ROLE OF SEPARATOR IN INDIAN COTTON GINNING INDUSTRY, ADVANTAGES AND DISADVANTAGES

Mirgulshanov Komoliddin Amonjon ogli
Namangan institute of textile industry
mka.phd2022@gmail.com

Abstract

In the article, the changes in quality indicators, the influence of equipment parameters, the factors affecting the efficiency of cotton transportation in pneumatic transport and their optimization as a result of exposure of cotton raw materials to the working parts of pneumatic transport equipment at the cotton ginning enterprise were studied. Advantages and disadvantages of existing cotton separators in India and Uzbekistan were presented.

Key words: Separator, pneumotransport, vacuum valve, grid surface, strainer.

India is one of the most developing countries in the world today. Industry and agriculture are mainly owned by the state. The textile industry in India has become the second largest source of employment in the country. It also deals with a wide range of cotton ginning machines in the ginning industry worldwide. To improve the quality of cotton products and reduce their cost, at all stages of the production of cotton products, as well as during the processes of drying cotton, cleaning it from small and large impurities, separating cotton fiber from seed (Fig. 1), and moistening cotton raw material and fiber, it has a negative effect on product quality. automated, resource-saving technologies were created to identify and eliminate the contributing factors, reduce product production costs [1].

In industrial enterprises, as well as in cotton and textile enterprises, the transportation of materials using pneumatic vehicles is widely established. Pneumatic transport transports materials through pipes using air flow. Improving the quality of cotton fiber and seed and reducing impurities in seed cotton is directly related to the good use of gins and gins and the quality of fiber and seed obtained.

A lot of research has been done on the improvement of cotton separator devices. The cotton separator of the Indian company Bajaj, during the transportation of cotton, the cotton separated from the air in the working chamber of the separator falls under its own weight into the vacuum valve [2]. As a result of its rotation, the cotton falls down under the influence of its own weight, and air is sucked into the working chamber of the separator from the outside (Fig. 2).

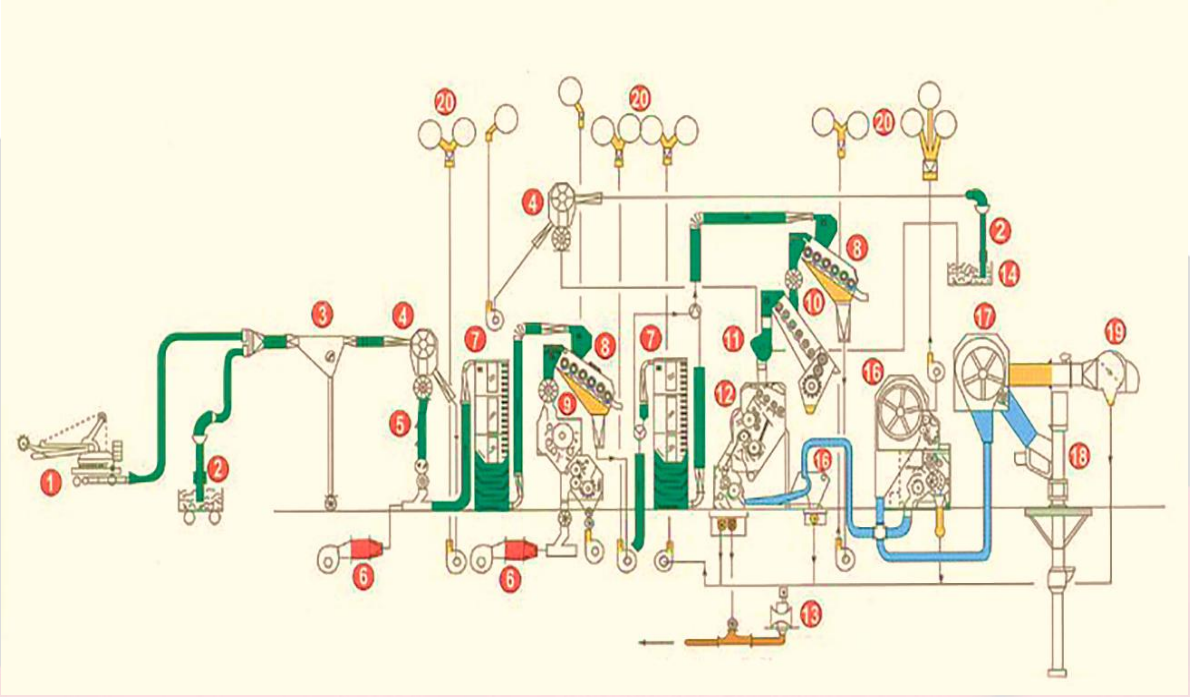

Figure 1. Indian cotton ginning company technological process scheme

1- picking cotton; 2-; 3-stone holder; 4-separator; 5-automatic control; 6-hot air generator; 7-tower dryer; 8- hot air purifier; 9-a small decontamination machine; 10-large decontamination machine; 11-supply pipe;
12-saw gin machine; 13-input carrier; 14-bunker; 15-flow cleaner;
16-fiber cleaning machine; 17-condenser; 18-press; 19-filter; 20-cyclone.

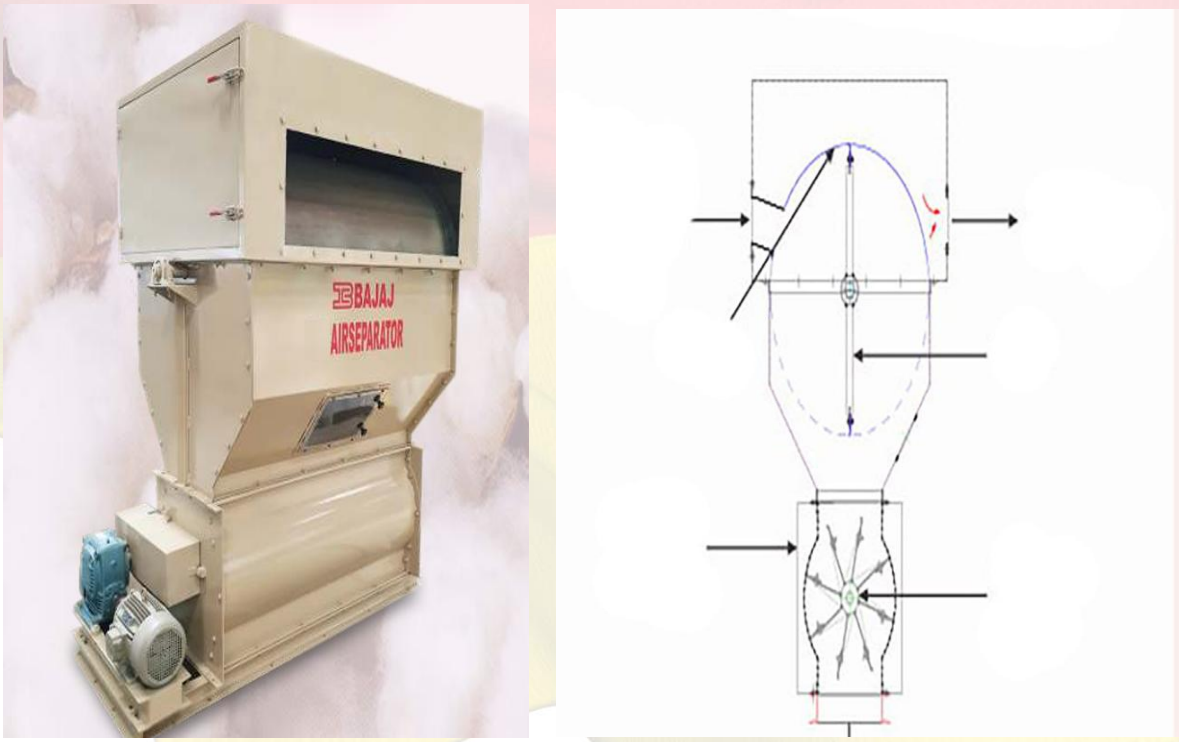

Figure 2. Cotton separator of Indian company Bajaj

1- seeded cotton part; 2- air outlet pipe; 3- scraper;
4- vacuum valve; 5 - vacuum valve shaft

Figure 3. Cotton separator of India Shivam Automization

1- part containing cotton; 2- scraper; 3- vacuum-valve shaft

India's Shivam Automation manufactures cotton machines, balers, conveyor systems, power control panels, industrial fans. An air separator is used to efficiently and quickly separate air from the piping system in heating and cooling applications (Figure 3). The air loses its speed in the separation chamber and shaft of the separator, so as a result, the lower part of the separator falls into the vacuum valve under the influence of gravity, and then it is taken out of the machine with the help of a rotary valve and sent to the next production [3].

Increasing the efficiency of the process of transporting cotton by pneumatic transport, maintaining the initial quality indicators of cotton and reducing the energy consumption of the process, creating compact, simple, low-material and energy-consuming constructions of cotton transportation equipment using air, modern, automated technologies that can control product quality, as well as created improving product quality and reducing costs by accelerating the introduction of advanced techniques and technologies into production is one of the main factors for the development of this industry.

In order to automate the processes of the separator machines in the air transportation of cotton in Indian cotton factories, a cotton mass sensor, a current sensor, an automatic control system of machines and mechanisms that take cotton from the bundle and transfer it to the cotton conveyor with compressed air, a device that records the stoppage of the machines and protective disconnection of the electric circuit -has technical means such as a stop device. The automatic system of protection against ignition and fire, the system of protection against clogging of the separator, devices for recording the stopping of machines were used. It is intended to use a strain gauge and speed measurement (monitoring) to automate the process of calculating the consumption of cotton when it is transferred to processing. An automatic

weighing system for measuring the mass of cotton in a dynamic state and technical means of transferring cotton to processing were used.

Currently, CC-15 separators are used in cotton ginning enterprises, but their main drawback is that they are not automated and the technologies that can control product quality have not been introduced into production. This has a negative impact on the mechanical effect of the cotton separator in enterprises, blockages formed during the process of separating cotton from air, fiber loss in the separator, high energy consumption, and the quality of the transported product. Taking into account the above, a deeper study of the separation process and its improvement, the development of new automation that does not negatively affect the quality indicators of cotton, blockages that occur in the process of separating cotton from air and the development of methods for their elimination, damage to cotton from air flow effective separation without delivery and reduction of fiber loss in the separator were studied.

LIST OF REFERENCES:

1. www.niphaindia.com
2. www.bajajngp.com
3. www.shivamautomization.com