



THE IMPORTANCE OF COTTON CLEANING MACHINES IN PRODUCTION

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Abstract

This article will focus on such issues as the role of the cleaning machine in the production process before cotton processing, the approximate economic efficiency obtained from the introduction of this machine into production, and the structure of the machine structure, technical mechanical properties under consideration for its introduction. From the results of the theoretical and practical study, general conclusions are drawn on the new equipment.

Keywords: Drum, conveyor, funnel, cotton, machine, dirt, pile, mesh surface, tangle, tape, punching force.

In the process of processing raw materials from hemp cotton, it will be necessary to clean it from impurities (crushed, leaf and flower residue, branches). Impurities are divided into two views (type). Impurities larger than 8 mm are classified as large, and those smaller than 8 mm are classified as small. The quality and quantity of impurities in cottonseed raw materials are determined by their quantitative and qualitative indicators. Quantitative indicators determine the total amount of impurities in the raw material (in units and percentage volume), while qualitative indicators characterize the size of the impurities and their combination with fibers in cotton fibers. Dirt is present on the surface and inside the cotton fibers, and the raw material particles are bonded to varying degrees. Accordingly, fine impurities are deeply embedded in the raw material, and their separation from



the particles requires rather complex methods, mainly using mechanical shock forces.

Large impurities are mainly located on the surface of the raw material particles, and since their adhesion to the fiber is quite loose, separating them from the fiber does not pose a major problem. Before we get acquainted with the equipment and devices for cleaning cottonseed waste from cottonseed waste, we will get acquainted with the essence of the content of the waste fiber attachment and its cleaning efficiency. In addition, we will consider the main control developments and computational processes in the selection of technological parameters of cleaners. Currently, the process of cleaning cotton raw materials from waste is based on the principle of shock and scraping cotton fibers from the surface. The main motility of the cleaner consists in reducing the coupling force between the waste particle and the fiber under the influence of dynamic force (shock, vibration, shaking and x,k) on it, moving the particle relative in the raw material and expelling it from the mass of the raw material.

Such processes play different roles in moving the waste. Impact force is the most basic method and is considered the main part of the cleaning process. In addition to the positive aspects, it is also important to consider the negative effects of impact force. For example, if the impact force is too high, the effects of fiber and pollen damage, or large impurities in the composition can turn into small impurities. Therefore, it is recommended to apply shock force in moderation. Another way to move dirt particles intensively will be to make the particles of their raw material vibrate (shake) dressing, thus ensuring that the strength of the attachment between the dirt particles and the fiber is slowly reduced by the time interval of the solution. This method has been adopted in the theory of shaking (vibration) as reducing the force of friction, with an addressable effect on the particles of impurity.

The quality indicators of cotton raw materials are deteriorating not only due to impurities, but also due to mechanical processes that affect it. R.V.Karabelnikov theoretically studied the effect of the rotation speed of cotton ginning machine drums on seed damage during ginning. By composing and solving the equation of motion of the object being hit, he was able to determine the amount of force that could completely damage the pollen. According to the results of this work,



the authors found that the speed of the cotton-cleaning drum is 3.5 m seq, the damage to the pollen is 0.2%, 1.0% at 6.9 m seq, and 2.8% at 10 m seq. It has been found that net damage to the pollen is produced when the rate of the drum is greater than 55 m of C. The impurities contained in cotton were divided into active and passive, depending on the condition. An example of an asset is large-scale impurities. They are located on the surface of the cotton and are weakly tied. The effect of cleaning machinery working organs on Tangled cotton in turn depends on a number of reasons: the working performance of the cleaning machine depends on the speed of rotation of the working parts, technological intervals between the working parts, their construction, nechanchi career cleaning of tangled cotton, etc.

Machines used to clean tangled cotton from small impurities are installed in the drying-cleaning Circuit of the enterprise, the cleaning circuit and the feeder of each gin.

The development of scientifically based methods in order to avoid existing attitudes remains relevant. Because the preservation of the initial quality indicators of the manufactured product depends on the amount of moisture and dirt in the cotton. The high moisture content of cotton causes its initial quality indicators to deteriorate during storage. Studies have concluded that cleaning cotton before spinning can improve the quality of the resulting products. For this purpose, it is proposed to improve the design of the KLP-650 brand mobile belt conveyor.

The KLP-650 transporter (Figure 1 gives an overview of the KLP-650 ribbon conveyor), operates in a complex of reception, transmission devices of PLA, XPP and other types in preparation facilities outside enterprises.

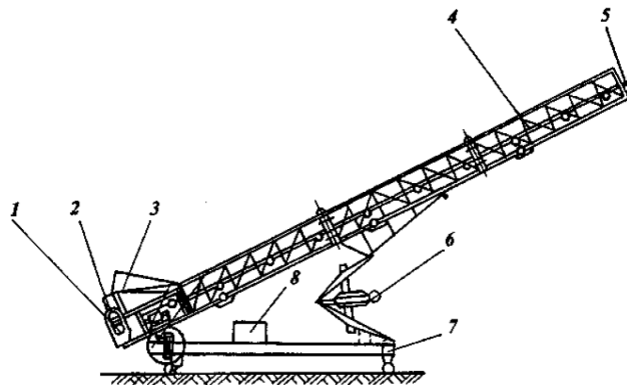


Figure 1. Schematic diagram of a KLP-650 belt conveyor.



1-propulsion Drum; 2-conveyor frame; 3-funnel; 4-ribbon; 5 - rotating drum; 6-hoist; 7-carriage; 8-control cabinet. Technical specifications of the belt conveyor model KLP-650

The theoretical studies carried out show that it is proposed to develop a mesh surface cleaner construction with the possibility of cleaning the passive small impurities contained in cotton on a sloping vibrating mesh surface, while maintaining its natural properties, in view of the effectiveness of cleaning it in the process of stacking for cotton raw materials.

When cotton is fed into the cotton processing process, if the amount of impurities in the cotton is less than 0.5 percent, the cotton is not passed through cleaning machines. Since most of the cotton grown today is hand-picked, the amount of impurities in it is around 2.0%, with the main part of the impurities being small impurities. How many times cotton is passed through pile drums to completely separate it from small impurities in cotton cleaning enterprises. In this case, the pile drum acts on the cotton in the form of a mechanical blow, moving it along the mesh surface. As a result, small impurities in cotton separate from the mesh surface holes and fall into the Shnek. Studies have shown that the more intense mechanical forces applied to cotton, the more damage to the fibers and the more uncleanable defects in the fiber.

Many scientists have conducted theoretical and practical research to improve fiber quality and increase the efficiency of cotton ginning machines. With an in-depth analysis of this research work, it was studied in a theoretical way that by vibrating the mesh surface, it is possible to clean the small impurities contained in cotton even more efficiently, according to the results obtained, when cleaning cotton from small impurities, each pile drum damages the pollen by around 0.05%. If we consider that one cleaner has 8 pile drums, then the damage in this case is 0.4% in eight drums. This, in turn, causes defects in the fiber content of about 0.2%. These 0.2% defects sometimes cause the quality of the fiber to drop from a higher grade to a good one or from a good one to a medium one, which reduces the price of the fiber sold by 30-40 thousand soums per ton. This can provide significant (750-800 million soums) economic losses for an enterprise producing 20-25 thousand tons of cotton fibers per year.



Conclusions

1. The flow line installed in the technological processes of cotton gins allows for effective cleaning of impurities in the raw material.
2. The large number of pile drums installed in the flow line leads to excessive mechanical stress on the cotton piece. This causes damage to the seeds and various defects in the fiber.
3. It was proposed to install a drum with a sieve and a mesh surface on the KLP 650 belt conveyor used for bailing cotton in order to separate impurities from it.
4. Theoretical studies were conducted to eliminate the shortcomings of the cleaning process, and the results of practical studies on the cleaning of cottonseed from small and large impurities and the issues related to it were studied.

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