

UO‘K 677. 051. 152.6

## ADVANTAGES AND DISADVANTAGES OF FOREIGN EQUIPMENT IN CLEANING COTTON FROM SMALL IMPURITIES

*Zarshid Omonov*

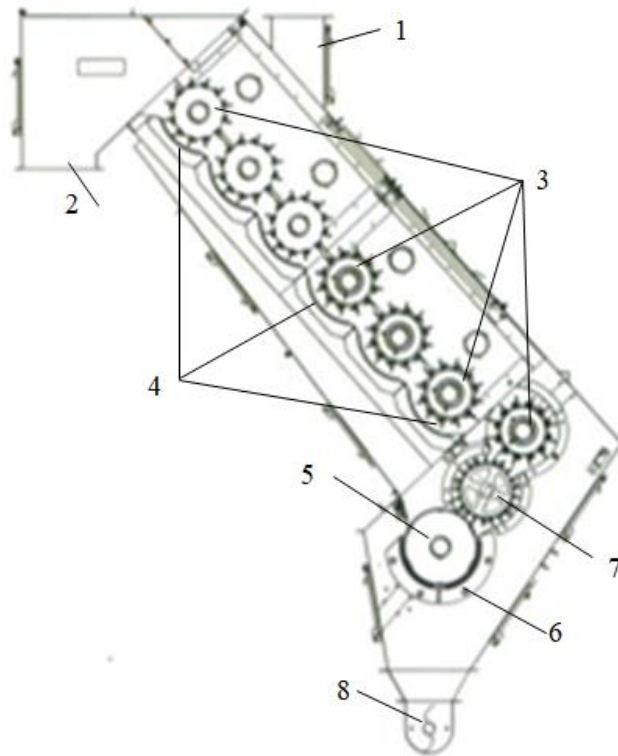
*Almalyk State Technical Institute*

*E-mail: [zarshidomonov96@gmail.com](mailto:zarshidomonov96@gmail.com)*

**Abstract:** *The cleaning efficiency of cotton of grades I and III in the MQZH-15 type cleaner for cleaning cotton from small impurities was 10.5 (abs)% and 9.6 (abs)% lower than the cleaning efficiency in the technical specifications, depending on the grade, and showed that it could not meet the technological requirements.*

**Key words:** *Machine, pick drum, regeneration drum, grate, cotton, cleaning effect, small debris, large debris.*

In the developed cotton-producing countries of China, Turkey, India, and the United States, cotton is cleaned of fine impurities during the initial processing of medium-fiber selected cotton varieties to produce high-quality fiber [1]. Therefore, cleaning equipment is produced in these countries to remove fine impurities from cotton. Cotton gins manufactured in these countries are similar in design and consist of working parts that receive cotton, clean it of small impurities, and regenerate cotton pieces separated as waste during cotton cleaning. In order to study the effectiveness of cotton gins in the initial processing of cotton at cotton ginning enterprises with foreign technological systems, a cotton gin manufactured in the People's Republic of China and currently operating in the Syrdarya region, the "Bek Cluster" Research work was conducted on the MQZH-15 equipment used in the cotton ginning plant's cotton cleaning system for removing small impurities (Figure 1). According to the technical specifications, the equipment's productivity is 15 t/h. The cleaning efficiency is 60-70% for cleaning high and low-grade cotton.



1, 2-intake and discharge manifolds, 3-pile drums, 4-slatted grates, 5-regeneration drum, 6-slatted grate, 7-brush drum, 8-waste auger.

**Figure 3. Scheme of the MQZH-15 slope cleaner from Swan cotton machinery**

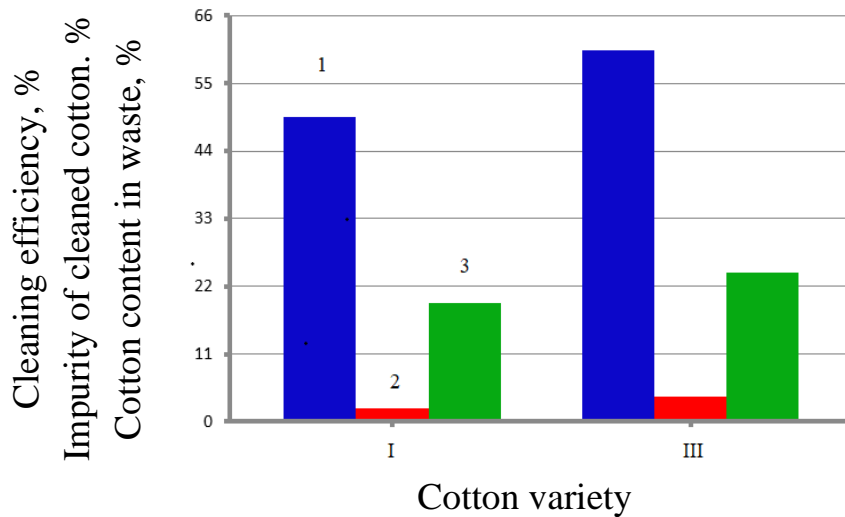
It was studied that the total electrical energy consumption for all rotating working parts of the equipment is 22 kW/h, which is 10 kW/h more than the local 1XK equipment for cleaning cotton from small impurities [2].

The research was conducted on An-Bayavut-2 selected grade I and grade III cotton of class 2 with initial moisture content of 9.2% and 12.4%, impurities of 4.6% and 10.5%. The average moisture content of cotton fed to the cleaner was 7.6% and 8.9% by grade, and the average impurities were 4.2% and 10.1%.

After cleaning cotton of the 1st grade 2nd class on the MQZH-15 equipment, the average moisture content was 7.4%, and the average impurity content was 2.12% [3, 4]. In this case, the cleaning efficiency of the cleaner was 49.5% on average, which was 10.5 (abs)% less than the cleaning efficiency in the technical characteristics (Figure 2). The amount of cotton separated from the cleaner into waste during cleaning was 19.2% on average compared to the waste mass.

Then, research was conducted on cotton of the 2nd grade of the III grade. In this case, cotton with a moisture content of 8.9% and a dirt content of 10.1% was fed to the MQZH-15 equipment. After cleaning the cotton in the cleaner, the moisture content of

the cotton was on average 8.7% and the dirt content was on average 4.0%. In this case, the cleaning efficiency of the cleaner was on average 60.4%, which was on average 9.6 (abs)% less than the cleaning efficiency in the technical specifications.



1-cleaning efficiency, %; 2-pollution of cleaned cotton, %; 3-amount of cotton in waste.

**Figure 4. Dependence of equipment efficiency, cotton quality and cotton content in waste on cotton variety**

During cotton cleaning, the amount of cotton separated from the cleaner into waste was high, averaging 24.3% of the waste mass. Despite the fact that the equipment was designed to clean cotton from small impurities, the spacing of the grates on the grate grid placed under each pile drum in the equipment was not selected correctly, and a large amount of cotton pieces with small and large impurities were observed during cotton cleaning. Despite the fact that the cotton in the waste was cleaned using the regeneration drum, it was found that a large amount of small impurities remained in the cotton composition and that the addition of this regenerated cotton to the cotton stream fed to the equipment for cleaning increased the level of impurities in the cotton stream, which led to a decrease in the quality of the fiber produced.

### References

[1]. *R.Sh. Sulaymonov, ZJ Omonov, MN Ismatov*. Innovative technology of cleaning cotton from small impurities. Global scholars scientific publishing. Interdisciplinary thinking. Republican Scientific and Practical Conference. Volume 1, Issue 1, August, 2025, pp. 61-63. [www.globalscholars.uz](http://www.globalscholars.uz).

- [2]. Handbook on the primary processing of cotton. Prepared under the general editorship of FB Omonov. "Cotton Industry Scientific Center" JSC, "Vorish-nashriyot", Tashkent, 2008.- 416 p.
- [3]. UzMSt 380:2024 . Cotton . Methods for determining moisture content. Tashkent, 2024.- 17 p.
- [4]. UzMSt 552:2025 . Cotton. Methods for determining contamination. Tashkent, 2025, 12 p.
- [5]. [Omonov Z.J.](#) Effective cleaning and ginning of low-grade cotton in a saw gin. International conference on advance science and technology, Volume 02, Issue 022025. 15-19 b. <https://doi.org/10.5281/zenodo.15421035>
- [6]. Sulaymonov R.Sh., Omonov Z.J., Abduxamidov S.K. Development of effective technology and element for a saw gin feeder. International conference on analysis of mathematics and exact sciences Volume 02, Issue 02, 2025. 19-23 b. <https://doi.org/10.5281/zenodo.15377813>
- [7]. Sulaymonov R.Sh., Omonov Z.J. Mashinada terilgan paxta tolasi sifatini oshirish. Global scholars scientific publishing. Science culture: innovations of the 21st century-scientific conference. Volume 01, ISSUE 01, Avgust-2025 72-75 b. [www.globalscholars.uz](http://www.globalscholars.uz)
- [8]. Sulaymonov R.Sh., Omonov Z.J. Xorijiy arrali jinlar ta'minlagichlarini samaradorligi. XXI asrda innovatsion texnologiyalar, fan va ta'lim taraqqiyotidagi dolzarb muammolar. Volume 03, ISSUE 07, 2025 85-89 b. [www.inlibrary.uz](http://www.inlibrary.uz)
- [9]. Umarov U.E., Omonov Z.J. Arrali jinda paxtani samarali tozalsh. Международный современный научно-практический журналю. Научный фокус. № 24 (100), часть 1 апрел, 2025. 29-38 b. <https://nauchnyimpuls.org/index.php/fokus/article/view/1721>
- [10]. Sulaymonov R.Sh., Omonov Z.J., Abduxamidov S.K. Study of the impact of improved supplier on product quality and grain efficiency. Development of science. Ilmiy jurnal. 2026/2 volume 3. ISSN 3030-3907. 288-300 b. <https://devos.uz/article.php?id=3906>
- [11]. Sulaymonov R.Sh., Omonov Z.J., Ismatov M.N. O'ngboyev A.M., Saytov U.A. The effectiveness of the cotton cleaning system on foreign saw gins. AMERICAN Journal of Engineering, Mechanics and Architecture. Volume 2, Issue 6, 2024 ISSN (E): 2993-2637. 74-78 b. [www.grnjournal.us](http://www.grnjournal.us)
- [12]. Irgashev B.A., Igamberdiyev A.A., Omonov Z.J. Расчета модуля зацепления шестерен, работающих в условиях сухого трения. The multidisciplinary journal of science and technology. Vol. 4 Issue 12 | ISSN: 2582-4686 SJIF 2021-3.261, SJIF

2022-2.889, 2024-6.875 ResearchBib IF: 8.848 / 2024. 549-556 b.  
[www.mjstjournal.com](http://www.mjstjournal.com)

[13]. Omonov Z., Yunusova M., Xurramov D. Исследование влияния чистящего средства на эффективность очистки и эффективность джина. The multidisciplinary journal of science and technology. Vol. 5 Issue 4 | ISSN: 2582-4686 SJIF 2021-3.261, SJIF 2022-2.889, 2024-6.875 ResearchBib IF: 8.848 / 2024. 990-998 b. [www.mjstjournal.com](http://www.mjstjournal.com)

[14]. Sulaymanov R.Sh., Omonov Z.J., Ismatov M.N., Rayimqulov O.Q., Saytov U.A. Study of the process of cleaning machine-harvested cotton from small impurities in saw gins. The multidisciplinary journal of science and technology. Vol. 4 Issue 6 | ISSN: 2582-4686 SJIF 2021-3.261, SJIF 2022-2.889, 2024-6.875 ResearchBib IF: 8.848 / 2024. 233-239 b. [www.mjstjournal.com](http://www.mjstjournal.com)

[15]. [Omonov Z.J.](#) Development of efficient motion transmission system for cleaning sectional fiber separator. Innovative research in modern education. Hosted from Toronto, Canada.154-158 b. <https://aidlix.org>.