

- 440 Practical Discussion of Dust Units Employed in Ventilation. F.F. Kravath. Saf Practice Bull. No. 63, Penna. Dept. of Labor and Industry, May, 1941.

This article reviews general types of filters, their capabilities and failings and their comparative worth as shown by the experience record of installations in the abrasive industry. Among those types discussed are the gravitational filter or settling tank, the cyclone, cloth filters, electrical precipitation air washers. The gravitational filter is recommended only as a preliminary cleaning device. Its velocities should be kept from 100 to 250 fpm. This type of installation is practically wear and maintenance free, since the dust comes in contact with practically none of the filter parts while it still has any velocity. The cyclone unlike the gravitational filter increases in efficiency with the decrease in size of, at least, the diameter. Because of its high efficiencies, it is probably the most widely used collector. These installations find their greatest application where the dust or collected material is non-abrasive in action. Cloth filters are used primarily where high efficiencies are necessary for the reclamation of valuable material, where recirculation is desired as a means of reducing heating losses, or in residential districts where it is unlawful to discharge visible solids into the atmosphere. The original cost is higher than for the cyclone but its efficiency is unquestioned, its life extremely long, and maintenance fairly simple. Electrical precipitation offers perhaps the most efficient type of separation but its initial cost is high. Therefore, its application will probably be restricted to the reclamation of valuable or extremely dangerous materials. Efficiencies of air washers are somewhat lower than cloth filters, but occasionally lack of proper application and maintenance of the latter tend to make the former the more practical unit. Its cost averages about one-third that of the cloth filter design.

- 441 A Comparison of the Weight, Particle Count and Discoloration Methods of Testing Air Filters. F.B. Rowley and R.C. Jordan. Heating, Piping, Air Cond., 13, 246-85 (April, 1941).

The relative merits of three filter test methods based on weight, particle count and discoloration are analyzed and the results of numerous tests are correlated with the theory of filtering air. In the tests by the counting method, the authors employed both an adhesive impingement type of dust counter and settling chambers. Relatively low dust concentrations were necessarily used in tests with these instruments. There is considerable evidence that arrestances based on particle count are the best measures of the degree to which dangerous dust is eliminated, but are not necessarily measures of degree of removal of nuisance dust. Moreover in its present state of perfection, this method requires too long a time to make a statistically reliable determination. The weight method has the advantage of high accuracy, and readily allows determinations of filter life, dust holding capacity as well as arrestance. However, the role of the larger dust particles is exaggerated and the method gives little information on arrestances due to smaller particles. Both the transmitted and reflected light discoloration methods have a reasonably good accuracy (3%), and the reflection method is probably the best for measuring reduction of soiling power. In the reflection method the blank is fairly constant, while it varies considerably in the transmission method. Both methods measure the reduction and discoloration only in relation to the test dust being used, and the arrestances vary greatly for the same filters with different dusts. The photo-electric cell method, which is the best measure of the reduction in discoloration, while the crucible method is the best measure of the reduction of the larger visible dust particles. The question of which is the best indicator of removal of nuisance dust is left

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