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Advantages Of Air Dust Collection System

Igamberdiev Anvarjon Uktamovich
Andijan State Technical Institute
(PhD). Igamberdiev@mail.ru
+998 90 253 23 59

Abstract
The article presents the results of the operation of a dust collection system for production facilities and an air dust collection system in industrial complexes during the production of gases and atomized or other substances.
Keywords: Dust collection system, air flow, dust filter, container, mechanisms, blower, cleaning devices, cyclone dust collection systems, dust collection device.

Introduction. Every industry has different contaminants and harmful particles that need to be removed. Dust collectors must meet the needs of each industry to ensure optimal air purification. As clean air standards become more stringent, manufacturers of dust collection systems have developed air cleaners that meet and exceed the requirements. The dust collection system cleans by passing through a series of air-tight filters. After the air is cleaned, it is vented or recirculated. Dust collection systems include air intake ducts, an air cleaner, and a dust collection container. These basic elements are configured differently for each type of system. Simply put, a dust collection system is designed to remove airborne particles generated during operation. Dust collectors must meet the specific extraction needs required by each industry to ensure optimal air purification [1,2].

Cyclone dust collection systems are a form of separator that uses centrifugal force to separate particles. The cyclone is created in a self-built chamber, where the air is cleaned by the action of the cyclone. During operation, the circulating air stream pushes heavier pollutants to the walls of the chamber. After airborne dust is collected, it collects in a collection container on the sides of the chamber. They are used by lumber shops, paper mills, and grain mills.

Methodology. The most common form of dust collection system is a bag. This is the most efficient system and uses a vacuum to pull contaminants through a bag filter. The Shaker method shakes the filter to remove accumulated dust, while the pulse jet version uses a blast of air when the sensor detects that the filter is full. The reverse air method passes fresh air through a filter. The dust on the outside of the bags is brought down to the collection hoppers by compressed air or movement. They work continuously to collect particles of all sizes. The design of the system allows easy access for maintenance [3,4,5].

Results. The main parts of a dust collection system include a blower, a dust filter, a cleaning system, a container, a channel and a particle collection device. Common types of dust collection equipment include fabric filter bags, inertial separators—sometimes called mechanical cyclones, wet scrubbers, and electrostatic precipitators. The types of pollutants emitted vary by industry. Dust collector manufacturers design equipment to meet the needs of every environmental condition. Their task should be to control, reduce and reduce pollutants, harmful substances, gas vapors and dust and meet the needs of the industry in which they are used. They are designed to clean and filter air before it can be released into the environment or workplace. Every industry

has different contaminants and harmful particles that need to be removed. After the particles have passed through the system and are removed from the filter, it will fall into a collection tank. Essentially, the blower draws air from the location to a filter that removes particles from the air. The air to fabric ratio is the amount of air that passes through a square meter of the filter. The lower this ratio, the higher the efficiency of the filtration system. The blower or dust collector is an important element of the dust collection system, as it is the mechanism that draws the polluted air from the workplace into the duct and sends it to the filtration and cleaning systems [6,7].

Discussions. With the increasing number of regulations and standards for air pollutants, dust collection systems are becoming a necessity, but they were once considered an afterthought. Besides the various regulations, there are practical reasons for installing a dust collection system. The first consideration is to protect the health of workers who are forced to work in gas-filled and dust-saturated environments. There are some factors to consider when deciding to install a dust collection system. Although less expensive systems may be attractive for financial reasons, the most important factor is the air quality in the workplace and the area around the facility [8].

One of the main areas of concern for the Centers for Disease Control is workplace safety for workers. As for dust and pollutants, they have special requirements for the permissible percentage of particles in the air. Violation of these standards may result in facility closure, requiring the installation of an acceptable dust collection system.

One of the major areas of concern for the Occupational Safety and Health Administration, the National Institute for Occupational Safety and Health, and the Centers for Disease Control is workplace safety for workers. As for dust and pollutants, they have special requirements regarding the allowable percentage of particles per cubic foot of air. Violation of these standards may result in the closure of the facility, which requires the installation of an acceptable dust collection system.

Dust collector PP-750/U is designed to remove abrasive dust and chips from the cutting zone of machines. It ensures compliance with labor protection standards, and also makes it convenient for the worker. As a standard, it is provided with connection elements for grinding machines (corrugations, adapters) shown in Fig.1.

It has a reusable dust bag that needs to be shaken from time to time during use. It has a power of 0.75 kW and is equipped with an electric vacuum cleaner. In addition, the advantages include compact size, so you don't need such a dust collector. PP-750/U, already installed without rearrangement, is designed for intensive operation [9].

Figure 1. Dust collection device PP-750/U.

Conclusion. Due to the increasing concern for the environment, dust collection systems have become necessary for industries that produce large amounts of dust particles and ambient gases. includes hazardous materials removal equipment. Every industry has a variety of pollutants and harmful particles that need to be removed. With increasing concern for the environment, dust collection systems are becoming essential to many industrial and manufacturing operations.

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