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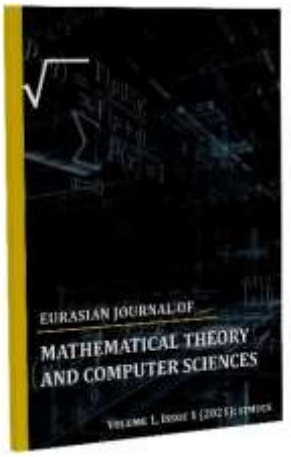

ANALYSIS OF TOXIC GAS CLEANING EQUIPMENT

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ABSTRACT

Nowadays, with the development of machinery and technology, the demand and supply of production is growing. As a result, the quality and volume of products are in line with modern requirements. Until the raw material becomes a finished product, the secondary waste dust and gases emitted from them are released into the atmosphere as emissions. This, in turn, is causing environmental damage.

Here's a few basic facts about a stomp pad and how it is used. In conclusion, our research will determine how and in what design the toxic gases should be carried out. Based on the above information, it is important to choose the optimal design.

Therefore, it is advisable to study the design of wet dust collectors.

Rotational and centrifugal dust collectors

Centrifugal scrubbers can be divided into two types according to their design:

1) devices for turning the gas flow using a central shovel turning element

2) devices in which the gas flow is transmitted tangentially by the side.

In this case, the liquid is transferred to the central part of the device through a nozzle, which also forms a liquid film that flows along the inner wall of the device.

These devices are used to trap any type of dust particles that do not solidify. To form a film of water along the surface of the inner wall, it is introduced into the device in a tangential state through a series of pipes at the top. (1)

Bubble and foam dust collectors

In such devices, the contact between the gas and the liquid occurs on the horizontal plates. When the velocity of the gas is small (around 1 m / s), bubbles form as the gas passes through the liquid layer, a process known as bubbling. If the velocity of the gas is high, a turbulent foam layer is formed. For this reason, plate scrubbers are divided into two types: foam and bubble.

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Figure 1 shows two types of foam dishwashers: a) overturned plate; b) pouring plate. Rotary plate scrubbers use perforated and slotted grills. The diameter of the holes is 4 - 8 mm, the width of the holes is 4 - 5 mm.

The free part of the plate (the proportion of holes relative to the total cross section) is 0.2 - 0.5 m 2 / m2. Casting plate devices use capped, S-shaped, perforated plates with collectors and other types of plates (3).

In this type of device, the number of perforated plates can be several, which increases the degree of cleaning (up to 99%). The hydraulic resistance of one plate is about 600 Pa. Plate scrubbers, which are devices that stabilize the foam layer, are widely used in industry. The stabilizer significantly expands the speed range of the foam mode (up to 4 m / s) and increases the height of the foam layer. The gas efficiency of such a device is standardized and can vary from 3 to 90 thousand m3 / h. The optimal velocity of the gas in the plates is 2.5 - 4.5 m / s, the specific flow rate of the liquid is 0.05 - 0.1 l / m3. Foam devices are effective in the chemical and metal processing industries, especially in the production of mineral fertilizers for the purification of gases from fluorine, sulfur, phosphorus dust 2).

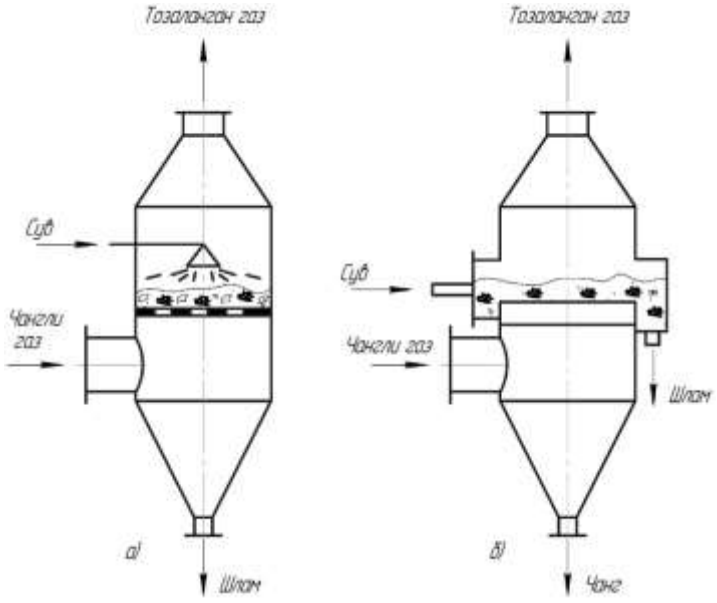

Figure 1 Foam gas washer
a) overturned plate; b) pouring plate.

Conclusion. As a result of studying the design of wet dust collection devices, the principle of operation of the devices is based on the use of phenomena that occur by increasing the contact surfaces in the direction of liquid flows to the dust gas flow (liquid and dust gas - parallel, liquid and dust gas - opposite). It is possible to trap even very small particles while trapping toxic and dusty gases emitted into the environment, and a very high level of purification can be achieved.

Offer. Our research focuses on fluoride, sulfur, and phosphorus dust in the chemical industry, especially in the production of mineral fertilizers. Therefore, the dust collector we have to choose must fully meet these requirements. Therefore, the use of simple, inexpensive, low-energy mechanical injectors and plates for the use of wet dust collectors for the capture of toxic gases released in the production of mineral fertilizers is very effective.

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