

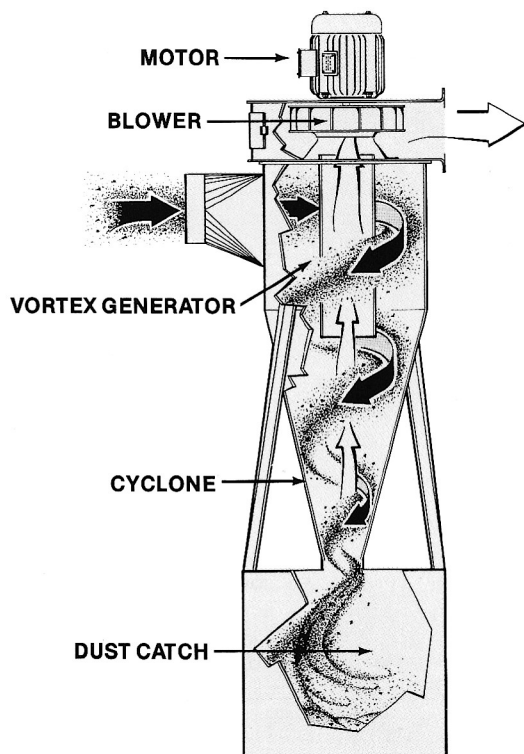
DUSTVENT CYCLONE DUST COLLECTORS

A CONTROLLED TORNADO

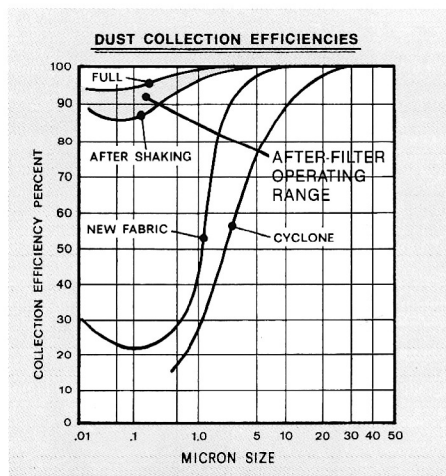
The DUSTVENT Integral Cyclone Collector is the finest made. By carefully and skillfully combining the best available technology from three engineering disciplines, DUSTVENT's engineers have integrated the Cyclone, the Blower, and the After-Filter into a product without peer.

Using skilled people, the best machinery, and careful manufacturing controls, DUSTVENT has manufactured thousands of these collectors in its modern suburban Chicago factory. They have been successfully applied to a wide variety of dust collecting applications. Proven over the years, they operate reliably with virtually no maintenance and have contributed to the significant growth and market acceptance of DUSTVENT and its products.

You will not find a more reliable, more powerful, more efficient or quieter Cyclone Collector than a DUSTVENT.



1. COLLECTOR CROSS SECTION



2. EFFICIENCY

OPERATION

In operation, the "dirty" air stream enters the cyclone inlet and the vortex generator immediately puts it into a forced vortex flow. This vortex is intensified and accelerated by the unique geometry of the cylindrical body and the long tapered cone. The dust, being heavier, is flung outward and concentrated by the tornadic forces until, at the bottom of the cone, it is thrown into the quiescent dust catch—quite literally a *controlled tornado* at work!

APPLICATION

DUSTVENT Cyclone Collectors are uniquely adapted to and recommended for many in-plant dust collecting problems. Typical applications are:

- 1) for handling large amounts of COARSE DUST; Wood Shops, Buffing and Polishing Operations, Paper Converters, Snagging, Re-tread Shops, etc.
- 2) where FIRES are possible; The fire is usually in the Cyclone dust catch. This is trash and represents little, if any, economic loss. Heavy sparking applications such as Abrasive Cut-Off Saws, Belt Sanders on ferrous metals and Rubber Grinding, etc. are some applications.
- 3) for CLASSIFYING DUSTS; Many applications in food processing, finishing, chemical processes, etc. require that coarse and fine dusts be separated. These Cyclones are ideal for this.

CYCLONE

All DUSTVENT Cyclones feature:

- 1) a long taper high-efficiency cone with an 8:5 height:diameter ratio,
- 2) carefully proportioned full diameter inlet and lead-in sections, and
- 3) an internal vortex generator which, unlike flow disturbing internal baffles, operates over wide flow ranges and contributes to the efficiencies shown in Figure #2.

Heavy gauge continuously welded steel is the material generally used. Smaller units feature the exclusive DUSTVENT "TRIPOD" support. Larger sizes use a "QUADPOD" or FOUR LEG support.

7 SIZES, 18 MODELS, TO 16,000 CFM

Offered in 7 Sizes and 18 basic Models, these Collectors can economically solve your dust problem. Five Dust Catch options, Indoor or Outdoor construction, special metals and many optional features are available. (See Page 10.)

EFFICIENCY—99.9% GUARANTEED

When exhausting outdoors, the unsurpassed efficiency of the DUSTVENT Cyclone meets many codes directly. When used indoors or when recirculating, the Collector should always be combined with a Custom After-Filter. DUSTVENT then guarantees an overall efficiency of 99.9% with any dust naturally occurring. These units exceed OSHA, EPA and State regulations, existing or contemplated, and these optimum results are always there because geometrical identity is maintained for all cyclone sizes.

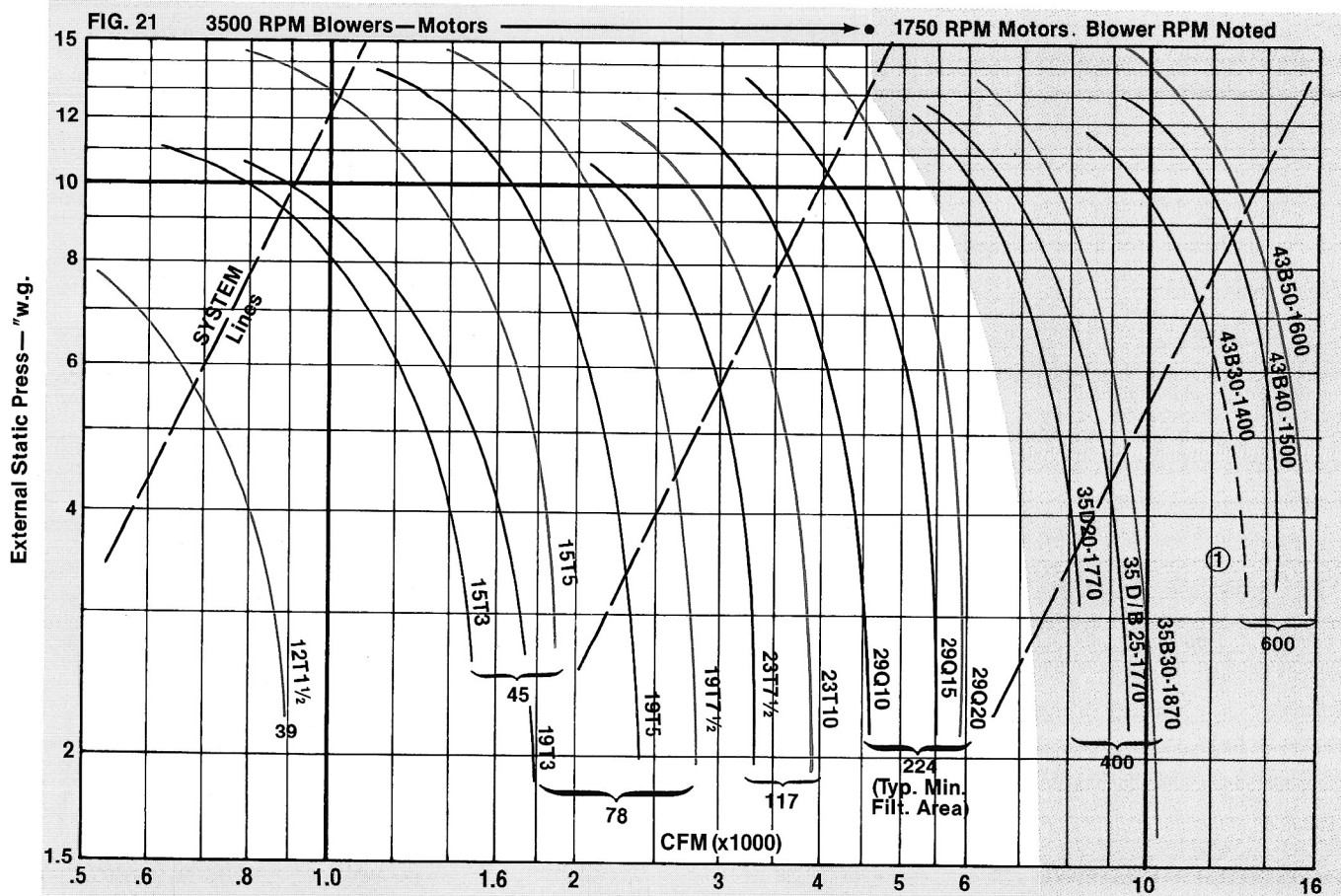
Once an initial dust cake has developed, operation of the After-Filter will be in the area between "Full" (shaking required) and "After Shaking". The "New Fabric" curve occurs only once, when the filters are brand new.

A complete discussion of Collection Efficiency, Dust Sizing, OSHA Threshold Limit Values, etc. is given in DUSTVENT Engineering Bulletin #EDS-29, "System Design". Copies available on request.

PERFORMANCES

CYCLONES: Most in-plant source capture dust collecting systems require certain air flows (CFM) which depend on the size and type of source(s) and adequate capture and conveying velocities. These CFM's and velocities along with the distances involved, etc. then establish the System Resistance (SP) for the piping system which connects the source(s) to the collector. DUSTVENT Engineering Bulletin EDS-29 "SYSTEM DESIGN", available on request, is of great help in determining CFM and calculating SP.

The smallest collector which equals or exceeds the required CFM-SP "rating" is usually the one to use. The largest Model in a given size group is the best buy. It is often the optimum selection, particularly because it may have some excess capacity which will handle future additional dust sources. Your DUSTVENT salesman is experienced in these matters and is eager to assist you.



MODEL DESIGNATIONS

The DUSTVENT Model Number defines the Cyclone Body Diameter (inches) and Motor Horsepower (See Page 7, I.D. Code). For each Cyclone group *minimum* filter area available is shown and can be used with Figure 22 below.

"BEST BUYS"; are shown in color and are much preferred.

USING THE CURVES: For any system of rigid piping, the calculated (or measured) rating, CFM vs. SP, can be extrapolated by constructing a straight line through it which is parallel to any of the "System Lines" shown. The intersection of this line and any Collector Curve would be the operating point. Performances are based on evasés to ducts with minimum areas equal to the noise absorbers on Page 10.

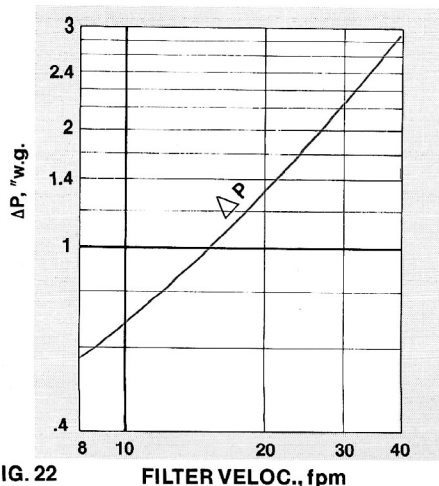


FIG. 22

AFTER FILTERS

After-Filters do affect air flow. Competitors statements that "they make no difference" or "no measurable difference" are, at best, misleading. To compensate for an After-Filter merely calculate the

$$\text{Filter velocity, fpm} = \frac{\text{CFM}}{\text{Filter Area, sq. ft.}}$$

and from Figure 22 add the ΔP to the System Resistance. Then, using this sum as the External Static Pressure, pick the proper collector.

Competitive data equal to DUSTVENT's is quite rare and comparisons are difficult. But we have never seen any data except on units *without* After-Filters, and it is almost axiomatic that filter efficiency and pressure drop go together. So be wary of claims of high efficiency with "no pressure drop", especially if the competitors unit lacks the steep pressure characteristic guaranteed by DUSTVENT on Page 3.

NOISE ABSORBERS

As explained earlier, noise control starts with the blower and no other Cyclone Collector is quieter than a DUSTVENT. But, since some unique applications require optimum noise control, DUSTVENT offers two types of noise absorbers;

ATTENUATOR—Available for all sizes, with or without an After-Filter. Acoustically engineered sound traps give optimum results and reductions of 12 to 18 db(A). Placed downstream of the blower, they can always be retrofitted but require that the air exit point, or the After-Filter, be moved "A" inches as shown below.

LINED PLENUM—Available with Plenum or Free-Standing style After-Filters. A special sound absorbing lining is installed inside the upper plenum, and gives very effective control of higher frequency noises with reductions of 6 to 9 db(A). Requires no extra space, but must be ordered initially.

The chart below gives extremely conservative recommendations supported by years of experience with these Collectors on all kinds of applications. Your DUSTVENT salesman has specific noise data for all models and noise treatments.

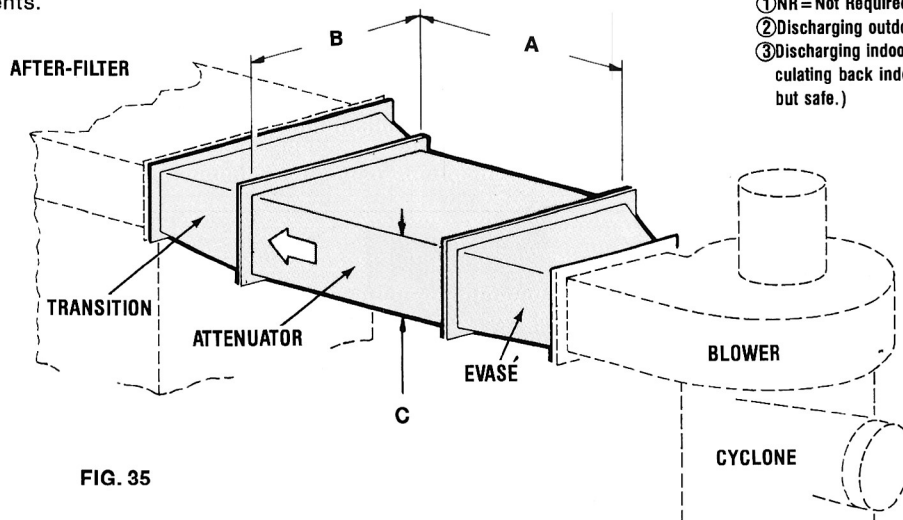



FIG. 35

CONSERVATIVE NOISE RECOMMENDATIONS—DIMENSIONS

Cyclone Collector Model	Recommended Treatment①			Attenuator			
	Collector Only②	Coll. & A.F.③		Dimensions, inches			Weight lbs.
		IN	OUT	A	B	C	
12T1½	NR	NR		36	12	6	26
15T3	NR	NR		36	18	6	39
15T5	NR	NR		36	18	12	51
19T3	NR	NR	NR	36	18	6	39
19T5	NR	LP	NR	36	18	12	51
19T7½	NR	LP	NR	36	18	12	51
23T7½	NR	LP	NR	60	18	12	86
23T10	A	LP	NR	60	18	12	86
29Q10	A	LP	NR	60	18	12	86
29Q15	A	A	NR	60	24	12	102
29Q20	A	A	LP	60	36	12	148
35 (All)	A	A	LP	60	36	12	148
43 (All)	A	A	LP	84	36	18	272

① NR = Not Required, LP = Lined Plenum, A = Attenuator

② Discharging outdoors with neighbors nearby.

③ Discharging indoors or outdoors, as noted. (If an outdoor After-Filter is recirculating back indoors, use "indoor" recommendation which is conservative but safe.)

HOPPER CAPACITY DUSTVENT COMPETITION

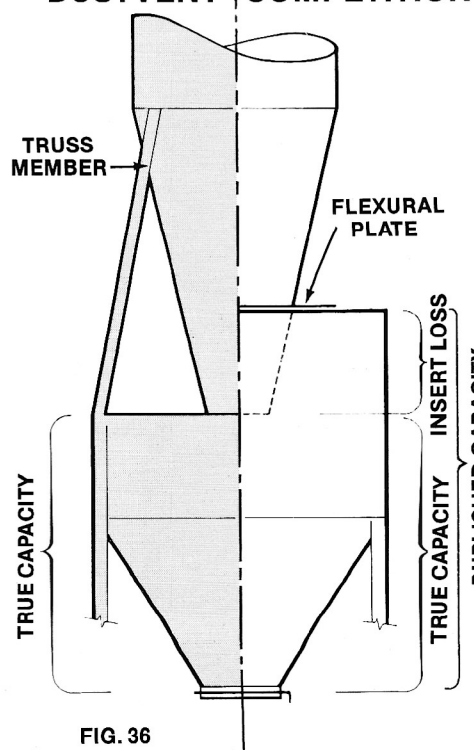


FIG. 36

Rather than the truss style support used by DUSTVENT (see Page 3), some competitors use a cheaper (and weaker) flexural plate support and insert the cyclone part way into the hopper. They publish only the total hopper capacity, hiding the insert loss. Since the dust cannot rise higher than the cyclone dust outlet, a significant distortion of the True Capacity results, as Figure 36 shows. And the comparison to DUSTVENT's "smaller" hopper is quite dramatic.

TRUE CAPACITY OF "EQUAL" HOPPERS—CU. FT.				
DUSTVENT Published True Capac.	COMPETITOR			True
	Published	Insert Loss	True	
37	54	24.5	29.5	
71	103	50	53	

SHIPPING WEIGHTS

Approximate maximum shipping weights are shown below, with additions for significant options. These are accurate enough for estimating foundations, freight, etc. Units are assembled all practical. Some field assembly may be required, particularly on larger components. Exact bill of lading weights may differ.

SHIPPING WEIGHTS; APPROXIMATE MAXIMUMS, POUNDS.

SIZE	Cyc. & Blower W/Std. Catch	ADD FOR:					
		Dust Catch		After filter		Noise Absorbers	
		Cab	Hop	Indoor	Outdoor	LINED PLENUM	ATTEN.
12T	210	NA	100	8	NA	NA	26
15T	350	NA	100	12	NA	NA	51
19T	560	150	105	110	400	18	51
23T	810	210	145	220	620	30	86
29Q	1440	340	210	260	650	40	148
35D	2000	NA	STD	760	1380	38	148
35B	2300	NA	STD	760	1380	38	148
43B	3800	NA	STD	1120	1860	56	272

NA = Not Available

FIG. 37

Some INDOOR APPLICATIONS; recirculating cleaned air.

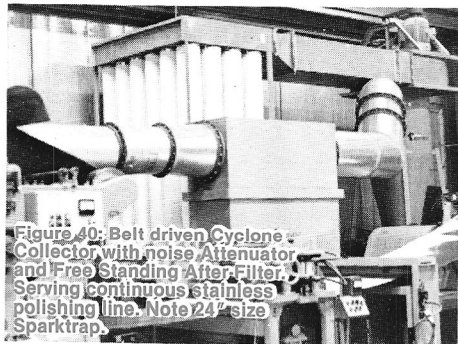


Figure 40: Belt driven Cyclone Collector with noise Attenuator and Free Standing After-Filter. Serving continuous stainless polishing line. Note 24" size Sparktrap.

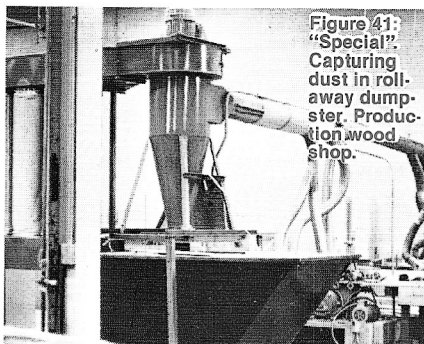


Figure 41: "Special" Capturing dust in roll-away dumpster. Production wood shop.

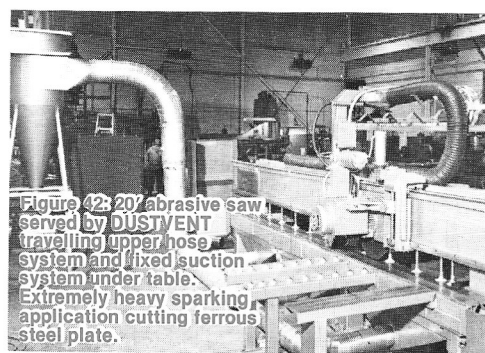


Figure 42: 20' abrasive saw served by DUSTVENT travelling upper hose system and fixed suction system under table. Extremely heavy sparking application cutting ferrous steel plate.

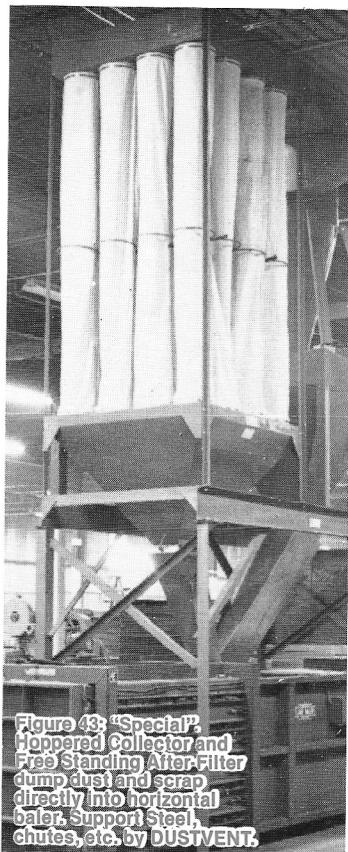


Figure 43: "Special" Hoppered Collector and Free Standing After-Filter dump dust and scrap directly into horizontal baler. Support Steel, chutes, etc. by DUSTVENT.



Figure 44: Wide belt sander—ferrous parts.

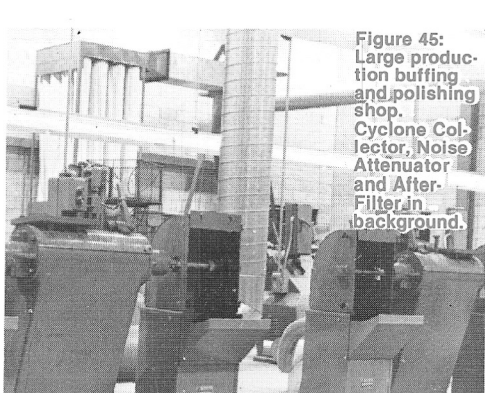


Figure 45: Large production buffing and polishing shop. Cyclone Collector, Noise Attenuator and After-Filter in background.

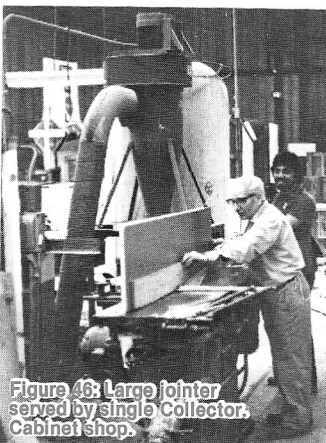


Figure 46: Large jointer served by single Collector. Cabinet shop.

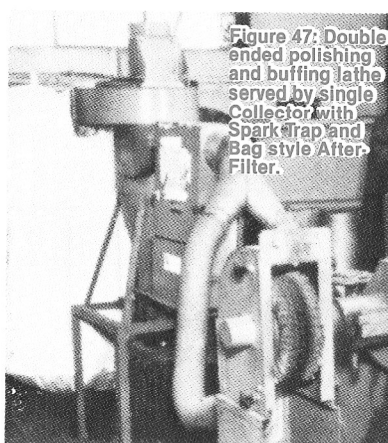


Figure 47: Double ended polishing and buffing lathe served by single Collector with Spark Trap and Bag style After-Filter.

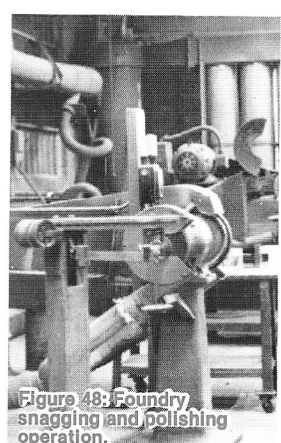


Figure 48: Foundry snagging and polishing operation.

Some OUTDOOR APPLICATIONS; with and without recirculation.



Figure 50: "Special" Deck Mount discharges into large hopper over dumpster. Air recirculates thru After-Filter (not shown). Wood shop.

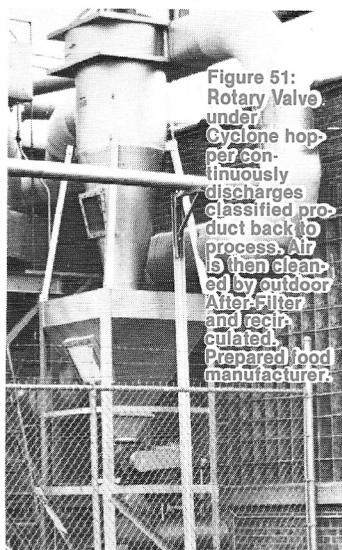


Figure 51: Rotary Valve under Cyclone hopper continuously discharges classified product back to process. Air is then cleaned by outdoor After-Filter and recirculated. Prepared food manufacturer.



Figure 52: Buffing and polishing shop. Note Hoppers under both Cyclone and After-Filter.

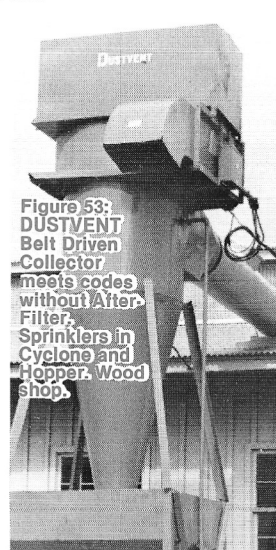


Figure 53: DUSTVENT Belt Driven Collector meets codes without After-Filter. Sprinklers in Cyclone and Hopper. Wood shop.