

ISSN 2181-8622

Manufacturing technology problems



Scientific and Technical Journal Namangan Institute of Engineering and Technology

INDEX  COPERNICUS
INTERNATIONAL

**Volume 10
Issue 4
2025**



NamMTI ILMIY-TEXNIKA JURNALI TAHRIR HAY'ATI A'ZOLARI

Bosh muharrir: f-m.f.d., prof. O.O. Mamatkarimov

Bosh muharrir o'rinbosari: k.f.d., prof. O.K. Ergashev

TEXNIKA FANLARI (PAXTA, TO'QIMACHILIK VA YENGIL SANOAT)

- | | | |
|------------------------------|---|--|
| 1. Prof. Dr. Metin ÇOLAK | – | Ege Universiteti, Turkiya |
| 2. Prof. Dr. Suneel KATERIYA | – | Javoharlal Nehru Universiteti, Hindiston |
| 3. Prof. Dr. Muradov RUSTAM | – | Namangan To'qimachilik Sanoat Instituti |
| 4. Prof. Dr. Obidov AVAZBEK | – | Namangan Muhandislik-Texnologiya Instituti |
| 5. Prof. Dr. Maxkamov ANVAR | – | Namangan Muhandislik-Texnologiya Instituti |
| 6. Prof. Dr. Azizov SHUXRAT | – | Namangan Muhandislik-Texnologiya Instituti |
| 7. Dr. Qorabayev SHERZOD | – | Namangan Muhandislik-Texnologiya Instituti |

TEXNIKA FANLARI (QISHLOQ XO'JALIGI VA OZIQ-OVQAT TEXNOLOGIYALARI)

- | | | |
|------------------------------------|---|--|
| 1. Prof. Dr. Sakina BINTU ABDULLAH | – | Malaya Universiteti, Malayziya |
| 2. Prof. Dr. Abdalova GULISTAN | – | Taraz davlat universiteti, Qozog'iston |
| 3. Prof. Dr. Xudayberdiyev ABSALOM | – | Namangan muhandislik-texnologiya instituti |
| 4. Prof. Dr. Merganov AVAZXON | – | Namangan muhandislik-texnologiya instituti |
| 5. Prof. Dr. Sherquziyev DONIYOR | – | Namangan muhandislik-texnologiya instituti |
| 6. Prof. Dr. Qanoatov XAYRULLO | – | Namangan muhandislik-texnologiya instituti |
| 7. Prof. Dr. Mamatov SHERZOD | – | Toshkent shahridagi Vebster Universiteti |

TEXNIKA FANLARI (MEXANIKA VA MASHINASOZLIK)

- | | | |
|--|---|--|
| 1. Dr. Jaclyn SHARP | – | Pittsburg Universiteti, AQSH |
| 2. Prof. Dr. Aleksey KAZINSKY | – | Saratov davlat texnologiya universiteti, Rossiya |
| 3. Akad. Prof. Zaynobbiddinov SIROJIDDIN | – | Andijon Davlat Universiteti |
| 4. Prof. Dr. Usmanov PAZLITDIN | – | Namangan muhandislik-texnologiya instituti |
| 5. Prof. Dr. Matkarimov PAXRIDDIN | – | Namangan muhandislik-texnologiya instituti |
| 6. Prof. Dr. Sharibayev NOSIRJON | – | Namangan muhandislik-texnologiya instituti |
| 7. Prof. Dr. Erkaboyev ULUG'BEK | – | Namangan muhandislik-texnologiya instituti |

KIMYO FANLARI (KIMYO VA KIMYOVIY TEXNOLOGIYALAR)

- | | | |
|----------------------------------|---|---|
| 1. Prof. Dr. Abel SANTOS | – | Porto Universiteti, Portugaliya |
| 2. Prof. Dr. Junli YANG | – | Lanzhou kimyoviy fizika instituti, Xitoy |
| 3. Akad. Prof. Namazov ShaFOAT | – | O'zR FA Umumiy va Noorganik Kimyo instituti |
| 4. Prof. Dr. Botirov ERKIN | – | O'zR FA O'simlik Moddalar Kimyosi Instituti |
| 5. Prof. Dr. Akbarov HAMDAM | – | O'zbekiston Milliy Universiteti |
| 6. Prof. Dr. Nurmanov SUVANKUL | – | O'zbekiston Milliy Universiteti |
| 7. Prof. Dr. Salihanova DILNOZA | – | O'zR FA Umumiy va Noorganik Kimyo instituti |
| 8. Prof. Dr. Kattayev NURIDDIN | – | O'zbekiston Milliy Universiteti |
| 9. Prof. Dr. Sulstonov PO'LATJON | – | Geologiya fanlari universiteti |

TA'LIMDA ILG'OR PEDAGOGIK TEXNOLOGIYALAR

- | | | |
|--------------------------------|---|--|
| 1. Prof. Dr. Paul TIKALSKY | – | Oklahoma Davlat Universiti, AQSH |
| 2. Dr. David Leffler | – | Liberty Universiteti, AQSH |
| 3. Prof. Dr. Wen-Jian ZHANG | – | Zhejiang Universiteti, China |
| 4. Prof. Ergashev SHARIBBOY | – | Namangan Muhandislik-Qurilish Instituti |
| 5. Prof. Dr. Musayev JAHONGIR | – | OFIV |
| 6. Prof. Dr. Eshbayeva ULBOSIN | – | Namangan Muhandislik-Texnologiya Instituti |
| 7. Prof. Dr. Xoshimova DILDORA | – | Namangan Muhandislik-Texnologiya Instituti |

IQTISODIYOT FANLARI

- | | | |
|----------------------------------|---|--|
| 1. Dr. Biral MERCAN | – | Necmettin Erbakan Universiteti, Turkiya |
| 2. Dr. Orsolya KATONA | – | Miskolc Universiteti, Vengriya |
| 3. Prof. Dr. Soliyev AHMADJON | – | Namangan Muhandislik-Texnologiya Instituti |
| 4. Prof. Dr. Saidboyev ShERMIRZA | – | Namangan Muhandislik-Texnologiya Instituti |
| 5. Prof. Matkarimov KAMOLIDDIN | – | Namangan Muhandislik-Texnologiya Instituti |
| 6. Dr. Bustonov MANSUR | – | Namangan Muhandislik-Texnologiya Instituti |
| 7. Dr. Rashidov RAKHMATILLA | – | Namangan Muhandislik-Texnologiya Instituti |

Muharrirlar guruhi

O. Kazakov, B. Xolmirzayev, A. Mirzaev, Sh. Maksudov,
A. Tursunov, O. R. Qodirov (mas'ul muharrir)



**EDITORIAL BOARD OF SCIENTIFIC AND TECHNICAL JOURNAL OF NAMANGAN
INSTITUTE OF ENGINEERING AND TECHNOLOGY**

Chief Editor: Prof. Dr. O.O.Mamatkarimov

Deputy Editor-in-chief: Prof. Dr. O.K. Ergashev

TECHNICAL SCIENCES (COTTON, TEXTILE AND LIGHT INDUSTRY)

- | | | |
|------------------------------|---|---|
| 1. Prof. Dr. Metin ÇOLAK | – | <i>Ege University, Turkey</i> |
| 2. Prof. Dr. Suneel KATERIYA | – | <i>Jawaharlal Nehru University, India</i> |
| 3. Prof. Dr. Muradov RUSTAM | – | <i>Namangan Institute of Textile Industry</i> |
| 4. Prof. Dr. Obidov AVAZBEK | – | <i>Namangan Institute of Engineering and Technology</i> |
| 5. Prof. Dr. Makhamov ANVAR | – | <i>Namangan Institute of Engineering and Technology</i> |
| 6. Prof. Dr. Azizov SHUXRAT | – | <i>Namangan Institute of Engineering and Technology</i> |
| 7. Dr. Korabaev SHERZOD | – | <i>Namangan Institute of Engineering and Technology</i> |

TECHNICAL SCIENCES (AGRICULTURE AND FOOD TECHNOLOGIES)

- | | | |
|------------------------------------|---|---|
| 1. Prof. Dr. Sakina BINTU ABDULLAH | – | <i>Malaya University, Malaysia</i> |
| 2. Prof. Dr. Abdalova GULISTAN | – | <i>Taraz State University, Kazakhstan</i> |
| 3. Prof. Dr. Xudayberdiyev ABSALOM | – | <i>Namangan Institute of Engineering and Technology</i> |
| 4. Prof. Dr. Merganov AVAZXON | – | <i>Namangan Institute of Engineering and Technology</i> |
| 5. Prof. Dr. Sherkuziyev DONIYOR | – | <i>Namangan Institute of Engineering and Technology</i> |
| 6. Prof. Dr. Kanoatov XAYRULLO | – | <i>Namangan Institute of Engineering and Technology</i> |
| 7. Prof. Dr. Mamatov SHERZOD | – | <i>Webster University in Toshkent</i> |

TECHNICAL SCIENCES (MECHANICS AND MECHANICAL ENGINEERING)

- | | | |
|---|---|---|
| 1. Dr. Jaclyn SHARP | – | <i>Pittsburg University, USA</i> |
| 2. Prof. Dr. Aleksey KAZINSKY | – | <i>Saratov State Technical University, Russia</i> |
| 3. Acad. Prof. Zaynobiddinov SIROJIDDIN | – | <i>Andijan State University</i> |
| 4. Prof. Dr. Usmanov PAZLITDIN | – | <i>Namangan Institute of Engineering and Technology</i> |
| 5. Prof. Dr. Matkarimov PAXRIDDIN | – | <i>Namangan Institute of Engineering and Technology</i> |
| 6. Prof. Dr. Sharibaev NOSIRJON | – | <i>Namangan Institute of Engineering and Technology</i> |
| 7. Prof. Dr. Erkaboiev ULUGBEK | – | <i>Namangan Institute of Engineering and Technology</i> |

CHEMICAL SCIENCES (CHEMISTRY AND CHEMICAL TECHNOLOGIES)

- | | | |
|---------------------------------|---|---|
| 1. Prof. Dr. Abel SANTOS | – | <i>Porto University, Portugal</i> |
| 2. Prof. Dr. Junli YANG | – | <i>Lanzhou Institute of Chemical Physics, China</i> |
| 3. Akad. Prof. Namazov ShaFOAT | – | <i>Institute of General and Inorganic Chemistry of the ASRU</i> |
| 4. Prof. Dr. Botirov ERKIN | – | <i>Institute of Chemistry of Plant Substances of the ASRU</i> |
| 5. Prof. Dr. Akbarov HAMDAM | – | <i>National University of Uzbekistan</i> |
| 6. Prof. Dr. Nurmanov SUVANKUL | – | <i>National University of Uzbekistan</i> |
| 7. Prof. Dr. Salihanova DILNOZA | – | <i>Institute of General and Inorganic Chemistry of the ASRU</i> |
| 8. Prof. Dr. Kattaev NURIDDIN | – | <i>National University of Uzbekistan</i> |
| 9. Prof. Dr. Sultonov POLATJON | – | <i>University of Geological Sciences</i> |

TA'LIMDA ILG'OR PEDAGOGIK TEXNOLOGIYALAR

- | | | |
|--------------------------------|---|---|
| 1. Prof. Dr. Paul TIKALSKY | – | <i>Oklahoma State University, USA</i> |
| 2. Dr. David Leffler | – | <i>Liberty University, USA</i> |
| 3. Prof. Dr. Wen-Jian ZHANG | – | <i>Zhejiang University, China</i> |
| 4. Prof. Ergashev SharIBBOY | – | <i>Namangan Institute of Engineering and Construction</i> |
| 5. Prof. Dr. Musaev JAHONGIR | – | <i>MHESIRU</i> |
| 6. Prof. Dr. Eshbaeva ULBOSIN | – | <i>Namangan Institute of Engineering and Technology</i> |
| 7. Prof. Dr. Xoshimova DILDORA | – | <i>Namangan Institute of Engineering and Technology</i> |

IQTISODIYOT FANLARI

- | | | |
|---------------------------------|---|---|
| 1. Dr. Biral MERCAN | – | <i>Necmettin Erbakan University, Turkey</i> |
| 2. Dr. Orsolya KATONA | – | <i>Miskolc University, Hungary</i> |
| 3. Prof. Dr. Soliev AHMADJON | – | <i>Namangan Institute of Engineering and Technology</i> |
| 4. Prof. Dr. Saidboev SHERMIRZA | – | <i>Namangan Institute of Engineering and Technology</i> |
| 5. Prof. Matkarimov KAMOLIDDIN | – | <i>Namangan Institute of Engineering and Technology</i> |
| 6. Dr. Bustonov MANSUR | – | <i>Namangan Institute of Engineering and Technology</i> |
| 7. Dr. Rashidov RAKHMATILLA | – | <i>Namangan Institute of Engineering and Technology</i> |

Editorial team

O. Kazakov, B. Xolmirezayev, A. Mirzaev, Sh. Mahsudov,
A. Tursunov, O. Kodirov (Executive editor)



CONDUCTING EXPERIMENTS WITH NEWLY DESIGNED SAW GIN RIBS IN THE COTTON CLEANING PROCESS FOR DIFFERENT COTTON VARIETIES

KOZOKOV SAIDMUKHTAR

PhD, Namangan State Technical University, Namangan, Uzbekistan

Phone.: (0599) 309-0241, E-mail.: gozoqovsaidmuxtor@gmail.com

Abstract: Experiments were conducted to determine the effect of using newly designed convex-surfaced saw ribs in a cotton cleaning machine for removing large impurities, comparing their cleaning efficiency with that of standard ribs across different cotton varieties. The experiments also aimed to assess how much cotton fragments are lost to the impurity bunker when using convex-surfaced ribs compared to conventional ones. The results showed that the cleaning efficiency of convex-surfaced ribs is significantly higher.

Keywords: cotton, fiber, seed, small impurities, cleaning, saw rib, convex rib, efficiency, large impurities, impurity bunker.

Introduction. Around the world, scientific research is being carried out to improve the technology and equipment used in the primary processing of cotton, focusing on developing technologies that help preserve the initial quality indicators of cotton during cleaning and ensure better control over product quality. In this regard, the development of effective technologies for removing impurities from cotton plays an important role.

In Uzbekistan, comprehensive measures are being implemented to develop the cotton industry, modernize and technically re-equip cotton cleaning enterprises, increase the profitability of cotton processing, and improve the competitiveness of manufactured products. Significant results have been achieved in this direction.

In particular, the Presidential Decree of the Republic of Uzbekistan dated January 28, 2022, No. PD-60, *“On the Development Strategy of New Uzbekistan for 2022–2026”*, defines important tasks such as ensuring national economic stability, continuing industrial policy within the framework of gross domestic product growth, and increasing the production volume of industrial goods by 1.4 times, including doubling the production of textile products.

In implementing these objectives, it is especially important to modernize the design and technology of machines that ensure efficient cleaning and prevent the loss of fibers into waste.

Methodology & empirical analysis.

In cotton-textile cluster enterprises, which include cotton ginning plants as one of their main components, various machines and units are used for cleaning raw cotton from both fine and large impurities. The working organs of cotton cleaning machines designed for removing large impurities are generally similar. That is, the raw cotton supplied by the feeders enters the saw cylinder, where a stationary brush evenly presses and feeds it onto the saw teeth. As the cotton attached to the saw teeth passes over the ribs of the grate (ribs), large impurities larger than 10 mm are separated due to the impact and frictional movement between the saw teeth and the ribs. These impurities then fall

through the gaps (about 40 mm apart) between the ribs into the impurity bunker. The cleaned cotton, in turn, is removed from the saw teeth by a separating brush cylinder and sent to the next processing stage.

Unfortunately, despite numerous improvements made to the design of machines and aggregates for cleaning cotton from large impurities, their cleaning efficiency remains insufficient. Moreover, some cotton pieces are still observed to fall into the impurity bunker along with the impurities, leading to fiber loss.

According to the results of research conducted within the framework of this dissertation topic, it was found that in most cotton ginning plants today, the UXK aggregate is used to clean raw cotton from both fine and large impurities. Analysis of the large-impurity cleaning section of the UXK aggregate showed that the cleaning efficiency for low-grade cotton is about 75%, while for high-grade cotton it reaches 81%. Furthermore, it was found that the impurities collected in the bunker contain 18.6–20.5% of cotton lumps suitable for spinning, indicating a significant loss of usable fiber.

To eliminate the shortcomings identified during the research, the design of the main working element of the cotton cleaning machine – the ribbed grate was improved by modifying the surface shape of the ribs. As a result of these design enhancements, the cleaning efficiency of the machine increased compared to the standard model. Furthermore, by determining the optimal diameters of the ribs, it was possible to reduce the amount of cotton fragments that fall into the impurity bunker along with large impurities.

To test the performance of the proposed convex-surfaced ribs, a construction drawing of the cotton cleaning device for removing large impurities was developed (Figure 1).

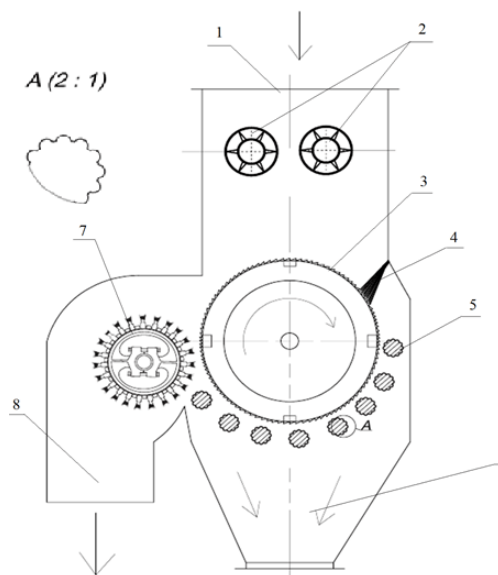


Figure 1. Structural diagram of the cotton-cleaning device for removing large impurities:

- 1 – inlet pipe; 2 – feeding rollers; 3 – saw cylinder; 4 – stationary driving brush; 5 – convex-surfaced ribs; 6 – impurity bunker; 7 – separating brush cylinder; 8 – outlet bunker.

The experimental model of the cotton cleaning device for removing large impurities operates as follows: The raw cotton entering the large-impurity cleaning device passes through the inlet pipe (1) and falls onto the feeding rollers (2). These rollers rotate in opposite directions at a speed of 0–14 rpm, evenly feeding the cotton to the saw cylinder (3). The cotton fed onto the saw cylinder is uniformly adhered to the saw teeth by means of the stationary driving brush (4).

Two ribbed grates are positioned at equal distances from the saw cylinder. Each grate contains five newly designed convex-surfaced ribs (5). The cotton tufts carried by the saw teeth strike against these ribs and slide along their surfaces. The saw cylinder rotates at a speed of 300 rpm. As the cotton slides over the ribs, the large impurities contained in it are separated and fall through the 40 mm gaps between the ribs into the impurity bunker (6). The cleaned cotton tufts are then removed from the saw teeth by the separating brush cylinder (7), which rotates in the opposite direction at a speed of 945 rpm, and are subsequently transferred through the outlet bunker (8) to the next stage of processing.

The main purpose of developing this device, designed to remove large impurities larger than 10 mm, and improving the rib construction, is to determine its optimal technological and structural parameters. The primary requirement for the experimental setup is that it allows for effective and measurable testing under real operating conditions.

The newly designed convex-surfaced ribs were installed on the UXK cotton cleaning unit, and preliminary tests were conducted at the “Toraqo’rg’on Cotton Cleaning Enterprise”, which is part of the “Namangan Textile Cluster” LLC (Figure 2).



Figure 2. Process of preliminary testing

The experiments were carried out in accordance with the requirements set for large-impurity cotton cleaning devices.

During the tests, experiments were conducted on different cotton varieties — Bukhara-102 (Grade I Class 1, Grade I Class 2, Grade II Class 3) and Andijan-35 (Grade II Class 1, Grade V Class 3). Before and after cleaning in the device, 300-gram samples of cotton were taken from the cotton feed section (before cleaning) and the outlet (after cleaning). The impurity content of these samples was determined using an LKM-type instrument.

According to the procedure described in UzDST 592–2008, the determination of impurity content in cotton using the LKM instrument is performed by cleaning a 300 g sample in two stages over 180 seconds:

- in the first stage (120 seconds), fine impurities are removed,
- in the second stage (45 seconds), large impurities are removed,
- and within the final 15 seconds, the cleaned cotton is transferred into the clean cotton chamber.

After the device stops, the internal surfaces are wiped to collect all residual dust, and the separated fine and large impurities are weighed on a scale.

After determining the impurity content with the LKM instrument, the cleaning efficiency of the raw cotton cleaned by the proposed convex-surfaced ribs was calculated using the following formula, based on the impurity levels of samples taken before and after cleaning in the large-impurity cotton cleaning device.

$$K = \frac{C_1 - C_2}{C_1} * 100$$

here: K – cleaning efficiency, %; C_1 – impurity content of the cotton before cleaning, %; C_2 – impurity content of the cotton after cleaning, %.

After determining K, the cleaning efficiency from the experiments conducted on the large-impurity cotton cleaning device was compared with the results obtained using conventional ribs. It was found that the cleaning efficiency increased by 15% when using the newly designed convex-surfaced ribs.

Experiments were conducted on different cotton varieties and with cotton containing various levels of impurities, using both the existing ribs and the newly designed ribs. Based on the obtained results, a summary table was compiled

Table 1

Cotton variety (selection)	Cotton grade and class	Cleaning efficiency with conventional ribs, %	Cleaning efficiency with newly designed ribs, %
Andijan – 35	II grade 1 class	74	87
	V grade 3 class	69	80
Bukxara – 102	I grade 2 class	75	90
	II grade 3 class	73	85

Results. For the Andijan-35 cotton variety of II grade, class 1, the cleaning efficiency of the machine using conventional ribs was 74%, whereas with the newly designed ribs, the cleaning efficiency increased to 87%, as shown in Table 1.

For the Bukhara-102 cotton variety of I grade, class 2, the cleaning efficiency using conventional ribs was 75%, while with the new type of ribs, the cleaning efficiency rose to 90%.

Based on the data presented in Table 1, a graph was constructed, clearly demonstrating the difference in cleaning efficiency between the existing and proposed rib designs (Figure 3).

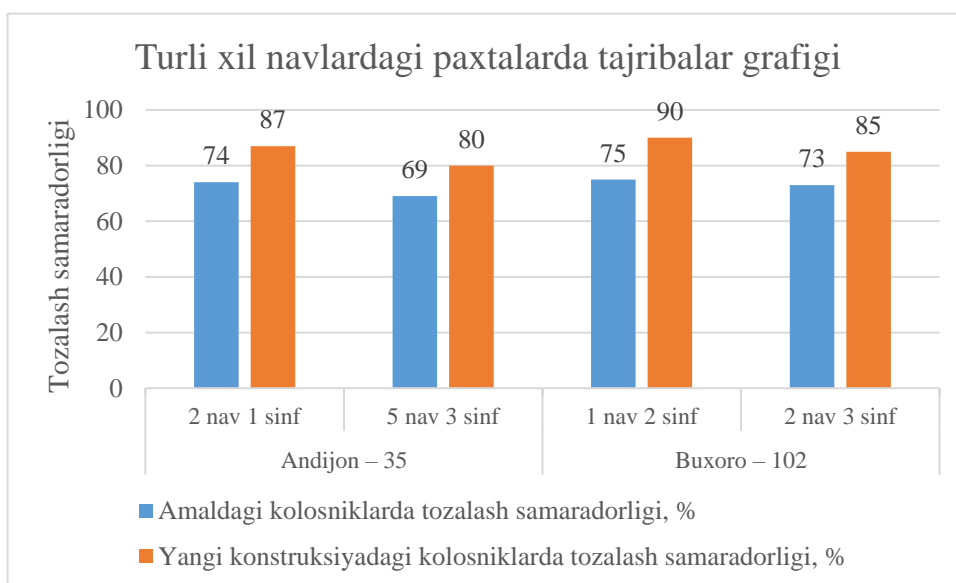


Figure 3. Graph of cleaning efficiency dependence when cleaning different grades of cotton using conventional and proposed ribs

In the device equipped with the proposed ribs, the amount of cotton fragments contained in the separated impurities during the cleaning process was determined. This value was then compared with the amount of cotton fragments found in the impurities discharged from the large-impurity cleaning section of one UXK unit section. The results were analyzed and compared under equivalent conditions (Figure 4).

Conclusions. As a result of the comparison, it was found that the amount of cotton fragments contained in the large impurities discharged from one section of the UXK unit ranged between 18.6% and 20.5%. By installing the proposed ribs with an optimal diameter of 25 mm into the device, the amount of cotton fragments in the discharged impurities was reduced to 12.2%, demonstrating a significant improvement in the cleaning efficiency.



Figure 4. a – large impurities discharged from the device with improved rib design; b – large impurities discharged from the UXK unit.

REFERENCES

1. Cotton: World Statistics. <http://www.ICAC.org>; <https://www.statista.com>
2. O'zbekiston Pespublikasi Ppezidentining 2022 yil 28 yanvardagi "2022-2026-yillarga mo'ljallangan yangi O'zbekistonning taraqqiyot strategiyasi" to'g'risidagi PF-60-sonli fapmoni.
3. S.Qozoqov, R.Muradov. Paxta xomashyosini iflosliklardan tozalash tahlili // Jizzax politexnika instituti. Respublika miqyosidagi ilmiy-texnik anjumani materiallari. Jizzax, 2022.
4. S.Qozoqov, X. Isaxanov, A.Yusupov, M. Yusupova. Paxtani yirik iflosliklarni tozalab oluvchi mashinalar konstruksiyalarini takomillashtirish bo'yicha olib borilgan ilmiy izlanishlar tahlili // Namangan muhandislik-texnologiya instituti, xalqaro anjuman, Namangan 2022.
5. S.Qozoqov, R.Muradov. Paxta tarkibidagi yirik iflosliklarni ajratib oluvchi mashinalar konstruksiyasini takomillashtirish bo'yicha olib borilgan ilmiy tadqiqot ishlarining tahlili // Namangan muhandislik-texnologiya instituti. xalqaro ilmiy-amaliy anjuman. 5-6 may, 2022 yil, Namangan.
6. S.Qozoqov, R. Muradov, A. Jamolov, T. Abdulkarimov. Theoretical Analysis of the Process of Cleaning Cotton from Small Contaminants on a Drum With an Inclined Splitter // Problems in the Textile and Light Industry in the Context of Integration of Science and Industry and Ways to Solve Them. AIP Conf. Proc. 2789, 040046-1-040046-8; <https://doi.org/10.1063/5.0149589> Namangan, Uzbekistan • 5–6 May 2022.
7. С.О.Козоков, О.С.Казakov. Вопросы повышение эффективности хлопка очистительных предприятий // XIX Международной молодежной научно-практической конференции 23 марта 2022 г., Екатеринбург.
8. S.Qozoqov, R.Muradov. Paxta tarkibidagi iflosliklarni samarali tozalash uchun yangi tozalash qurilmasini yaratish // Namangan muhandislik-qurilish instituti. Mexanika va texnologiya ilmiy jurnali, maxsus son 2022, № 3(3).
9. S.Qozoqov. Paxta tozalash texnika va texnologiyalarining rivojlanishi

uchun olib borilgan tadqiqotlar tahlili // Namangan muhandislik-texnologiya instituti. xalqaro ilmiy-amaliy anjuman. 3-4 may 2023 yil, Namangan.

10. S.Qozoqov, R.Muradov Paxta tarkibidan iflosliklarni tozalovchi mashinalarini takomillashtirish bo'yicha olib borilgan ilmiy tadqiqotlar tahlili // Farg'ona politexnika instituti. xalqaro ilmiy-texnikaviy anjuman ma'ruzalar to'plami, 26-27 aprel 2023 yil, Farg'ona.

11. S.Qozoqov, R.Muradov, E.Tadayeva, T.Sayfidinov. Paxtani tozalovchi mashina konstruksiyasini takomillashtirish // Jizzax politexnika instituti. Respublika miqyosidagi ilmiy-texnik anjumani. Jizzax, 8-9 aprel 2022.

12. S.Qozoqov. Paxtani tozalash mashinalarini zamogradeiy texnologiyasini yaratish // Andijon mashinasozlik instituti. xalqaro ilmiy-amaliy konferensiya, 8-iyun 202-yil Andijon.

13. S.Qozoqov. Paxta tarkibidagi iflos aralashmalarni tozalash bo'yicha chet el texnologik mashinalar tahlili // Namangan muhandislik-texnologiya instituti. xalqaro ilmiy-amaliy anjumani, 16-17 may 2023-yil, Namangan.

14. S.Kozokov, R.Muradov, A.Jamolov, T.Abdukarimov. Theoretical Analysis of the Process of Cleaning Cotton from Small Contaminants on a Drum With an Inclined Splitter // Problems in the Textile and Light Industry in the Context of Integration of Science and Industry and Ways to Solve Them. AIP Conf. Proc. 2789, 040046-1-040046-8; <https://doi.org/10.1063/5.0149589> Namangan, Uzbekistan • 5-6 May 2022.

15. S.Qozoqov, R.Muradov, S.Egamov. Paxtani iflosliklardan tozalash mashinasining ta'minlagichdagi harakati nazariy yo'l bilan aniqlash // Interdiscipline innovation and scientific research conference British International Science Conference 15th July, 2023. Great Britain, London.

16. С.Қозоқов. Пахтани йирик ифлосликлардан тозалаш машинанинг ишчи қисми колосникли панжарасининг мустахамликка ҳисоблаш // Международный современный научно-практический журнал НАУЧНЫЙ ИМПУЛЬС, № 11 (100), часть 1 июнь 2023 г.

17. M.A.Salomova. Paxtani havodan ajratish jarayonining samaradorlihini oshirish maqsadida qo'zg'aluvchan qurilma konstruksiyasini takomillashtirish. // Fal. fan. PhD diss. ... Namangan, 2023 y.

C O N T E N T S

TECHNICAL SCIENCES: COTTON, TEXTILE AND LIGHT INDUSTRY

Saloxiddinova M.	3
Improving the separator design to prevent cotton fiber loss.	
Juraeva G.	9
Optimizing cotton fiber quality during the production process.	
Mamadaliyev F.	16
Analysis of problem in the aerodynamic system of cottonseed linting equipment in cotton processing plants.	
Kozokov S.	23
Conducting experiments with newly designed saw gin ribs in the cotton cleaning process for different cotton varieties.	
Usmonov I., Abdullajonov S.	30
Methods and results for determining the parameters and operating modes of irradiating watermelon seeds with ultraviolet rays.	
Majidov A.	36
Theoretical foundations of the technological parameters of a straight-flow fiber separation device.	
Rahmatova S.	44
Scientific approach to considering properties in the design of garments made from knitted fabrics.	
Rahmatova S.	48
Technology for obtaining knitted fabrics from various raw materials.	
Turaboyev G.	54
Methodology for determining the tribotechnical properties of structural materials interacting with raw cotton.	

TECHNICAL SCIENCES: AGRICULTURE AND FOOD TECHNOLOGIES

Khurmamatov A., Boyturayev S.	58
Results of industrial water treatment from mechanical impurities.	
Khurmamatov A., Alimardonov Kh., Akhmedova K.	65
Two-stage installation for deep air purification from fine-dispersed solid particles.	
Mamatusmonova D., Mamatov Sh.	73
Technical characteristics of the use of vibrating conveyors for drying rosa caninas.	
Toshboyeva S., Dadamirzayev M.	79
Physicochemical properties of a functional sauce for fish canned products.	

Saribayeva D., Maxmudova D.	
Study of protein–lipid composition in food products.	83
Gulomkhojaeva N., Zokirova M.	
Study of polyphenolic compounds in jujube (<i>Ziziphus jujuba</i> mill.) grown in Uzbekistan.	88
Gulomkhojaeva N., Zokirova M.	
Investigation of the amino acid composition in black and white mulberry (<i>Morus nigra</i> l. and <i>Morus multicaulis</i> perr.) varieties.	94
Kadirov A., Vokosov Z.	
New technology for growing microorganisms of the <i>Bacillus</i> sp, <i>Rhizobium</i> sp, <i>Azotobacter</i> sp.	101
Rakhimova G.	
Development of an effective technology for producing soy milk from local soy raw materials, studying its composition and physical and chemical properties	107

CHEMICAL SCIENCES

Khabibullaev J., Shomurotov Sh.	
Oxidation of various cellulose containing materials using the $\text{HNO}_3/\text{H}_3\text{PO}_4\text{-NaNO}_2$ system.	112
Nuritdinov A., Abdullaev O.	
Technical parameters and energy efficiency of an oil sludge processing unit	122
Okhundadaev A.	
Study of the effect of various factors on the synthesis of vinyl esters of wine acids	127
Usmonova Z.	
Effectiveness analysis of thermally and steam activated plum seed adsorbents	133
Kaxarova M.	
Technological scheme for extracting naphthalene from pyrolysis oil by the extraction (phase separation) method	139
Oribzhonov M., Bektemirov A., Arislanov A., Azizov V.	
Method for producing biosuperphosphate fertilizers containing humic compounds	143
Erkinov R., Soliyev M., Arislanov A.	
Synthesis of sulfur containing organic compounds by reaction of thiol-en and thiol-in	151
Yusupov M., Nuritdinov A.	
Elemental analysis of carboxyl-modified copper phthalocyanine pigment	156

Nuritdinov A.
Thermal analysis of carboxyl-modified cobalt and calcium metal phthalocyanine pigments 162

Isakov B.
Development and study of an anti-caking additive to improve the physico-mechanical properties of ammonium nitrate 168

TECHNICAL SCIENCES: MECHANICS AND MECHANICAL ENGINEERING

Gulamova D., Bobokulov S., Eshonkulov E.
Resistance and voltage anomalies above 200k bscco synthesized by solar technology 173

Kutbidinov O., Abdullabekov D., Usmonov D., Xushbakov M.
Analytical and experimental model for assessing the depreciation rate of transformer oil based on physicochemical factors 182

Obidov A., Abdurasulov A.
Basis of implementation of resource-effective shaft production 188

Utaev S.
Calculation of oil change intervals in diesel-based gas engines 193

Isomiddinov A.
Derivation of differential equations for spindle oscillation in a system of rectangular coordinates 200

Dedakhanov A.
Determination of fuel consumption for drying cotton raw materials 209

Atambaev D.
Difference of the individual yarns in the composition of a wrapped yar on the quality of the yar and determination of acceptable values of the main factors affecting their production 215

Rokhmonov D., Sulaymonov J.
Development of a control algorithm for a smart irrigation system based on soil moisture and meteorological data 224

Mamakhonov A., Khikmatillaev I.
Modeling of a vibratory cleaning device with cosinoidal and sinusoidal shapes in matching the longitudinal and transverse cutting surface 227

Soliyev A.
Theoretical study and characteristics of yarns in the production of circular knit fabrics 239

Nomanov M.

With improved blade mixer results of research work on the development of the 5lp linter **246**

Lastochkin P.

The influence of carding parameters optimization on the useful time coefficient of a rotor spinning machine **259**

Mirzaakbarov A.

Improving the efficiency of the ginning process to enhance fiber quality **260**

ADVANCED PEDAGOGICAL TECHNOLOGIES IN EDUCATION

Abdumanonov A.

Enhancing the methodology for applying intelligent control systems in the teaching of technical sciences **265**

Makhmudov Z.

Increasing students' activity and knowledge level using test assignments **271**

ECONOMICAL SCIENCES

Sarimsakov B., Mirzabdullayev R.

The role of contemporary HR technologies in improving business performance **275**
