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AUTOMATIC BALE OPENER UNIFLOC A 12

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Abstract
This article is devoted to the method of cleaning cotton, which is a part of the technological methods used to produce thread products from cotton mills. Pre-cleaning, main cleaning, and aerodynamic cleaning machines are used in spinning plants. These machines have pinch cleaning, impact cleaning, and aerodynamic cleaning bodies or devices. Percussive cleaning is done in one-drum, two-drum, and six-drum cleaners equipped with knives, piles, scrapers, and saw-toothed discs.

Keywords: Auto feeder, multifunctional cleaner, distributor, mixing machine, aerodynamic cleaner, mechanical cleaning, electropneumomechanical cleaning.

Introduction

Innovative bale take-off technology guarantees high efficiency in the blowroom.With a line production of up to 2 000 kg/h, the UNIfloc A 12 is extremely economical. The machine concept is based on a rugged full shell design, torque controlled direct drives and a unique scanning force measurement of the take-off unit.The fiber tufts are taken off uniformly by a patented take-off roller system, opened into so-called microtufts and there by optimally prepared for the subsequent blowroom process. Energy costs can be reduced by feeding braking power back into the electricity network.[1]

With 2 000 kg/h line production, the UNIfloc A 12 supplies cards reliably. The patented force measurement for scanning the bale laydown allows the required high productivity rate to be obtained from the very beginning, even with a new bale group. Energy is saved by both the future-orientated direct drive concept and the backward feeding of braking power into the electricity network.

Bale opening into microtufts allows the subsequent blowroom process to clean and extract dust efficiently. The scanning force measurement on the take-off unit results in a uniform take-off of the bale laydown.Thanks to the patented wobble-disk take-off roller, gentle and continuous tuft extraction is ensured. The microtufts allow an extremely homogeneous blend from the start of the process.Thanks to an operating unit with direct menu navigation and a visual display of inputs and operating states, the A 12 is intuitive to operate.The UNIfloc A 12 can process up to three different assortments. The settings of the A 12 are automatically adjusted to the specific material by the blowroom control UNIcontrol. [5]

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Figure-1. Automatic Bale Opener UNIfloc A 12

The UNIfloc A 12 achieves a processing rate of up to 2 000 kilograms of fiber material per hour and is therefore extremely economical. The machine is constructed as a rugged full shell. It has direct drives and a force measurement function that profiles the bale laydown. The fiber tufts are removed evenly by a patented roller system and opened up into microtufts. They are then fully prepared for the downstream blowroom process.

Method

The UNIfloc A 12 processes natural and man-made fibers up to a staple length of 65 mm. The bales to be taken off are supplied in a longitudinal or transverse direction on both sides of the bale opener. The A 12 processes up to three different assort
ents.The combination with the patented double teeth on the takeoff roller and the grid ensures that the raw material is gently opened up into microtufts. During each run, the take-off unit lowers by a pre-definable or calculated value. A fan extracts the fiber material and pneumatically feeds it to the downstream machine. The bales being laid down may have different heights and densities. To achieve good machine productivity, the bales need to be equalized. The bale profiling system of the UNIfloc A 12 uses unique technology. During the first production run, the A 12 profiles the bale height and density by taking a scanning force measurement.The bale profile is detected directly.Based on the system's calculations, the bales are taken off layer by layer during the runs that follow. The bale laydown is quickly equalized and taken off completely with high production rates. [7]

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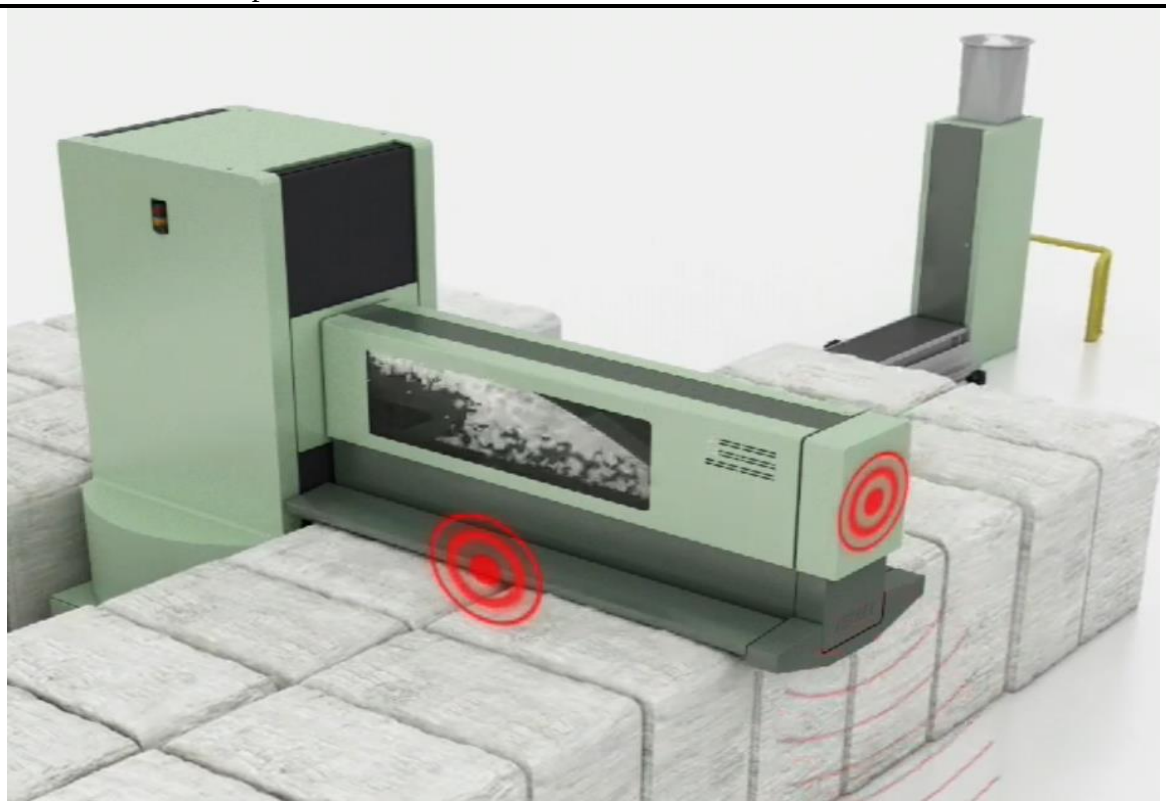

Figure-2.Optimal personal safety and safe production process

Personal safety was high on the agenda when designing the new bale opener.

A 2D scanner ensures a high standard of safety. The 2D scanner is resistant to external influences such as temperature and air currents and immediately detects when a person has entered the hazard zone. The machine shuts down in a proper manner. Additional mechanical devices safeguard the working area of the A12.Measuring the volume flow rate guarantees continuous process reliability and prevents the machine from clogging. Production runs safely and smoothly.[8]

Microtufts – the key to optimum quality

The fineness of the fiber tufts is determined via the 312 double teeth of the patented wobble disk take-off roller and their rotational speed. Continuous and even take-off of the bale laydown material is another requirement for small uniform microtufts.This is achieved by the take-off unit of the UNIfloc A 12, which moves over the bales and measures the scanning force using a patented method. This guarantees an even fiber flow to the next blowroom machine. The microtufts obtained in this way can be effectively cleaned and dedusted during the downstream blowroom process.

Conclusion:

The operating unit is located on the front next to the suction duct and provides a good overview of the machine state. Parameters can be entered and easily changed by the operator. The A 12 is connected to the UNIcontrol blowroom control. UNIcontrol delivers the data to the superordinate mill control system SPIDERweb. As a result, the spinning mill manager has

an overview of the machine's operating state at all times.An efficient blowroom process is dependent on the raw material being well opened from the outset. Only trash and dust that is on the tuft surface can be gently and efficiently removed during the blowroom process. The smaller the opened tufts, the larger their relative surface.Up to three bale groups can be laid down on each side of the A 12. The bale sequence and the length of the bale groups can be freely selected. Up to three assortments are possible. The A 12 processes bale laydowns across a total length between 6 and 46 meters. A maximum of 40 000 kilograms of raw material can be laid down. This ensures flexible and economical production.

References

1. Z.O. Eshmurodov, M. Abdusalomov "KO'TARISH MOSLAMALARINING ELEKTR YURITMALARI UCHUN RAQAMLI BOSHQARUV TIZIMLARI VA ULARNI QURILISH HUSUSIYATLARI" Eurasian Journal of Academic Research 2 (6), 630-636. 2022.
2. Abdusalomov, M. B., & Asranov, X. K. (2023) "SUTNI QURITISHNING ZAMONIY TEXNOLOGIYASI HAMDA MAXSULOTNING XOZIRGI KUNDAGI AHMIYATI VA UNING AVZALLIKLARI" Universal Journal of Technology and Innovation, 1(1), 20-27.
3. Asranov, H. K., Abdusalomov, M. B., & Sh, T. H. (2023). Automation of quality control at oil factories (improvement of oil quality). Texas Journal of Engineering and Technology, 20, 75-78.
4. Bobir o'g'li, A. M. (2023). "MECHATRONICS AND MANUFACTURING INTEGRATION: DRIVING EFFICIENCY AND INNOVATION" Mexatronika va robototexnika: muammolar va rivojlantirish istiqbollari, 1(1), 141-144.
url: https://michascience.com/index.php/mrmri/article/view/88
5. Fayzulloh, S., & Salohiddin, G. U. (2023). REAKTIV QUVVAT NAZORATINI BOSHQARISH JARAYONINI MATLAB DASTURIDA MODELLASHTIRISH. FAN, JAMIYAT VA INNOVATSIYALAR, 1(1), 147-153.
Url: https://michascience.com/index.php/fji/article/view/26
6. Fayzulloh, S., & Islombek, S. (2023). THE USE OF RADAR SENSORS IN MEASURING SATURATION. FAN, JAMIYAT VA INNOVATSIYALAR, 1(1), 126-131.
Url: https://michascience.com/index.php/fji/article/view/23
7. Fayzulloh, S., & Sanjarbek, A. (2023). REACTIVE POWER COMPENSATION: ENHANCING POWER SYSTEM EFFICIENCY AND STABILITY. FAN, JAMIYAT VA INNOVATSIYALAR, 1(1), 132-137.
Url: https://michascience.com/index.php/fji/article/view/24
8. Khasanov R.D. (2023). A Comparative Analysis of AutoCAD and NX Siemens Programs in Tokhirov, A. I. (2021). USING THE GRAPHICAL EDITOR" КОМПАС 3D" in teaching computer engineering graphics. Universum: технические науки: электрон. научн. журн, 7(88), 8-3.
9. Tokhirov, A. (2021). Application procedure CAD/CAM/CAE-systems in scientific research. Universum: технические науки, (6-5), 16-19.
10. Tokhirov, A. (2021). Writing control programs for computer numeral control machines. Universum: технические науки, (5-6), 15-17.

11. Tokhirov, A. (2021). WRITING CONTROL PROGRAMS FOR COMPUTER NUMERAL CONTROL MACHINES. Universum: технические науки, (5-6), 15-17.
12. ugli Tokhirov, A. I. (2021). Technological process development using CAD-CAM programs. Science and Education, 2(6), 288-291.
13. Tokhirov, A. I. U. (2021). Technological process development using CAD-CAM programs. Science and Education, 2(6), 288-291.
14. TOKHIROV, A., & MARASULOV, I. (2021). Control models and information system of cotton storage in the claster system. UNIVERSUM, 12-18.
15. Ogli, I. M. R., & Ogli, T. A. I. (2021). A Role of Mechanical Engineering in Mechatronics. JournalNX, 824-828.
16. Djurayev, A. D., Tokhirov, A. I., & Marasulov, I. R. (2022). CLEANING COTTON FROM SMALL DIRTY. Universum: технические науки: электрон. научн. журн, 3, 96.
17. A'zamjon, T. (2022). ROBOTOTEXNIKA MAJMUALARINING AVTOMATLASHTIRILGAN ELEKTR YURITMALARINI QO'LLANILISH SOHALARI. Involta Scientific Journal, 1(6), 3-9.
18. A'zamjon, T. (2022). ROBOTOTEXNIKA MAJMUALARINING AVTOMATLASHTIRILGAN ELEKTR YURITMALARINI QO'LLANILISH SOHALARI. Involta Scientific Journal, 1(6), 3-9.
19. Marasulov, I. R., & Toxirov, A. I. (2021). A role of mechanical engineering in mechatronics. Journal NX–A Multidisciplinary Peer Reviewed Journal, 824-828.
20. Tokhirov, A. I. Methodology of teaching three-dimen modeling using the program «KOMPAS 3D». Eurasian Journal of Academic research Innovative Academy Research Support Center/[Электронный ресурс].–Режим доступа: https://doi. org/10.5281/zenodo, 4718298.
21. Tokhirov, A. (2021). APPLICATION PROCEDURE CAD (No. 6, p. 87). CAM/CAE–SYSTEMS IN SCIENTIFIC RESEARCH//Universum: technical sciences: a scientific journal.
22. Ibrohim o'g, T. A. Z. (2022). Robototechnics And Technical Sets Application Of Automatic Electric Power Supplies Fields. Open Access Repository, 8(6), 92-96.
23. Джураев, А. Д., Далиев, Ш. Л., & Тохиров, А. И. У. (2022). РАЗРАБОТКА ЭФФЕКТИВНОЙ КОНСТРУКТИВНОЙ СХЕМЫ ОЧИСТИТЕЛЯ ХЛОПКА-СЫРЦА ОТ МЕЛКОГО СОРА. Universum: технические науки, (9-2 (102)), 26-28.
24. Anvar, D., Azamjon, T., & Islombek, M. (2022). CLEANING COTTON FROM SMALL DIRTY. Universum: технические науки, (3-7 (96)), 9-14.
25. Azamjon, T., & Islombek, M. (2021). CONTROL MODELS AND INFORMATION SYSTEM OF COTTON STORAGE IN THE CLASTER SYSTEM. Universum: технические науки, (11-6 (92)), 12-18.
26. Azamjon, T. (2021). WRITING CONTROL PROGRAMS FOR COMPUTER NUMERAL CONTROL MACHINES. Universum: технические науки, (5-6 (86)), 15-17.
27. Ugli, T. A. I. (2021). USING THE GRAPHICAL EDITOR" КОМПАС 3D" IN TEACHING COMPUTER ENGINEERING GRAPHICS. Universum: технические науки, (7-3 (88)), 38-43.
28. Azamjon, T. (2021). APPLICATION PROCEDURE CAD/CAM/CAE-SYSTEMS IN SCIENTIFIC RESEARCH. Universum: технические науки, (6-5 (87)), 16-19.

29. IR, D. A. T. A. M. CLEANING COTTON FROM SMALL DIRTY.
30. A'zamjon Ibrohim o'g'li Toxirov, Robototexnika majmualarining avtomatlashtirilgan elektr yuritmalarini qo'llanilish sohalari, "Science and Education" Scientific Journal, May 2022 Vol. 3 No. 5 (2022): Science and Education
URL: https://openscience.uz/index.php/sciedu/article/view/3425
31. Toxirov A'zamjon. ROBOTOTEXNIKA MAJMUALARINING AVTOMATLASHTIRILGAN ELEKTR YURITMALARINI QO'LLANILISH SOHALARI. Involta Scientific Journal, 1(6), 3–9.
URL: https://involta.uz/index.php/iv/article/view/159
DOI - 10.5281/zenodo.6519792
32. Djurayev A.D., Tokhirov A.I., Marasulov I.R. CLEANING COTTON FROM SMALL DIRTY // Universum: технические науки : электрон. научн. журн. 2022. 3(96).
URL: https://7universum.com/ru/tech/archive/item/13196
DOI - 10.32743/UniTech.2022.96.3.13196
33. Tokhirov A.I. Writing control programs for computer numeral control machines // Universum: технические науки : электрон. научн. журн. 2021. 5(86).
URL: https://7universum.com/ru/tech/archive/item/11810
DOI - 10.32743/UniTech.2021.86.5.11810
34. Tokhirov A.I. Application procedure CAD/CAM/CAE - systems in scientific research // Universum: технические науки : электрон. научн. журн. 2021. 6(87).
URL: https://7universum.com/ru/tech/archive/item/11836
DOI - 10.32743/UniTech.2021.87.6.11836
35. Tokhirov A.I. Using the graphical editor "Компас 3D" in teaching computer engineering graphics // Universum: технические науки : электрон. научн. журн. 2021. 7(88).
URL: https://7universum.com/ru/tech/archive/item/12076
DOI: 10.32743/UniTech.2021.78.8-3.12076
36. Tokhirov A.I., Marasulov I.R. CONTROL MODELS AND INFORMATION SYSTEM OF COTTON STORAGE IN THE CLASTER SYSTEM // Universum: технические науки : электрон. научн. журн. 2021. 11(92).
URL: https://7universum.com/ru/tech/archive/item/12486
37. Azamjon Ibrohim ugli Tokhirov, "TECHNOLOGICAL PROCESS DEVELOPMENT USING CAD-CAM PROGRAMS", "Science and Education" Scientific Journal, June 2021
URL: https://openscience.uz/index.php/sciedu/article/view/1561
38. Toxirov A'zamjon Ibrohim o'g'li, "METHODOLOGY OF TEACHING THREE-DIMEN MODELING USING THE PROGRAM "KOMPAS-3D"", EURASIAN JOURNAL OF ACADEMIC RESEARCH Innovative Academy Research Support Center,
URL: https://doi.org/10.5281/zenodo.4718298
39. Marasulov Islombek Ravsjanbek o'g'li,Tohirov A'zamjon Ibrohim o'g'li, "THE IMPORTANCE OF AUTOMATION OF COTTON RECEIVING SYSTEM", EURASIAN JOURNAL OF ACADEMIC RESEARCH Innovative Academy Research Support Center,
URL: https://doi.org/10.5281/zenodo.4898919
40. Toxirov A'zamjon Ibrohim o'g'li, "QUALITY IN MODERN MANUFACTURING ENTERPRISES THE ROLE OF ROBOTOTECHNICS AND AUTOMATED ELECTRICAL

INSTRUMENTS IN PRODUCTION", EURASIAN JOURNAL OF ACADEMIC RESEARCH Innovative Academy Research Support Center,
URL: https://doi.org/10.5281/zenodo.4968770
41. Islombek Marasulov Ravshanbek Ogli, & Toxirov Azamjon Ibrohim Ogli. (2021). A ROLE OF MECHANICAL ENGINEERING IN MECHATRONICS. JournalNX - A Multidisciplinary Peer Reviewed Journal, 824–828.
URL: https://repo.journalnx.com/index.php/nx/article/view/1690
42. Technical Drawing. Texas Journal of Engineering and Technology, 22, 10–12. Retrieved from
URL: https://zienjournals.com/index.php/tjet/article/view/4224