

ABOUT VIBRATION NOISE PROBLEMS IN MACHINERY AND MACHINES USED IN COTTON GINNING FACTORIES (CCP)

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Abstract. *This article covers the problems of vibration noise in machinery and machines used in cotton ginning plants.*

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In the conditions of today's market economy, the problems that need to be solved have become so serious that now it is the need of the hour not only to solve them, but also to find a new direction for further development and to raise it to a higher level. That is why our country, along with other advanced developed countries, is paying serious attention to the issues of further development of technology and widening of the cotton industry, as well as any industry that serves to further increase human material well-being.

It is known that by the end of 2023, it is planned to obtain 3-3.5 million tons of cotton and high-quality fiber per year in our country. Therefore, in recent years, the processes of progress in terms of quantity and quality in the system of the cotton processing industry are clearly felt. This means that the qualifications and skills of the workers working in the cotton ginning industry have increased significantly, the production processes have been further improved, and the latest and most effective advances in science and technology are continuously being used effectively.

In order to obtain high-quality products (in line with world standards) from cotton ginning industries, the creation of new varieties of expensive fine and medium-fiber cotton, and obtaining fertile and high-quality seed cotton from them remains a demand of the times. After this demand is met, in the performance of important tasks such as reprocessing various cultivated cotton varieties and producing high-quality fibers for the textile industry, technological machines in existing cotton processing plants: organization of an acceptable and appropriate technological process, further increase of work output and capacity, existing machine mechanisms modernization or reconstruction, replacement of outdated equipment with new ones with high performance, reduction of excessive noise and vibration, ensuring the cleanliness of the atmosphere in workshops (departments) in accordance with sanitary and hygienic standards it will be necessary to solve problematic issues. Therefore, it can be said that such important and urgent issues as increasing the productivity of technological machines and the quality of manufactured products in the cotton industry, as well as improving the working conditions of the workers working in the departments of the enterprise, are directly connected with the issues of accelerating the development of science and mechanics.

Thus, at present, based on the President's decisions, what has been done and the achievements achieved in the cotton industry system of the Republic are being determined, the existing shortcomings and their causes are being studied, and clear guidelines for solving the tasks facing the cotton industry are being determined. Major changes in this regard include the construction of new cotton ginning plants (if necessary), the reconstruction of existing plants, the design and production of high-performance machines, flow lines, complexes and aggregates, and the provision of workers of various categories used in the main departments of the plant for the republic's cotton industry. urgent problems such as improving normal conditions to meet sanitary and hygienic standards must be solved.

Nevertheless, the issue of training necessary workers for the cotton industry is still a problem. Therefore, it is necessary to pay special attention to the training of qualified workers in new professions related to the development of science and technology based on the current conditions. So far, the scale of training of qualified workers does not fully meet the growing requirements of the structure and quality of the national economy.

Deficiencies are noticed in the training of skilled (skilled) workers for the use of electronic computing machines, robot mechanics, and automated production technology.

The increase in the number of technological machines and the frequency of rotation of their working bodies (sources of sound and vibration) remains the main factor in the increase of mechanical noise and vibrations in cotton ginning industrial enterprises. Depending on the level (amount) of noise and vibration, it is necessary to understand the sum of vibration noises of different frequencies and strengths that have a negative effect on the body of the operators who manage them. But some natural vibronoises can also be pleasant, that is, natural noises (waves hitting the shore, leaves rustling, rain pattering, the voice of a good singer, the sound of a pleasant musical instrument, etc.) have a positive effect on the human body, they calm the person, to induce sleep, and in a word, to give pleasure to a person, or in the roller cotton industry, progress-return to XDG brand roller fiber separators (it is known from long ago that the beating organ with vibration movement has been used for several hundred years, etc.

In short, any sound is a physical phenomenon that occurs through the wave-like vibration of solid, liquid, and gaseous bodies, and our hearing organs perceive them as sound.

However, the auditory organs do not perceive all vibrations as physiological sensations. The human ear hears sound signals with a frequency of 16 to 20,000 Hz. Vibrations with a frequency below 16 gs are called infrasound, and vibrations with a frequency above 20,000 gs are called ultrasound and cannot be heard by the human ear.

As a person ages, the reception of high frequencies decreases, or decreases. Old and elderly people cannot hear sounds above 13,000 Hz, while children can hear sounds up to 20,000 Hz.

According to the source and frequency of sound vibrations, the generated noises are divided into 3 groups: low-frequency sound 16-400 gs, medium-frequency sound 400-800 gs, high-frequency sound 800 gs and above.

In practice, when measuring noise, the sound pressure level is adopted and is measured in decibels (DB).

If the amount of noise and vibration is high compared to the standards of sanitation and hygiene, they are very dangerous for the body of people (operators). Any noise and vibration that occurs is affected by various sensory organs and can be analyzed.

Especially in high-noise areas, where 2-3 years are average, when working for 5-10 years, the human ear gradually becomes heavy.

Therefore, in order to create normal conditions for the operators who control the machines and constructions in the main section (workshop) of the cotton ginning factories, it is necessary to keep the noise and vibration levels of the relevant machines in accordance with the sanitary and hygienic norms and to constantly control it. If it is greater than the standard (SN1104-73) limit, then it is necessary to reduce them in the relevant machines and constructions, or it should be recommended to produce them taking into account vibroacoustic issues in newly produced technological machines and constructions. However, it should be noted that it is a very difficult problem to reduce the vibroacoustic parameters of all working bodies of technological machines and constructions with noise and vibrations above the norm. Therefore, it is recommended to identify the main work bodies that are a source of noise and vibration to the relevant machines and constructions, and then take necessary measures to immediately reduce these harmful factors.

The list of work bodies that are the main source of such noise and vibration in the main technological machines used in the existing cotton industry (Surkhondarya region) is presented in Table 1.

Table 1

Working bodies that are a source of noise and vibration in technological machines in the main shops of roller and saw CCPs.	
Names of work bodies that are a source of noise and vibration	What brand of car is the composition of working bodies
Saw cylinder	Saw fiber separators (ZXDDM, ZXDD, DP-130) at
Pile drum	In the PD fuse
Mowing roller and stake drum	DV-1M fiber optic splitter in small
Saw cylinder	PMP- 160 M in linters
Smoothing drum	KPP linter supplier-cleaner- in the senses
Saw and brush drums	OX-3 in cotton cleaner
Saw cylinders	3 in OVP fiber cleaner
Drums with saws and piles	4X-3 M1 in a cotton cleaner
Screw drums	6A- 12M in cotton cleaner
Pile-valve drums	OXB-10 in cotton cleaner
Vacuum valve drum	In the SS- 15A separator
Various and intensive drums	In the KV- 3M condenser
Condensing rollers	In the KVVA condenser
Vacuum valve drum	KV- 0.3 in the condenser
Various drums	In the KPV- 8 condenser
Dryer drum	2 on the SBS drum
transmissions	
Pile drums	SCh in the separator-cleaner
Saw drums	OX-2 in the cotton cleaner

Pile drums Rotors Knife drums	OVO in fiber cleaner VTs- 8M, VTs-10M, VTs-12M, In UVTs- 22M and other centrifugal fans ON- 6-3 in fiber cleaner
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It is recommended to carry out measurement of noise and vibration parameters (magnitudes) of all available technological machines to cotton ginning factories of the two types listed above in this table (with saws and rollers) based on the following methodology:

A set of GDR instruments and analysis equipment was used for measurement (see Figure 1);



Figure 1. Overview of the set of tools and equipment produced in the GDR.

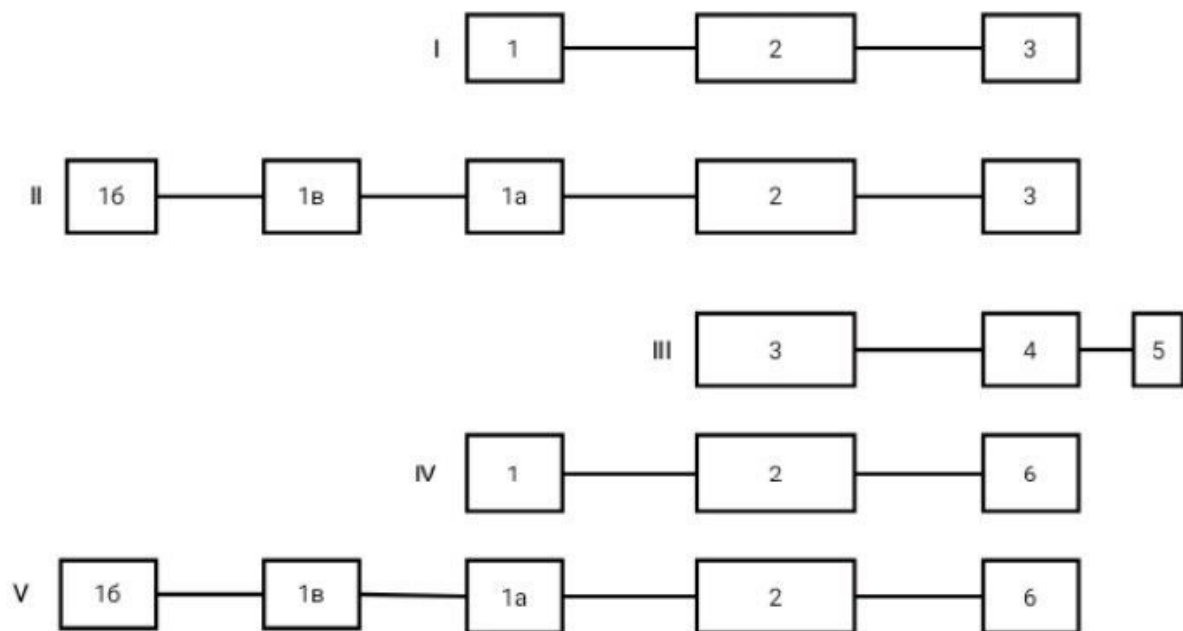


Figure 2. Block diagrams of equipment used to check noise and sound vibrations in technological machines in cotton ginning factories.

Conventional characters in the quoted block scene are:

- 1-MK-102 microphone with MV-101 amplifier;
- 2 - 202 type high-precision pulse noise meter (noise meter);
- 3. A tape recorder or sound recording device.
- 1a microphone with MV-101 brand amplifier;

- 1b KD-22 type piezoelectrode sensor for vibration;
- 1v- ZE – 322 type sound adapter for solid bodies.
- 4- 01012 type real scale spectrum analyzer for time.
- 5- camera.
- 6- OF-201 octave felts were used.

The block diagrams were used as follows (Fig. 2).

- I - for recording noise on a tape recorder through a block circuit;
- II - for recording the vibration on a tape recorder through the block circuit;
- III – spectral analysis of noise and vibration in the third octave in laboratory conditions through a block scheme;

Through the IV-block scheme, it may be possible to carry out measurements such as noise analysis by octaves directly in the departments of cotton factories;

Through the V-block scheme, it is possible to perform measurement work, such as the analysis of vibrations by octaves, directly in the departments of cotton factories.

Thus, by experimentally determining the amount of noise and vibration in existing technological machines in cotton ginning factories, the following urgent issues are solved:

1. It is recommended to implement the necessary tools and measurement methodology and the corresponding block diagrams in carrying out measurement work to determine (install) and analyze the amount of noise and vibration of technological machines in various industrial enterprises (Figure 2).

2. By determining the noise and vibration levels of technological machines and bringing them to hygienic standards, increasing the productivity of the relevant enterprises, improving the quality of the produced products, increasing the duration and speed of operation of the relevant machine-structures, cleaning the main departments of the factory (drying, cotton material, gluing, linting of seed, fiber pressing, etc.), we will have the opportunity to achieve a positive solution to some of the most important issues of the day, such as minimizing the exposure to professional and non-professional diseases of workers and plumbers (repairmen).

It should be noted that in solving these problems, it is necessary to take into account the specifications of the relevant industrial enterprises.

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