

Topic № 3 APPAREL TECHNOLOGY













A COMPARATIVE STUDY ON AIR PRESENCE ALONG STITCH LINES FOR THE PURPOSE OF INCREASED THERMAL RESISTANCE

Saeed HASSAN, Dr. -Ing.

Technische Universität Dresden, Faculty of Mechanical Engineering, Chair of Assembly Technology for Textile Products, Hohe Str. 06, Dresden, Germany e-mail: hassan.saeed@tu-dresden.de

Introduction

In clothing products for extreme weather conditions, layers of textile materials are combined with insulation materials and are held together with sewing. During the stitch formation, the outer and inner layers of textile material are brought close together by the tensions of sewing threads. The air, which itself act as an insulator plays a very important role in clothing insulation systems [1], [2]. Due to compression along stitch lines the entrapped air in insulation material in particular is forced to leave. During the stitch formation when the outer and inner membranes of the material are sewn together and cold spots are formed, heat conduction is very rapid and a general reduction in the overall insulating value of the material takes place [3]. These thin spots, commonly known as 'cold spots', are responsible for heat loss from the human body to its external climate.

Experimental part

A new sewing technology is developed which do not rapidly compress the sewing material and insulation material sandwich structure along stitch lines, thus help to maintain sustain the insulating air along stitch lines which is important for higher thermal resistance. The new technology is names as 'Spacer Stitching'. This new material feeding technique introduces a distance between the extreme layers of fabric and prevents the compression of insulating material by thread tensions at needle insertion points. Due to introduction of distance between the extreme layers of fabrics, it is named 'Spacer Stitching'. Spacer stitching patent application (EP 3252196 A1) has published on 06.12.2017 [4].

Results, Discussion, and Conclusion

In order to compare the thermal resistance sweating guarded hot plate test method was used. The

sweat guard hot plate or commonly known as skin model works as per DIN (BS) EN 31092 and ISO 11092 [5], [6]. This device measures thermal properties and water vapor resistance of fabrics and other materials under steady state conditions. The tested fabric sample is placed on a horizontal porous metal plate, which is heated up to 35 °C [7]. Air flow is maintained during testing at $1 \pm$.0.05 m/s at 15 mm above working platform [8]. The dimensions of sample prepared







are 300 mm * 300 mm. In total 15 samples were prepared with 5 samples each for conventional lockstitch, unstitched sample and spacer stitching with stitch pate distance of 11 mm for testing.

The thermal resistance of samples without stitch showed the best thermal resistance, followed by the samples sewn with spacer stitching. Samples sewn with conventional lockstitch showed the lowest thermal resistance. An improvement of 3.6 % was observed in thermal resistance of spacer stitching samples when compared with conventional lockstitch method.

Keywords: air gaps, thermal resistance, spacer stitching, lockstitch *Bibliography*

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APPLICATION OF ELEMENTS OF BULGARIAN FOLK COSTUME IN CONTEMPORARY CLOTHING

Snezhina Angelova ANDONOVA¹, Elka Zankova DJURAKOVA², Milena Hasanova PERCHINKOVA², Daniela Sadakova ILIEVA²

¹South-West University "Neofit Rilski", Faculty of Engineering, Department of Mechanical Engineering and Technologies, Ivan Mikhailov Street, №56, Blagoevgrad, Bulgaria ²Secondary school "Metodiy Draginov", village of Draginovo, municipality of Velingrad, Bulgaria e-mail: andonova_sn@swu.bg

Abstract

1.Introduction

In recent years, globalization has conquered all spheres of natural science, technology and industry. The global dissemination and integration of ideas, technologies and culture [3] is particularly characteristic of the fashion and apparel industries [5].

In this dynamic development of globalization it is of utmost importance that we manage to preserve specific Bulgarian traditions and customs. Some of the innermost manifestations of the national spirit have found expression in Bulgarian folk costumes.

Each application of elements of the Bulgarian folk costume in our contemporary clothing is a touch of the national spirit and striving to preserve the national traditions.

The purpose of this work is to study and analyze the characteristic features of Bulgarian folk costume from a given region and to develop model variants of contemporary clothing with elements of this folk costume.

2. Experimental part

The subject of this study is an extremely colorful and attractive female folk costume for a wedding ritual from the Draginovo region.

A thorough study of traditions of performing the wedding ritual [4] has been made in the village of Draginovo, Velingrad municipality.

As a result of researches, original folk women's wedding costumes from the village of Draginovo were illustrated.

3. Results and a Discussion

A thorough analysis of characteristics of these costumes has been made with regard to:

color and color combinations;

construction lines and silhouette;

composition and structure of textile materials used.

Model variants of women's clothing with elements of traditional folk costume for wedding ritual from the village of Draginovo have been developed.

4. Conclusion

The researches, analyzes and their results can serve as a means of illustrating the method and principles of work in the development of contemporary clothing with elements of folk costumes.

Keywords: Bulgarian folk costume; contemporary clothing

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BULGARIAN EMBROIDERY AS A PROTECTION PROVIDING PRACTICE

Dayana Emil PROKOPOVA

National Academy of Arts, Faculty of Applied Arts, Department Textile - Art and Design Shipka str. 1, Sofia, Bulgaria e-mail: dayanaprokopova@gmail.com

In Bulgaria, the topic of traditional stitching, its origin, function and importance of sewn images is becoming more and more interesting for representatives of the scientific community and people working in the field of art, but also for a wider range of new researchers and simply people feeling deeply their Bulgarian origin. The Bulgarian embroidery practice (in Bulgarian -called 'vezba') is one of the first cultural achievements of humanity, along with weaving and sewing. Multicolored embroidered figures, called 'shevitsa', are one of the main features common for all traditional costumes of the Bulgarian women, regardless of the regional differences and the changes occurring over time. The wide variety of these figures are not just an aesthetic expression of creative inspiration. Embroidery ornamentation is a manifestation of both morality and values, but it also visually and materially represents the hopes and worries of the person from the past. Therefore, one of the basic functions of the 'shevitsa' is to protect. This topic has been introduced in the scientific community by a number of researchers, such as I. Koev, R. Ganeva, G. Mihailova and others. On the other side, the issue concerning demonology in Bulgarian folklore has been deeply studied by native and foreign researchers (D. Marinov, R. Gatsin and others). Each topic is incredibly interesting itself, but when viewed on a mutual basis, the connection between both of them can be seen and understood more clearly.

The Bulgarian nation has defended themselves from outside forces through various practices, carried out parallelly. One of them was only women's work - the traditional Bulgarian embroidery. This sacral practice, passed down from generation to generation, along a female line in the family, has a deep initiating potential. The art of 'vezba' used to be a compulsory part of the education and initiation of the little girl on her way to becoming a woman. This transition from one social status to another, is the most burdensome and of the greatest importance in the traditional Bulgarian society. It is the period when a girl is most vulnerable and susceptible to outer influences and malicious forces.

The ornamentation of clothes by stitching is a technique originating from the cosmogonic conception of the Bulgarians, his value system, knowledge of the universe, as well as the forces that control him and and which man is influenced by. It is an expression of the basic cultural differentiation - the opposition between man and nature.

The 'vezba', as a method of protection, focuses on the idea that man is not only exposed to the hostility of natural forces or other circumstances beyond his control, but there are also other forces to which everyone is subject to and can be influenced by. The Bulgarian people have given the image and name to many of them. Most of these images can be compared and related to the popular expression in Bulgarian folklore "evil eyes".

The desire of the Bulgarians in the traditional society is to protect themselves from those invisible forces. This leads to the creation of trademarks in the clothing - necklaces, sleeves, edges of the skirts, as well as at the seams. In the image of the garment that covers the naked human body, these open spaces, these holes are the transition between man's wild nature and his cultivated behaviour - his culture, his socialization.

Embroidery ornaments are a code by which the garment becomes a mediator between two worlds - the human one and the one beyond. Communication flows in both directions, so it is important certain actions which are the same for everyone in the community to be passed forward correctly and followed strictly. Therefore, this defines man's belonging to the society and provides him an ultimate protection from all outer forces.

Keywords: stitching, embroidery, ornament, protection.

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DRAPING THE STYLES OF LADY'S SKIRT

Goran DEMBOSKI, Maja JANKOSKA and Elena BOSKOVSKA,

University "Ss. Cyril and Methodius" - Skopje, Faculty of Technology and Metallurgy, Department of Textiles, Rudjer Boskovic 16, Skopje, Republic of Macedonia e-mail: goran@tmf.ukim.edu.mk

Introduction

The majority of two dimensional tests for determining fabric drape cannot exactly provide the idea of fabric appearance in the finished garment, since draping includes three dimensional double curvature deformations, which correlate to fabric shear properties. The drape coefficients for various types of garments stating the optimal drape coefficient have been published as a guide. However, the effect of fabric drape on final garment appearance is still difficult to correlate since it depends on style and garment end use. The paper investigates correlation between drape coefficient and final appearance of the various fabric weights and styles of lady's skirts.

Experimental part

The ranges of woven fabric of various weights have been selected for manufacturing of lady's skirts. The fabrics were tested for fabric drape using BS 5058:1973 method. Two styles of plain lady's skirts, one long and one short, having two side seams, were manufactured from investigated fabrics. The appearance of the skirt styles chosen is shown in *Figure 1*. The sewn skirts were photographed from the front, back and two sides. The area of the skirts on the pictures was measured using an image analyzer. The

correlation was investigated between fabric drape coefficient and the surface area on the photograph from the front, the left and right sides and the back of the skirts.

Results

The fabric drape coefficient for all investigated fabric ranged from 35 to 94%. The area of the skirts from the front was higher than the area of the skirt from the back. The area of the skirt from left and right side was smaller compared to front and back area of the skirt. There was slight difference between the left and right side of the skirt, for both styles of the skirt.



Figure 1 The styles of sewn skirts

Discussion

There was no correlation between fabric drape coefficient and skirt area from the front, back and sides of the skirt for the long style of the skirt. Also there was no correlation between these parameters and fabric weight. For the short style of the skirt, the correlation was found between the fabric drape coefficient and skirt area from the sides. Somewhat lower correlation was found between fabric drape coefficient and the skirt area from the front and back. Also, the correlation was found between fabric weight and the skirt.

Conclusion

Two plain styles of lady's skirts, having two side seams, were manufactured from fabrics of various weights and drape coefficients. The skirts were photographed from all four sides and the area of the skirt on the photograph was measured. The correlation was found between fabric drape and skirt area for the short style.

Keywords: fabric drape, woven fabric, skirt, image analysis

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