

Toshmirzayev Kadirjon Odiljonovich

Ibragimov Akhadjon Odiljanovich

Fergana Polytechnic Instituti, Fergana, Uzbekistan

Abstract: Drying at the beginning of the continuous process of processing cotton raw materials is designed to reduce the moisture content of cotton raw materials to the values recommended in the technological regulations, thereby ensuring reliable and efficient operation of subsequent cleaning equipment. Therefore, drying of cotton raw materials is one of the main and necessary processes of the technological process. The article discusses these processes.

Keywords: cotton, drying agent, dirt, heat consumption, humidity, temperature, purity.

One of the main activities in the primary processing of cotton in cotton ginning plants is drying wet cotton. Preparing wet cotton for long-term storage in cotton ginning plants begins with the drying process.

A very popular foreign drying and cleaning equipment complex consists of two continuous systems operating in parallel, each of which includes two groups of equipment located in series [1] (Figure 1).

The first group includes a pneumatic transport with a stone grab and a MZF-10 cotton separator, an MKX-10 bunker straightener of an automated feeder, an MGZ-10 rack dryer, an MQZX-10 inclined separator-cleaner of small impurities and an MQZT-10 large impurities cleaner, while the second group consists of an MGZ-10 rack dryer, an MQZX-10 elongated inclined separator-cleaner of impurities with a regeneration section and an MY-171 cleaner-feeder located under the distributing auger. In each foreign system introduced into the process, after each of the two dryers, cleaners are installed one above the other: after the first dryer, a large two-section dirt cleaner is installed under the separator-cleaner, after the second dryer, a dirt cleaner with a regeneration section is installed under the separator-cleaner, and below it, a distributing screw and a gin cleaner-distributor are installed. [2]

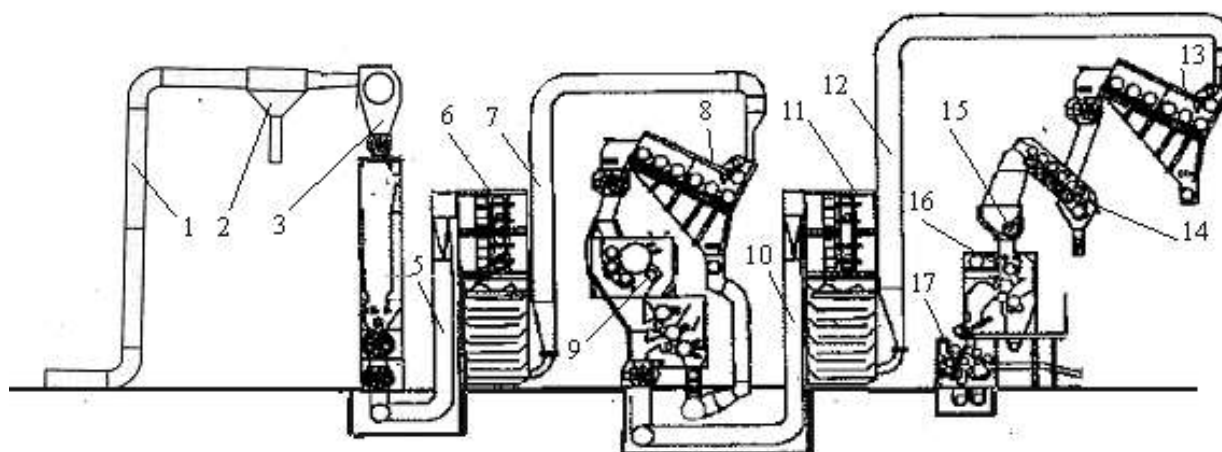


Figure 1. - Schematic of the installation of a complex of foreign drying and cleaning equipment into a continuous system

1-pipe with automatic cover, 2-stone holder, 3-separator, 4-bunker-straightener of the automated feeder. 5,7,10,11-supply and discharge pipes, 6,11-rack dryers, 8,13-inclined separator-cleaner of

small impurities, 9-two-section large impurities cleaner, 14-oblong impurities cleaner 15-distributing screw, 16-cleaner-feeder of the gin, 17-gin.

The MGZ-10 dryer (Fig. 1, pos. 6, 11) in the continuous system of the foreign drying and cleaning equipment complex consists of two interconnected sections. Each of them has 8 shelves arranged obliquely to the horizon. The scheme of the shelf dryer is shown in Fig. 2. As shown, the shelves do not touch the side walls of the dryer from right to left, and thus the raw material being moved by the drying agent forms a channel. The edges of the shelves are bent upwards, which allows the moving raw material to smoothly rise to the next shelf and prevent dirt from clogging.

When using a rack dryer, the drying of cotton begins in the initial horizontal section of the pipe 1 from the bunker-rack, where the drying agent is pumped. It then continues between the racks, in the transport pipe 3 and in the hopper of the separator-cleaner, where impurities are collected. [3]

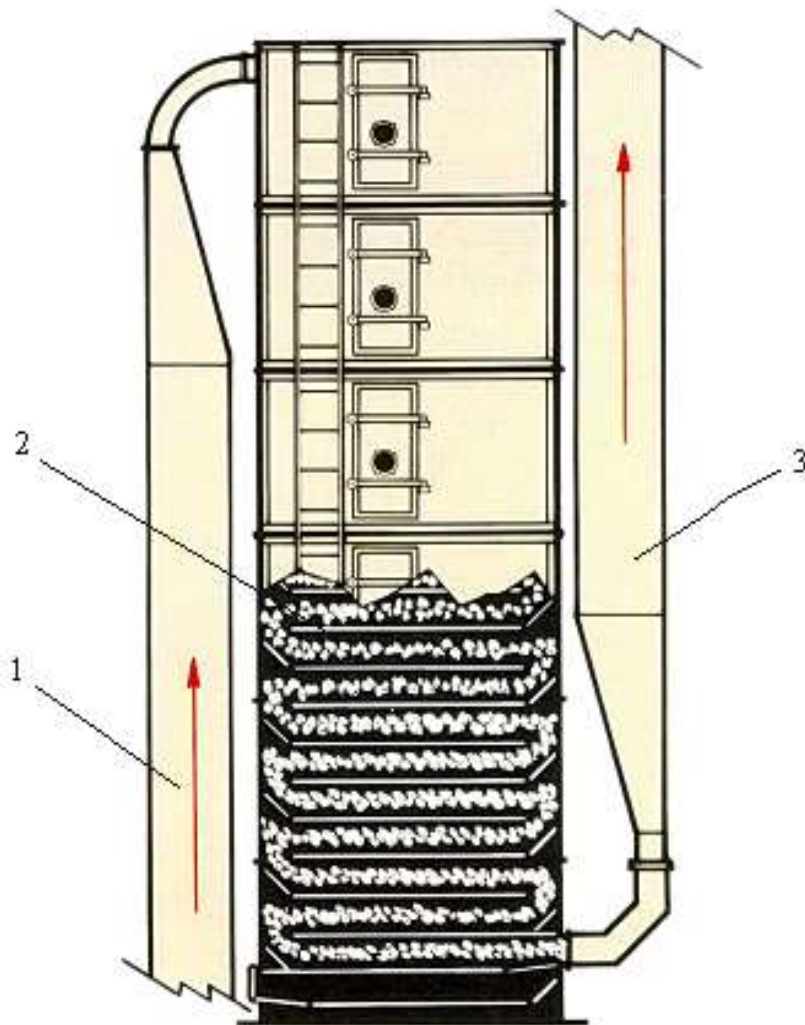


Figure 2. Diagram of a cotton rack dryer

1,3 – pipes for transferring and removing the drying agent and transporting cotton, 2- racks.

The flow rate of the drying agent driving fan should be up to 6 m/sec., and its losses in the ejection funnel and pipes should not exceed 20%.

The main disadvantage of the foreign drying and cleaning equipment complex is its lack of energy efficiency, with a total installed capacity of 662 kW for 40 electric drives in the complex, and 446 kW for 12 electric drives for fans [4]. In addition, it was found that the consumption of drying agent for each kg of moisture removal from cotton is higher than that of domestic cotton dryers.

REFERENCE

1. Haghi, A.K. Heat and Masstransfer in Fibrous Materials: Theory and Applications/ A.K. Haghi, S. Thomas, L.A. Pothan //Publisher&Distrbutors.LTD.- New Deli,2009.-245p
2. Хакимов, Ш.Ш. Сушильно-очистительный агрегат с системой рецеркуляции сушильного агента / Ш.Ш.Хакимов, Е.А. Мирошников, П.Н. Бородин // Universum: Технические науки: электрон. научн. журн.- 2018.- № 1(46) . –С.4-6.
3. Mujumdar, Arun S. Handbook of Industrial Drying Fourth Edition/ Arun S. Mujumdar.- New York:LLC CRC Press is an imprint of Taylor & Francis Group, an Informa business, 2015.- 1334p.
4. Paxtani dastlabki ishlash bo'yicha qo'llanma, "O'zpxatasanoat" AJ, Toshkent, 2019 y., 477 b.
5. Paxtani dastlabki ishlash. Z.Zikriyoyev tahriri ostida, Mexnat, Toshkent,1999, 398 b.
6. R.R. Nazirov, Q.O. Toshmirzayev. Kichik o'lchamli barabanli quritgichi uchun zanjirli uzatmaning geometrik va kinematik parametrlarini aniqlash, Farg'ona politexnika instituti ilmiy-texnika jurnali. №4 2024, 36-39 b.