUT EFFICIENCY

The Ore throughput capacity can Fluctuate based upon Grain Size, Specific Gravity of Feed, And Porosity of the Material. Generally Coarse Material Dry Faster than fine, sized Material Dry Faster than unsized and non-porous Material Dry Faster than porous material.

THROUGHPUT EFFICIENCY					
MINERALS	Moisture %		Feed Size	fuel	Capacity
	Original	Final	mesh	gal/hr.	Tons/hr.
Heavy mineral sands e.g. those containing cassiterite, ilmenite	8	0.8	-30	6	4
	12	1.0	-30	6	3
Silica Sands	8	0.5	-60	8	1.6
Phosphate Rocks	10	1.0	-40	8	2
Kaolin Clay	15	1.0	-100	8	1.3

* STATISTICS BASED ON MODEL RMD-3000

TECHNICAL SPECIFICATIONS

COMPONENT		UNIT	MODEL					
			RMD-1000	RMD-2000	RMD-3000	RMD-4000	RMD-5000	RMD-10000
THROUGH PUT CAPACITY		Kg/HOUR	1,000	2,000	3,000	4,000	5,000	10,000
		LB/HOUR	2,204	4,409	6,613	8,818	11,023	22,046
DRYING-SHELL (INSIDE DIMENSIONS)	DIAMETER	mm	508	760	910	910	1,219	1,520
	LENGTH	mm	3,048	4,267	5,486	7,600	6,097	9,100
FURNACE (OUTSIDE DIMENSIONS)	DIAMETER	mm	508	760	910	910	1,219	1,219
	LENGTH	mm	1,676	1,828	1,828	1,828	1,828	1,828
TOTAL DRYER DIMENSIONS	LENGTH	mm	5,715	7,162	8,229	10,607	10,134	13,956
	WIDTH	mm	1,092	1,346	1,576	1,576	2,082	2,596
	HEIGHT	mm	3,581	3,962	4,572	5,422	5,181	7,134
MOTOR POWER	MOTOR DRIVE	HP	2.0	2.0	4.0	5.5	10.0	20.0
	DRAFT-PAN	HP	2.0	2.0	3.0	5.5	5.5	10.0
	BURNER	HP	1/4	1/4	1/2	1/2	1/2	1
APPROXIMATE WEIGHT	LESS FURNACE	Kg	1,680	2,500	3,250	3,550	4,600	6,100
	FURNACE ONLY	Kg	800	1,100	1,100	1,100	3,500	1,100

* THE CAPACITY IS RATED ON MINERAL SANDS AT 10% INPUT MOISTURE.

* THE MOTOR WILL BE FURNISHED TO OPERATE ON 415 VOLTS, 3 PHASE, 50 HZ AC.

* TECHNICAL SPECIFICATION SUBJECT TO CHANGE WITHOUT NOTICE FOR IMPROVEMENT.



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MANUFACTURER

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