



Air Handling Systems Newsletter

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Ductwork Direct
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Ductwork Doc Back to School



Dust Collector Misapplications in High School Woodworking Shops

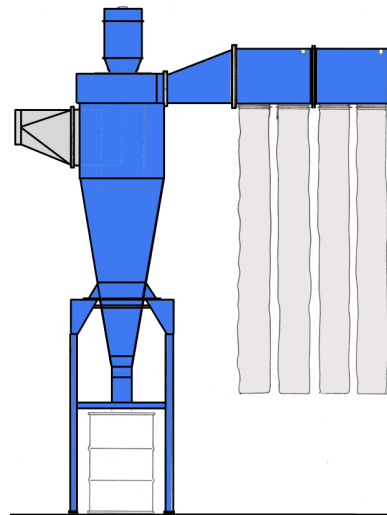
I had the pleasure of meeting a few high school wood shop teachers at the AWFS Las Vegas Show luncheon. To my dismay, **not one had a functioning dust collection system** for the shop. It is not that the funds were not available and spent, the wrong dust collector was purchased. Per NFPA 664, Chapter 4, General Requirements 4.5, Designer and Installer Qualifications. "Systems that handle combustible wood particulates shall be designed by and installed under the supervision of qualified engineers who are knowledgeable of these systems and their associated hazards." It is highly apparent, this was not the case.



For safety, longevity, and functional purposes, a pull through cyclone separator with after filter is the proper equipment. Some of the dust collectors were cartridge type as well as envelope style cabinet collectors, neither of which is proper for a typical wood shop. The after filter bags that come with a cyclone package will last for several years. The cartridge filters must be replaced on a regular basis. Cost per cartridge filter can range from \$275.00 - \$375.00 each. Even a small unit can have at least 6

TECH SUPPORT Two-Stage Duct Collectors

Since most woodworking dust contains coarse-sized and fine-sized particles, a two-stage dust collection system is generally recommended. A two-stage dust collector consists of a first stage cyclone, a blower, and a second stage after filter.



A cyclone separator is a cone shaped vessel into which the dust-laden air enters. The dust particles' inertia causes them to move toward the separator's outer wall. As the dust particles proceed towards the outer wall the coarse-sized particles lose momentum. When velocity drops on the coarse-sized particles, gravity causes them to settle into the container below. The remaining fine dust exits through a central outlet at the top and into the blower. The blower then relays the fine dust to the after filter.

cartridge filters, others as many as 12. Cartridge dust collectors and cabinet collectors are designed for fine particulate. The pull through cyclone separates up to 98% by weight of wood dust, chips, and shavings. The purchase price for a pull through cyclone arrangement with after filter is much less than the misapplied equipment, never mind the replacement cartridge filter cost.

Bag filter material offered today is substantially improved. There are 10 oz and 16 oz polyester felts with singe to avoid cling (1-5 micron range filtration), fabrics that control electrostatic build up, special surface treatments that improve performance, fabrics that extinguish sparks, and so on. The filter bag longevity with today's fabrics can be at least 5 years or more.



My recommendations are as follows. When going out for bid on the system, request in conjunction with the proposal, a blue print with engineer's seal that shows pipe sizing and equipment specifications. Then, prior to signing off on the purchase, request at least three recent references, make site visits, and interview the shop teacher. It is unfortunate that dust collectors are being sold by individuals with little or no knowledge of the equipment they are selling. The same situation is occurring in the woodworking industry as well. These catastrophes have to stop. We must remember, the proper three are the key, dust collector, hooding, and piping.

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The longer the cyclone body and cone, the better the dust separation.

One major reason for using separator is so blower unit will only convey fine dust. Coarse wood dust particles and other debris hitting the blower impeller most likely will result in blower unbalance. This condition will ruin the blower very quickly. Also, a separator is used so that the after filter does not receive 100% of the dust-laden air.

Click here for more technical information and white pages on dust collection.

Got Dust? Need Hose?

Air Handling Systems stocks 15 different types of flexible hoses from 2"-12" in diameter.

Click here to see our online selection. If you don't see the hose you need, let us know and we can tap our extensive network to find the correct hose for your application.



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