PROSPECTS FOR TEXTILE FABRICS

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Abstract

Within three months, the Cabinet of Ministers of the Republic of Uzbekistan approved the Concept of accelerated development of the textile and clothing industry for 2019-2025. support-based production and export, research of domestic and foreign markets for the sale of textile products, implementation of measures to ensure the competitiveness of products in domestic and foreign markets, the creation of a single chain of value added, to increase the volume of textile exports to 7 billion US dollars by 2025 through the processing of the entire volume of cotton yarn [1].

The Ministry of Investment and Foreign Trade of the Republic of Uzbekistan together with the Ministry of Foreign Affairs, the Association of Textile Industry of Uzbekistan organizes international exhibitions of textile and fashion industry in Uzbekistan at least once a year, including textile events in the world calendar. Agreements with the European Union, Turkey, Korea, China and other countries will include the reduction of customs duties on national textile products and the simplification of regulatory measures.

Electric cloth. The German company Novonic has developed a material production technology with the best cross-linked wires. If current is passed through the wires, the fabric will heat up. The maximum heating temperature is 42 degrees Celsius. The smart clothes respond to the owner’s command - just by pressing a button, the heating process starts. The built-in electronics are powered by a 7.4 V compact power supply that weighs about 200 grams. One battery charge provides 6 heating cycles of 20 minutes each. The battery charging status is indicated by the LED [2, 3]. "Electric" clothes can be washed at a temperature of 30 degrees.

Clothing manufacturers use Novonic technology to create kits that protect against wind and cold temperatures

Clothing is something that a person observes throughout their life. It is a substance that is connected to us, bringing comfort and convenience. The production of modern clothing is not left out of innovative technologies. The fashion industry is entering the latest materials with fantastic properties. Clothing stays “smart” - it reacts to cold or heat, charges mobile devices, demonstrates our mood to others, and transmits emotions to distance. Designers are already using the power of high-tech fabrics to create stunning garments of a new generation.

It is currently working on creating a huge demand for light clothing for promising fabrics. Designers are constantly improving their inventions, improving the features of electronic units, chargers, and developing safe ways to connect microgadgets and suits.

Bright fabrics are also offered by the French company LumiGram. They produce interwoven optical fiber materials. Products made from them bloom in the dark with an unusual glow. You need a 3-5 volt battery for the backlight. You can turn the light mode on or off. It is possible to switch four light modes with the ability to change the intensity of the light. The visual performances in costumes sewn from bright fabric leave an unforgettable experience.

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Microcapsules for tissues. The technology of inserting microcapsules into tissues has been known since the end of the last century, but now the active creation of materials containing microcapsules of various substances has begun. The American company Outlast Technologies originally patented an Outlast material designed for military clothing. The property of the material is to regulate the heat inside the garment. The fibers of the thermoregulatory fabric are impregnated with embedded paraffin microcapsules. When heated, paraffin dissolves, absorbing excess heat. When cooled, the paraffin in the capsule solidifies and releases the absorbed heat energy. Thus, the garment itself maintains a heat balance.

In the fashion industry, the material with paraffin microcapsules can be widely used if the fabric is lighter. Innovative microcapsulation technologies are gradually bringing new opportunities to the fashion world.

Depending on the quality of the microcapsules, it is possible to obtain tissues that change color when exposed to sunlight (photochromic tissue) or when temperature changes (thermochromic

material) [4, 5]. A useful invention will be a fabric with antibacterial, anti-inflammatory and moisturizing effect. Experts recommend using it for children and casual wear. Aromatic microcapsule fabrics are currently being produced.

The types of fabrics under study are different, and examples of previously used yarns and nonwovens are also available. The longevity of this trend depends on factors such as the increase in the number of people on the planet and changes in the natural climate. Due to water shortages, declining arable land, and global warming, cotton production is declining, which could lead to a reduction in raw materials for the cotton industry.

Given that promising fabrics can be used in clothing, sports, medicine, household items, we can say that they can be used in all industries.

The types of these fabrics are evolving day by day and it is recommended to use new and new types. Analysis of the literature shows that currently more than a hundred scientific organizations and enterprises are engaged in the production of this type of fabric [6-11]. The main manufacturers are Europe, USA, China, South Korea and other developed countries. Depending on the use of promising fabrics, there are requirements such as thinness, flexibility, resistance to temperature and sunlight, made of popular raw materials. Below we get acquainted with the products of a number of companies:

EVENT companywith the most comprehensive range of waterproof, windproof and weatherproof EPTFE technologies in the field, the brand has expanded its range of products including new bio-based membrane technology. EVent Bio uses sustainable materials to protect against any weather and to ensure the performance that users expect from eVent fabrics. EVent creates high-quality clothing, footwear and accessories with fabrics in any weather conditions and introduces the peculiarities of their use. EVent fabrics are waterproof, breathable, dry and comfortable, and their tents are resistant to strong winds. eVent fabrics use a style invented and patented by Direct Venting.

In bad weather, not only workers but also climbers, extreme travelers, hunters, snow athletes and water sports fans are more likely to clash. Such cases restrict human freedom of movement or health.

Figure 1. Prospective membrane clothing for climbers

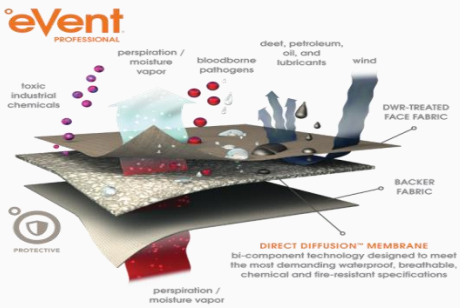

Figure 2. eVent waterproof fabric

The company received a patent in 1999 for a fully waterproof fabric (Figure 1). Its assortment introduced naming based on the main function of the fabric. These include wind, storm, water, salt water, rain, breathing, and more. Depending on the thickness or thinness, the names are also given internal terms. It has also launched the production of mechanical protective fabrics for industrial and special workwear.

One of the main directions of the military (Fig. 2) is the production of fabrics for protective clothing for firefighters, acids and oils.

The main purpose of another company is the production of heated underwear.appeared at the end of the last century. It was first used as ammunition as an element of uniform for specially armed warriors and was initially unknown to many. A few years later, due to its remarkable properties, thermal underwear became used only in the army and later gained popularity among athletes [12-19]. In particular, athletes, extreme athletes and those who are active in sports know about thermal underwear.

Figure 3. Thermal underwear.

Figure 4. Fabric for thermal underwear.

Thermal underwear has been produced by many manufacturers due to its rapid growth (Figure 3). The different thermal underwear models differed from each other not only in design but also in features and consumer characteristics.

The main function of thermal underwear is to remove moisture from the surface of the human body (Figure 4). Heat storage is a special case. The term “comfortable heating mode” in the definition does not refer to heat retention. In hot weather, a person is comfortable to cool off. The division of warm underwear into types depends on its characteristics. In turn, the properties of thermal underwear are determined by the composition and texture of the fabric from which these thermal underwear are made. Both of these factors are important and complement each other [20-24].

3D (three-dimensional) weaving methods are often used in the production of fabrics for thermal underwear. They make it possible to obtain complex, single, double and triple-layer

fabrics, as well as fabrics with different textures and density zones, taking into account temperature changes in different layers of the human body.

A single layer of fabric is used to sew summer thermal underwear. Such thermal underwear should remove moisture from the surface of the human body and have a cooling effect. Good airflow The texture of all layered fabrics is designed to meet the above requirements.

Assortments of special clothing and their requirements, fabrics used for special work clothes made of promising fabrics are classified, assortments of clothes made of promising fabrics for different professions in use today, requirements for them depending on the function of each garment , the types of promising fabrics used in the world today, information on the range of these fabrics.The waterproof and breathable fabric is designed to protect against wind, rain and body heat loss, while the breathable fabric passively releases water vapor and prevents the ingress of liquid water for comfortable clothing. Breathable is much better than a fabric covered with ordinary waterproof materials, which has a higher resistance to vapor transport than ordinary woven fabrics. The water-resistant breathable fabric will continue to breathe in the rain. But the breathing ability of most of them stops after prolonged exposure to prolonged heavy rain conditions. The water-resistant breathable fabric is also highly breathable, ensuring dryness and comfort in any activity.

References

1. Tohirovich, B. H., & Abdujabbor O‘g‘li, Y. A. (2020). Change of Physical and Mechanical Properties of Twisted Yarn during Rewinding. The American Journal of Engineering and Technology, 2(08), 64-69.
2. Ugli, Y. A. A., Tokhirovich, B. H., & Abdujabborovich, Y. S. (2021). Research into the effect of stretching couples on the quality of thread in a ring spinning machine. ACADEMICIA: An International Multidisciplinary Research Journal, 11(3), 164-171.
3. Ugli, Y. A. A., Tokhirovich, B. H., & Qambaraliyevich, Y. J. (2021). Analysis of changes in the physical and mechanical properties of twisted yarns as a result of finishing. ACADEMICIA: An International Multidisciplinary Research Journal, 11(3), 117-122.
4. Soloxiddinov, J., Bobojanov, H., Fayzullayev, S., & Korabayev, S. (2022, June). Analysis of the effect of spindle speed on the quality of yarn on the spinning machine and use of the Android application in the analysis. In AIP Conference Proceedings (Vol. 2432, No. 1, p. 030038). AIP Publishing LLC.
5. Abdujabbor o’g’li, Y. A., & Abdujabborovich, Y. S. (2022, May). Scientific research of improving the quality of yarns on a spinning machine. In E Conference Zone (pp. 19-21).
6. Abdujabbor o’g’li, Y. A. (2022, April). Improving the quality of yarns by installing an additional compactor on the spinning machine. In E Conference Zone (pp. 280-282).

7. Tokhirovich, B. H., Ugli, Y. A. A., & Ugli, M. A. A. (2021). Influence of technological parameters of the drafting systems of the ring spinning machine on yarn quality. ACADEMICIA: An International Multidisciplinary Research Journal, 11(3), 93-102.
8. Bobajonov, H. T., Yuldashev, J. K., Gafurov, J. K., & Gofurov, K. (2017, October). The arrangement of the fibers in the yarn and effect on its strength. In IOP Conference Series: Materials Science and Engineering (Vol. 254, No. 8, p. 082005). IOP Publishing.
9. Gafurov, J. K., Mardonov, B., Gofurov, K., Dushamov, O. S., Ergashev, O. O., & Bobajonov, H. T. (2018, December). Yarn Deformation with view of its structural structure. In IOP Conference Series: Materials Science and Engineering (Vol. 459, No. 1, p. 012042). IOP Publishing.
10. Жуманиязов, К. Ж., Матисмаилов, С. Л., Юлдашев, Ж. К., & Бобожанов, Х. Т. (2018). Расчет силы трения волокон о переднюю грань зуба дискретизирующего барабана прядильной машины. Universum: технические науки, (11 (56)), 4-7.
11. Бобожанов, Х. Т., Юлдашев, Ж. К., Содиков, Р. А., & Исматуллаев, Н. А. (2018). Исследования по измерению деформации пряжи при помощи оптических приборов. Universum: технические науки, (12 (57)), 64-66.
12. Bobojanov, H. T., Jumaniyazov, J. Q., Gofurov, Q. G., & Gofurov, J. Q. (2019). The relationship between the properties of yarn and knitted. Textile Journal of Uzbekistan, 1(1), 7.
13. Bobojanov, H. T., Gofurov, Q. G., Jumaniyazov, Q. J., & Raxmatulinov, F. F. (2019). New ways to measure yarn deformation. Textile Journal of Uzbekistan, 2(1), 63-68.
14. Бобожанов, Х. Т., Холиков, К. М., Сидикжанов, Ж. С. У., & Назарова, М. А. К. (2019). Исследования трикотажных полотен, выработанных из компактной и обычной пряжи. Universum: технические науки, (3 (60)), 20-25.
15. Yuldashev, J. Q., & Bobojanov, H. T. (2020). Study Of The Influence Of The Parameters Of The Sampling Zone On The Condition Of The Capture Of Fibers By The Drum Teeth. The American Journal of Engineering and Technology, 2(08), 75-78.
16. Bobojonov, H. T., Yusupov, A. A., Yuldashev, J. Q., & Sadikov, M. R. (2020). Influence of deformation properties of yarn on the quality of knitted fabric. Test Engineering and Management, 29502-29513.
17. Хаятов, Э. М., Раджабов, У. У., & Рахматов, К. Р. (2019). Результаты вертебропластики при лечении больных с патологическими переломами и гемангиомами позвонков. Новый день в медицине, (4), 352-354.
18. Jamshid, Y., Akbarjon, U., & Olimjon, S. (2020). Dynamics of Interaction of a Single Fiber with a Headset of a Sampling Drum. Engineering, 12(6), 347-355.

19. Максудов, Н. Б., Нигматова, Ф. У., Юлдашев, Ж. К., & Абдувалиев, Р. Р. (2018). Анализ деформационных свойств высокоэластичных трикотажных полотен для проектирования спортивной одежды. Universum: технические науки, (9 (54)), 12-16.
20. Yuldashev, J. Q., Rayimberdieva, D. X., Mirxojayev, M. M., & Atambaev, D. D. (2019). Analysis of Modern Sportswear Materials. International Journal of Advanced Research in Science, Engineering and Technology. INDIA, 6(3), 8535-8540.
21. Zikirov, M. C., Qosimova, S. F., & Qosimov, L. M. (2021). Direction of modern design activities. Asian Journal of Multidimensional Research (AJMR), 10(2), 11-18.
22. Qambaralievich, Y. J. (2022, May). Research to improve the working parts of a pneumo-mechanical spinning machine. In E Conference Zone (pp. 17-18).
23. Khamrakulova, Z. (2022, June). Improving product quality by improving the working body of the spinning machine. In E Conference Zone (pp. 21-24).
24. Жуманиязов, К. Ж., Матисмаилов, С. Л., Юлдашев, Ж. К., & Бобожанов, Х. Т. (2018). Расчет силы трения волокон о переднюю грань зуба дискретизирующего барабана прядильной машины. Universum: технические науки, (11 (56)), 4-7.