ZAMONAVIY KIYIMLARDA QO‘LLANILADIGAN MASHINA YORDAMIDA TIKILGAN TURLI TURDAGI KASHTA TIKISHLARNI O‘RGANISH

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Moda va dizayn kafedrasi dotsenti

Annotatsiya: *Maqolada zamonaviy kiyimlarda qo‘llaniladigan turli xil mashina kashtachiligi turlari, shuningdek, ularning mahsulotlarning estetik va funksional xususiyatlarini shakllantirishdagi roli ko‘rib chiqiladi. Tadqiqotning dolzarbligi tikuvchilik sanoatida avtomatlashtirilgan texnologiyalarning keng qo‘llanilishi va kiyimlarni dekorativ bezashga bo‘lgan qiziqishning ortib borishi bilan izohlanadi. Mashinada kashta tikishning asosiy usullari, ularning texnologik xususiyatlari, afzalliklari va qo‘llanish sohalari tahlil qilinadi.*

Kalit so‘zlar: *mashinada kashta tikish, zamonaviy kiyimlar, kiyim dizayni, bezakli pardozlash, kashtachilik texnologiyalari, to‘qimachilik, avtomatlashtirish, moda, innovatsiyalar, tikuvchilik sanoati.*

ИССЛЕДОВАНИЯ РАЗНЫХ ВИДОВ МАШИННОЙ ВЫШИВКИ ИСПОЛЬЗУЕМЫЕ В СОВРЕМЕННОЙ ОДЕЖДЕ

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Аннотация: *В статье рассматриваются различные виды машинной вышивки, применяемые в современной одежде, а также их роль в формировании эстетических и функциональных характеристик изделий. Актуальность исследования обусловлена широким распространением автоматизированных технологий в швейной промышленности и растущим интересом к декоративной отделке одежды. Анализируются основные техники машинной вышивки, их технологические особенности, преимущества и области применения.*

Ключевые слова: *машинная вышивка, современная одежда, дизайн одежды, декоративная отделка, технологии вышивки, текстиль, автоматизация, мода, инновации, швейная промышленность.*

RESEARCH ON DIFFERENT TYPES OF MACHINE EMBROIDERY USED IN MODERN CLOTHING

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Annotation: *The article examines various types of machine embroidery used in modern clothing, as well as their role in shaping the aesthetic and functional characteristics of garments. The relevance of the study is обусловлена the widespread use of automated technologies in the garment industry and the growing interest in decorative clothing finishes. The main machine embroidery techniques, their technological features, advantages, and areas of application are analyzed.*

Keywords: *machine embroidery, modern clothing, fashion design, decorative finishing, embroidery technologies, textiles, automation, fashion, innovations, garment industry.*

The modern fashion industry is активно developing due to the introduction of innovative technologies, among which machine embroidery holds an important place. It allows for the creation of complex decorative elements with high precision, speed, and repeatability, which is especially important in conditions of mass production. The use of digital technologies and specialized software enables designers to implement even the most intricate artistic ideas, adapting them to various types of fabrics and garment structures.

Unlike hand embroidery, machine technology ensures consistent product quality, reduces production time, and lowers costs. At the same time, modern machines are capable of imitating hand techniques, which helps preserve the aesthetic value and uniqueness of the design. Thus, machine embroidery becomes an important tool for integrating traditional decorative and applied arts into modern fashion.

Main Types of Machine Embroidery. There are several main types of machine embroidery used in garment production, each of which has its own technological features, artistic possibilities, and areas of application.

1. Satin Stitch Embroidery. This is one of the most popular and versatile types of machine embroidery. It is characterized by a dense arrangement of parallel stitches that completely fill a given shape, creating a smooth and glossy surface.

Satin stitch embroidery is widely used for decorating logos, inscriptions, monograms, and ornamental designs. It is especially effective on medium-weight fabrics, where it allows for clear lines and high visual expressiveness. However, when working with large elements, it requires careful adjustment of stitch density to avoid fabric distortion.

Additionally, this type of embroidery can vary in stitch width, thread direction, and density, making it possible to create a variety of visual effects—from strict geometric shapes to soft gradients.

2. Outline Embroidery. Outline embroidery consists of a sequence of single stitches forming the lines of a design. It is one of the simplest yet highly functional techniques. It is used for outlining shapes, creating fine lines, detailing designs, and marking guidelines before applying more complex types of embroidery. Due to minimal thread consumption and high production speed, this type is economically efficient. In addition, outline embroidery is widely used in minimalist clothing design, where lightness and graphic clarity of the image are essential.

3. Fill Embroidery. This type of embroidery is designed to fill large areas of a pattern using various types of stitches that create a textured surface. Unlike satin stitch embroidery, it employs a variety of patterns such as grids, diagonal lines, zigzags, and other structures. Fill embroidery makes it possible to create complex decorative compositions with a sense of depth and volume. It is widely used in designer clothing, especially in the creation of large ornaments and artistic textile panels. Technologically, this type requires precise adjustment of parameters such as stitch density, angle, and fill direction to prevent fabric deformation and ensure uniformity of the design.

4. Applique Embroidery combines elements of embroidery with applied fabric pieces. First, a piece of fabric is placed onto the garment and then secured with embroidery stitches. This method significantly reduces stitch density and, consequently, the stress on the fabric, which is especially important when working with lightweight materials. In addition, appliqué allows for combining different textures, colors, and materials, creating expressive design solutions.

5. 3D Embroidery (Raised Embroidery). 3D embroidery is a modern technique that allows for the creation of raised, three-dimensional designs. Special underlays, most often made of foam, are placed beneath the stitches to create volume. This type of embroidery is especially popular in streetwear and sports fashion, for example in decorating baseball caps, jackets, and hoodies. 3D embroidery enhances the expressiveness of a garment, making it more noticeable and visually appealing. Technologically, it requires precise machine settings, as it is important to take into account the thickness of the material and the sequence of stitch application.

6. Combined Embroidery. Combined embroidery involves the use of multiple techniques within a single garment. For example, satin stitch, outline, and fill embroidery can be used together, along with applique elements. This approach makes it possible to create complex artistic compositions rich in texture and visual impact. Combined embroidery is widely used in designer collections, stage costumes, and exclusive garments. Its main advantage lies in achieving maximum expressiveness through a variety of techniques and effects.

Machine embroidery has a number of significant advantages that make it one of the most востребованных technologies in the modern apparel industry. One of its key benefits is high production speed: modern embroidery machines are capable of creating complex patterns within minutes, which is especially important for mass production. This significantly reduces manufacturing time and increases overall production efficiency.

Another important advantage is the precision and repeatability of the design. Thanks to digital programming, every element of the pattern is reproduced with a high degree of accuracy, and the finished products fully correspond to the original design regardless of the production volume. This is particularly relevant for branded products, uniforms, and serial collections where strict consistency is required.

In addition, machine embroidery offers wide possibilities for creating complex designs. It allows for the realization of multilayer compositions, fine detailing, and the creation of visual effects, including gradients and textured transitions. With the help of specialized digitizing software, any graphic image can be adapted for embroidery technology, taking into account the characteristics of the fabric and the threads used.

An important advantage is also durability and resistance to wear. Embroidered elements are highly durable, retain their shape after numerous washes, and are resistant to fading and mechanical impact. Unlike printed images, they do not crack and maintain their original appearance over a long period of time, making them especially востребованными in everyday and workwear.

Modern technologies provide extensive opportunities for automating the embroidery process. Embroidery machines can be easily integrated into automated production lines, which minimizes human involvement, reduces the likelihood of errors, and ensures consistent product quality. Automation also facilitates efficient scaling of production and increases output volumes.

Finally, machine embroidery is a cost-effective technology. Despite significant initial investments in equipment, in the long term it helps reduce costs by decreasing manual labor, increasing productivity, and minimizing defects. All of this makes machine embroidery an important and promising tool in the modern fashion industry.

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