Flooding – flooding is a significant area in the destruction of hydraulic structures – dams, as well as the rise of the water level in rivers and lakes. Extent of flooding predicted by the intensity loss precipitation of snow, ice thickness, the intensity of their melting.

According to established practice flood is divided into three stages:

– disaster forecasting and organization of work to reduce harm, including notification management and population unit dams to limit the extent of flooding, the preparation of forces and means to fight ;

– implementation of measures to save the people, values, and strengthen the capacity of dams and embankments , survival evacuees;

– recovery housing ; facilities management, commissioning and operation, agricultural rehabilitation, works on flood (deepening riverbeds, dikes, embankments, etc.)

Upon receipt of notice of the flood should have already completed the protection of the population and in the ES (prepare documents, money, place the property, products, food in attics prepare for evacuation and cattle-like). At the announcement of the evacuation, need to come to the assembly point, register and wait for further instructions. A placement in evacuation must comply with the administration of the tent camp or settlement.

After the evacuation should first examine the general condition of buildings, if necessary, work to strengthen them and begin to flood relief .When approaching wave of release should take a hill or upper floors of buildings. Fire – uncontrolled combustion process entailing the destruction of wealth, people. The Republic is most often forest, peat fires and less wild. They occur as the fault of the person, and as a result of spontaneous combustion from the sun or a lightning strike. Statistics show that 80 % of fires occur because of the person, and only about 20% of the fault of nature.

If the hot weather there is no rain 15 – 18 days, the forest becomes a fire hazard. Spontaneous combustion of peat is very rare – in 5 cases out of 100. Most are flammable dead wood, pine young, cutting cluttered, less dangerous and mixed deciduous forests.

Forest fires are:

– Grassroots (lit litter, the propagation velocity of 0.3 to 1.0 m / min to 1 km / h);

– riding (burning crown, the speed of 8 – 25 km / h);

– Stable fires when all lit tree, the speed of 5 – 8km / h;

– Underground (burning peat layer extends at a speed (0.1 – 0.5 m / min);

– runaway fires when burning dry grass (usually in the spring);

– steppe (field) fires occur in the open countryside in the presence of mature breads, dry grass.

The main way to fight forest fires are entanglement, backfill soil, fill with water, creating a barrage band, start a fire at the oncoming wind direction changes by 180 °. With the threat of falling into a forest fire lane must go to the fields, the barrage band, ditches, water bodies. In dry weather, forest protection at the request of visiting forests prohibited.

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## ENERGY CONSUMPTION REDUCING IN THE ASPIRATION SYSTEMS AT THE WOODWORKING ENTERPRICES

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*The article deals with traditional and modernized aspiration systems at woodworking enterprises. It presents some activities for aspiration systems technology improvement, which help to reduce energy consumption. It researches a volume vertical packaged collector application in the aspiration system; it* *introduces graphical dependences of aerodynamic parameters and waste catching degrees during the modern aspiration system working. It contains the analysis of the results and recommends methods, which improve functioning of aspiration systems.*

The woodworking enterprises produce a good deal of waste: wood chips, saw dust and dust. Wood wastes are removed from the room by bush aspiration systems, which contain waste and air receivers, duct pipelines, cyclones and ventilators.

The bush aspiration systems don't only serve for the moving of materials, they are also used as local retractable ventilation systems. It is a specific characteristic of bush aspiration systems. The pressure decreases in the system due to duct pipeline wall friction of transported materials and transported air, material particles surface friction of the air, that have less speed, and also friction of material particles. Shaped parts of the duct pipeline and the used equipment have increased resistance. There are energy expenses for overcoming of material weight [1].

In view of the features of aspiration systems, we can offer to improve technology of these systems significantly decreasing the length of material transportation and energy consumption. That is why we offer to install volume vertical packaged collector [2] in the middle of the machines location, where large particles of the transported material precipitated. Cyclone is installed after the packaged collector. It clears only medium and small dispersion dust (Fig. 1).

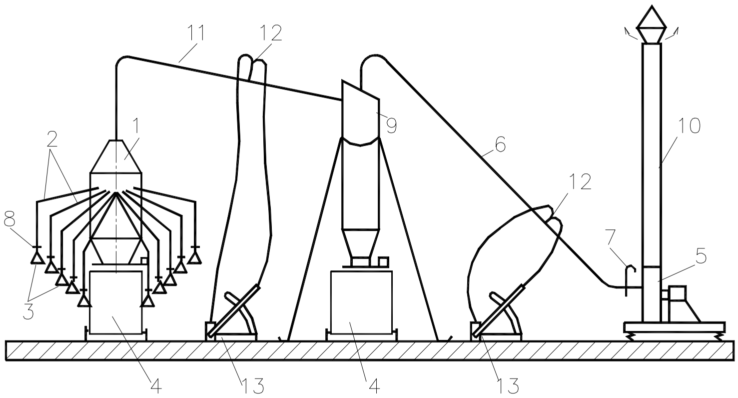


Fig. 1. Scheme of modernized bush aspiration system: 1 – vertical packaged collector; 2 – duct pipelines; 3 – dust receptacle casing; 4 – truck; 5 – ventilator; 6 – packaged duct pipeline; 7 – damper; 8 – ventilation valve; 9 – cyclone; 10 – exhaust pipe; 11 – packeged duct pipeline; 12 – pneumatic tubes; 13 – micromanometer

Bush aspiration systems are widely used at the enterprises. Every such system unites more than ten woodworking aggregates. In the middle of the aggregates location and their suctions *3*, we offer to set up the vertical packaged collector *1* [2], which is appended in the top part of duct pipelines *2* from waste receivers. The waste receivers are connected with machines. The main function of packaged collector is to drop out the basic weight of wood waste particles from the air flow. Such an accumulation takes place due to fast decrease of the air speed at the collector, which has bigger diameter (8-10 times) than the pipeline diameter of the waste receivers.

Wastes accumulate in the vertical collector under their own influence of weigh. Fallen wastes don't transpose and don't have cyclone purification *9*. It is the reason of the 15-20 % reduction of energy consumption. The cyclone *9* and the ventilator *5* are situated at some distance (mostly outside) from the collector. Waste removal from the collector is produced by the air outlet to body truck 4 or to conveyer.

Air quantity, which is drawn out by ventilator *5* on the packaged duct pipeline *6* according to the number of synchronous working machines, is controlled by ventilation valves *8*. These valves are mounted in pipelines *2* directly near suction *3* of each machine. All the currently inactive machines disconnect automatically of the aspiration's net, thanks to ventilator valves, which are electrically connected with machines. As a result, the ventilator *5* draws out less air and, therefore, consumes less power, through net throttling. However transporting speed is reduced in the packaged duct pipeline 6, when the small quantities of machines are synchronous working. It makes the purification efficiency of dust worse in the cyclone *9*. That's why it is necessary to provide the installation of the speed reactor *9* at the air inlet in the cyclone. Speed reactor will maintain the air speed at the allowable level and it doesn't matter how much machines are synchronously functioning [3]. Wood dust, which was catching by cyclone, is periodically unloaded from the bunker in the truck *4* or to the conveyer.

The air speed on the net part can be less than transporting speed or more than terminal velocity, because only dust is transported in the duct pipeline and the mass concentration of aeromixture is negligible.

Transporting speeds and terminal velocities of wood dust can be determined from the formula [2]:

$$\upsilon_{mp} = c\cdot\left(4\cdot\mu\cdot\frac{\upsilon_{\text{в}}}{\upsilon_{\text{м}}}+0,01\cdot\rho_{\text{м}}+b\right)\cdot\sqrt{\frac{1,2}{\rho_{\text{в}}}} = 1,1\cdot\left(4\cdot 0,02\cdot 1,1+0,01\cdot 500+7\right)\cdot\sqrt{\frac{1,2}{1,2}} = 13,2 \text{ m/sec}$$

where $c$=1, 1-the coefficient, which considers the speed decrease in the local consumptions; $\rho_{\text{м}}$- the density of the material, kg/m$^3$; $\rho_{\text{в}}$- the density of the air, kg/m$^3$; μ- the concentration of material, kg/kg;$\upsilon_{\text{в}}$- the air speed, m/sec; $\upsilon_{\text{м}}$-the material speed, m/sec;$b$-the experienced coefficient, which depends on the kind of the transporting material (for dust $b$=7).

$$\upsilon_s = 0,14\cdot\sqrt{\frac{\rho_{\text{м}}}{\left(0,02+\frac{a}{h}\right)\cdot\rho_{\text{в}}}} = 0,14\cdot\sqrt{\frac{500}{\left(0,02+\frac{0,9}{3}\right)\cdot 1,2}} \approx 5 \text{ m/sec}$$

where $a$=0,9- the coefficient, which depends on the shape of particle; $h$- particle thickness, mm.

According [4] the values of the dust transporting speeds belong to the interval:

$$m\cdot\upsilon_s < \upsilon_{mp} < n\cdot\upsilon_s$$

where $m\cdot\upsilon_s$ – the minimum value of the diphasic flow speed according to the kind of the transporting material, m/sec; $n\cdot\upsilon_s$ – the maximum value of the diphasic flow speed according to the economic conditions of the aspirationsystems operation, m/sec.

The minimum value of the dust transporting speed is 9...10, 5 m/sec for the experimentally received meanings $m$ = 1, 8, $n$ = 2, 1. Satisfactory air speed by dust outlet will be about 6 m/sec in the duct pipeline. This air speed is scarce for the cyclone work, so it is necessary to install a speed reactor in the cyclone inlet.

Experiments were conducted with changing air consumption from 120 to 180 m$^3$/h. The aeromixture concentration was accepted within 0, 1…0, 5 kg/m$^3$. Results of the experiments are presented in the form of graphs (fig. 3, 4).

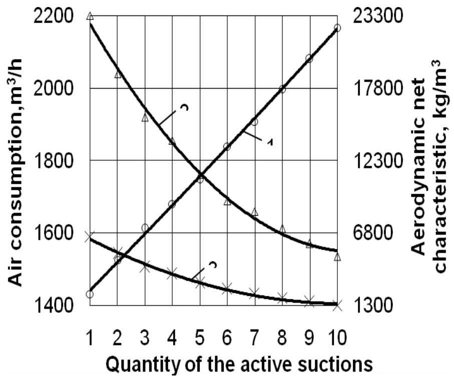


Fig. 2. Aerodynamic parameters of the aspiration system:
1 – air consumption; 2 – aerodynamic characteristic of the aspiration system;
3 – aerodynamic characteristic of the packaged collector net

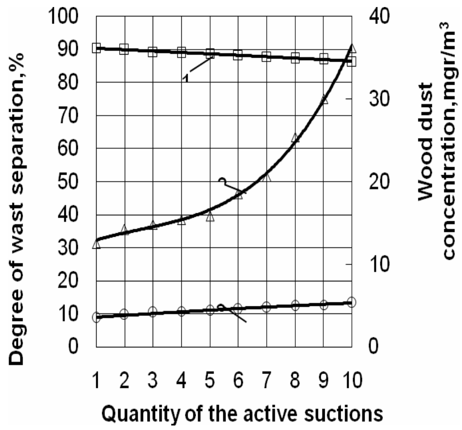


Fig. 3. The degree of waste separation with the improved aspiration system:
1 – waste quantity, which was separated in the packaged collector; 2 – dust concentration in the air ejections;
3 – waste quantity, which was separated by cyclone

Based on the graphic dependences in Figure 3, 4, we can make the following conclusions:

– aerodynamic characteristic and, therefore, the consumption of the packaged duct collector net with 10 modes constitute insignificant part of all installation consumption;

– disconnection of temporary inactive machines from the aspiration net significantly reduces energy consumption for material transportation, although net consumption is increasing due to decrease of the air consumption. If you accept the coefficient of the synchronous working machines as 0, 6, that power consumption of energy consumption will reduce on 21, 2% in the experiment;

– the main wood waste mass (86-90%) falls in the vertical collector, thus it isn't necessary to transport it by expensive pneumatic methods, which need large energy consumption. There is a tendency to some insignificant decreasing of the accumulated waste mass with the increasing of synchronous working suctions. It can be explain by the difference between modes of the waste entrance in the collector shell. It is necessary to connect air channel of the suction to the collector shell, which is leaned angle 40-50º;

– the additional economy of energy consumption is about 40%, what is achieved by the main mass of large wood waste transfer induct pipelines on the short distance from machines to the packaged collector. It helps to reduce pressure loss;

– only 8-13% of small factions of all waste mass gets in the cyclone, besides, the load slightly increases in the cyclone with the increase of the synchronous working machines quantity.

Although, the purification degree stays on the constantly high level (93-97%), it can be explain by the presence of speed reactor and small mass of the fine-dispersed dust ejected in the atmosphere.

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## IMPROVING OF FIXING SYSTEM OF CUTTING PLATES IN BLOCK-MODULAR CUTTING TOOLS

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*The paper present research system of fixing cutting plates and blocks in block-modular cutting tools*

Reliability teams cutting tools to a large extent determined by the reliability of fixing plates in the housing. There are many designs of clamping mechanisms, taking into account the working conditions of the cutting tools and features for their manufacture. These systems reflect the current trends in the design of cutting tools: high precision of manufacturing of cutting plates, the closed grooves and precisely manufactured to accommodate the cutting plates, the cutting plates clamping mechanisms with a minimum number of structural elements, such as a screw or a lever. The implementation of such systems in terms of domestic production tool is not always possible, as it requires special equipment and precise, high-quality components elements. Therefore urgent to establish a system fixing cutting plates technological conditions for domestic production and not inferior to the best foreign systems reliability.

The system of fixing cutting plates, including the following key elements (fig. 1): the cutting plate (pos. 1) is set to open width direction groove cutting block (pos. 2). Fixing module of (pos. 3) is configured as a "T-shaped" strap, "the horizontal shelf" which is introduced into one part of the cutting plate hole and is pressed against the front surface of the cutting plate, while the other part is brought into contact with the bevel of the cutting block. The "horizontal shelf" of "T-shaped" strap is installed by planting in open longitudinal groove the cutting block. "Vertical shelf" of strap is designed as a screw threaded into "horizontal shelf" of strap and