СЪДЪРЖАНИЕ
CONTENS
11
2018

1. СОЦИАЛНА ОТГОВОРНОСТ В индустрията ЗА ПРОИЗВОДСТВО НА ОБЛЕКЛО В БАЛКАНСКИЯ РЕГИОН
Наташа Сивевска, Йордан Белоздски .......................................................................................... 287

SCR IN THE CLOTHING INDUSTRY OF THE BALKAN REGION
Natasha Sivevska, Yordan Belvodski .......................................................................................... 287

2. ПРИЛОЖЕНИЕ НА ЕКСПЕРТНА СИСТЕМА НА ДИЗАЙН НА УНИФОРМИ ЗА СТЮАРДЕСИ
О. Захаревич, И. Пайенок, О. Хасанова, Ю. Вовк ................................................................... 290

APPLICATION OF THE EXPERT SYSTEM TO DESIGN A STEWARDESS UNIFORM
O. Zakharkevich, I. Payenok, O. Hasanova, J. Vovk .................................................................. 290

3. ИСТИНСКИ НОСИМА Е-ТЕКСТИЛНА ТЕХНОЛОГИЯ, РАЗРАБОТЕНА ОТ PIRETA................. 296
TRULY WEARABLE E-TEXTILE TECHNOLOGY DEVELOPED BY PIRETA ................................. 296

4. ПОЛИНА СОТИРОВА - ФИНАЛИСТ В МЕЖДУНАРОДНИЯ ФЕСТИВАЛ DESIGNBLOK В ПРАГА................................................................. 297
POLINA SOTIROVA - FINALIST AT THE DESIGNBLOK, PRAGUE INTERNATIONAL DESIGN FESTIVAL ......................................................................................... 297

5. РЕКЛАМИ 2019/ADVERTISEMENTS 2019................................................................. 299-304

Контакти/Contacts
e-mail: spisanie@tok-bg.org;
redaktor@tok-bg.org;
office@tok-bg.org
www.tok-bg.org
Уважаеми читатели,

Онлайн списание за Текстил, облекло, кожи и технологии© със сайт www.tok-bg.org и електронното издание вече е на 2 години.

Това са години, през които пътешествахме онлайн в света на текстилната и кожено-кожухарската индустрия за вас нашите читатели.

Публикувахме актуални информационни материали за иновационни и технологични продукти и услуги, за международни изложения, конференции, конкурси и много други прояви на български и английски език.

Надяваме се, че сме Ви били полезни и за напред ще бъдем, защото нашят екип ще продължава да работи за вас – нашите съпътстващи читатели, които ни подкрепяте през тези години.

Изказваме нашата голяма БЛАГОДАРНОСТ на читателската ни аудитория, на всички български и чуждестранни партньори, автори и фирми, който избраха и продължават да избират нашето медийно онлайн пространство.

Оставаме Ви да се потопите в новите теми на брой 11/2018, който е много разнообразен и специален!

Редакционен екип на онлайн списание за Текстил, облекло, кожи и технологии, www.tok-bg.org

Редакторски съвет:
Проф. Елсайед Елнашар, Египет
Проф. д-р инж. Йован Степанович, Сърбия
Проф. д-р инж. Душан Трайкович, Сърбия
Проф. д-р инж. Горан Дембовски, Македония
Проф. д-р Сешадри Рамкумар, САЩ
Доц. д-р инж. Ненад Ћиркович, Сърбия
Доц. д-р инж. Ѕоня Вачинска, България
Гл. ас. д-р инж. Евлазин Златев, България
Гл. ас. д-р Кристина Савова, България
Д-р инж. Даниел Ангелов, България
Инж. Наташа Сивевска, Македония

Графичен дизайн: Стефка Нейкова
Снимка първа корица: ©PIRETA

Editorial Board:
Prof. ElSayed A. ElNashar Ph.D, Egypt
Prof. Jovan Stepanovich Ph.D, Serbia
Prof. Dušan Trajković Ph.D, Serbia
Prof. Goran Dembovski Ph.D, Macedonia
Prof. Seshadri Ramkumar, Ph.D, USA
Assoc. Prof. Nenad Ćirković Ph.D, Serbia
Assoc. Prof. Kapka Manasieva Ph.D, Bulgaria
Assoc. Prof. Eng. Zlatin Zlatev,Ph.D, Bulgaria
Assist.Prof. Eng. Sonia Vachinska,Ph.D, Bulgaria
Assist.Prof. Kristina Savova,Ph.D, Bulgaria
Eng. Daniel Angelov Ph.D, Bulgaria
Eng. Natasha Sivevska, Macedonia

Graphic Design: Stefka Neykova
Photo - first the cover: ©PIRETA
Abstract:

Corporate and social responsibility is one of the most important subjects in clothing and textile industry worldwide. It covers mostly the fashion industry and mainly the production capacities. The number of the byers looking for a CSR certified production capacities from the clothing industry is increasing, so the companies will have to adjust to those requirements. Since most of the requirements under the CSR standards (SA8000 and BSCI/SEDEX/ etc) are covered by the national laws, the companies will just have to work on their improvements and to identified the discrepancies trough self-assessment. In purpose to help companies to do that, we develop a QCC (Quality control checkpoints) and procedure for self-assessment, so the companies can follow the requirements and make certain adjustments. Further, under Macedonia/Bulgaria IPA cross border project a SCR label TRUSTED BALKAN APPAREL was develop with the aim of helping companies from the Balkan region to implement ISO 26000 standard and to be recognized by the buyers as a SCR complied companies.

Keywords: Corporate and social responsibility, clothing industry, self-assessment, quality control check points, ISO 26000, Trusted Balkan apparel.

Introduction

CSR represents a concept by which companies integrate the social and environmental aspects of their business and in their interaction with the participants - on a voluntary basis. Due to the increased public concerns about the inhumane conditions in developing countries in 1997 was formed the International Organization for Social Responsibility. The aim was to prepare a universal code of conduct for working conditions in the industry.

The clothing industry is one of the leading industries in Balkan region. Over 2500 clothing production companies are actively involved in this sector in the region of Macedonia and Bulgaria. The biggest parts of the companies are export oriented, producing for well-known European brands. Working for such clients requires implementation of social compliance in the production capacities.

Exposure

The agenda of the European commission regarding CSR is very dynamic. The activities are developed in the direction of improving visibility of CSR and disseminating good practices. Further the agenda covers the activities such as: improving and monitoring the level of trust in the business, improving companies own processes, improving the market value for CSR, improving visibility and working on publication of social and environmental information. For the better understanding of the importance of CSR the agenda content activities for further integration of CSR in education and research, emphasizing
the importance of national CSR policies and better harmonization of European and world approaches to CSR.

The key areas of CSR are: 1. Internal environment – employees that covers: remuneration of employees, protection of the workplace, respect for basic human rights; 2. External environment - business partners indicated through respect for relations with business partners and ethics in business; 3. Environment - immediate environment and global climate change with direct negative impact - waste and direct positive impact - recycling; 4. Community – investing in society, responsible behavior, financing of local programs and donations;

Business and organizations do not operate in a vacuum. Their relationship to the society and environment in which they operate is a critical factor in their ability to continue to operate effectively. It is also increasingly being used as a measure of their overall performance. For that purpose a working group of about 500 experts developed the ISO 26000. ISO 26000:2010 provides guidance rather than requirements, so it cannot be certified to unlike some other well-known ISO standards. Instead, it helps clarify what social responsibility is, helps businesses and organizations translate principles into effective actions and shares best practices relating to social responsibility, globally. It is aimed at all types of organizations regardless of their activity, size or location.

In purpose to support clothing industry in the Balkan region two clothing associations in the cross border region Macedonia-Bulgaria created Quality control checkpoint list, so their members companies can determinate the level of social compliance in their production capacities and work on the improvements in the implementaion phase prior realization of social audit requested by their clients. The checklist is developed in the form of a self-assessment. The code itself covers both legal requirements and generally accepted principles of human and business rights. In cases where the legal requirements are “weaker” than the generally accepted principles of human and business rights, at least the generally accepted principles are taken.

Further the two associations, Textile Trade Association – Textile cluster-MK and Textile and Clothes Branch Organization-BG, develop a SCR label named TRUSTED BALKAN APPAREL. Companies that are fulfilling certain level of SCR requirements and are following the SA8000 code of conduct can apply and gain the label. The aim is to develop this label on such level that it will become recognizable by the buyers.

CONCLUSION

The clothing industry is a leading industry in the Balkan region. The big fashion brands and suppliers are obliged to work with SCR companies in the whole supply chain of subcontractors. Since the clothing producers from Balkan countries are playing the role of subcontractors and are mainly exporting to
EU market, they need to follow the global changes and the SCR requirements. To support companies in implementation of the SCR standards in their production capacities and to gain a positive SCR audit report, a quality control checkpoint list is developed by two associations in Macedonia and Bulgaria. The final idea was the SCR label TRUSTED BALKAN APPAREL to become trustable among the European fashion brands.

REFERENCE

1 https://www.iso.org/iso-26000-social-responsibility.html
2 https://www.iso.org/publication/PUB100260.html
Abstract:

Nowadays industrial world faces a lot of changes every day due to the rapid development of innovative technologies as well as globalization and fast spreading of information. In order to keep pace with trends, sewing industry and apparel design are obliged to use at least some kind of artificial intelligence (AI) along with CAD-systems and digitization techniques. Thus, the main purpose of this work is to develop a way to use the element of AI such as an expert system to design a stewardess uniform.

The hypothesis of the study is as follows: the stewardess uniform might be designed based on the typical design documentation of the garment that is already constructed at the given sewing enterprise. Input data for the development of the productive model of the expert system is information about range of stewardess uniforms that are used by various airlines. The assortment of the uniforms is analyzed. Based on the results of the analysis the way of decision-making to select a design prototype of the given uniform is developed. The stewardess uniform, which is constructed based on the recommendations of the expert system, is designed and presented in the paper.

Keywords: expert system, stewardess uniform, assortment, design.

INTRODUCTION

Nowadays industrial world faces many changes every day due to the rapid development of innovative technologies as well as globalization and fast spreading of information. In order to keep pace with trends, sewing industry and apparel design are obliged to use at least some kind of artificial intelligence (AI) along with CAD-systems and digitization techniques.

Such systems and techniques are the most useful when used for the typical design of typical clothing items. However, it is obvious that any software become useless when encounters with some situations, which were unexpected by its developer. In order to increase abilities of the software, it is necessary to study any possible way of clothing assortments development.

A possible rapid change in the clothing assortment is a uniforms production, that is based on the clothing manufacturing enterprises those usually produce casual clothing.

A uniform is a type of clothing worn by members of an organization while participating in that organization’s activity. Modern uniforms are most often worn by armed forces and paramilitary organizations such as police, emergency services, security guards, in some workplaces and schools and by inmates in prisons. In some countries, some other officials also wear uniforms in their duties.

One of the most attractive uniforms all over the world is a uniform of flight attendant. While airline passengers typically prefer to wear comfortable clothing while traveling high above sea level, flight attendants are usually dressed in style.
EXPOSITION

Nowadays, scientists in the world successfully implement elements of artificial intelligence and the ES at various stages of designing clothes. Among them are expert systems for selection of clothes style according to the constitution features of consumers [2], for the choice of clothes to form a harmonious image of individual consumers [3], to assess the quality of design clothes drawings [4], for the formation of industrial clothing range [5]. Some of them are aimed for the rapid change in design of women’s outerwear [6], for the choice of clothes models based on the assessment of consumers’ emotional impressions using the methodology of Kansei Engineering [1]. Development and implementation of interactive systems to select ready-made clothes via the Internet are shown in [7]. Development of ES for the design of special and corporate clothes is presented in [8].

However, none of them considers issues of designing the uniform for flight attendants or any other uniform.

Thus, the main purpose of this work is to develop a way to use the element of AI such as an expert system to design a stewardess uniform.

The hypothesis of the study is as follows: the stewardess uniform might be designed based on the typical design documentation of the garment that is already constructed at the given sewing enterprise.

Input data for the development of productive model of expert system is information about range of stewardess uniforms that are used by various airlines. The information was gathered via the Internet [9-10].

Almost every country of the world can boast with its own flight attendant uniform. Some countries can present even several different airlines and naturally, it results in the numbers of the uniforms’ models (fig. 1).

Table 1 – Flight attendants uniforms analysis (fragment)
Quantitative analysis was performed in order to select major features of the stewardess uniform. Results of the analysis of garment types, which are used as uniforms' items, are shown in the figure 2, 3 and 4.
The features of the suit jacket of the stewardess uniform are as follows: semi fitted silhouette is most frequently used (its frequency is about 49%); straight silhouette is used in 34% of uniforms; and fitted suit jackets are used only in 17% of them. The suit jacket is hip length garment (51% – below the hip level, 45% – above the hip level); a fashion fabric is mostly monotone (87%), the sleeves are set-in.

In the figure 5, results of the quantitative analysis of design elements are presented.

The sleeves in the uniforms are mostly long (81%) and set-in (almost 100%). Results of the analysis show that it is advisable to use a typical suit jacket as an element of a flight attendants uniform. However, a uniform jacket differs from the typical one by its decorative elements such as emblems, applications, kerchiefs (neckerciefs, scarfs), and gloves and so on. Characteristic of the decorative elements is shown in the figure 6.

It was determined that 60% of the uniforms do not include headgears, 39% of them include hats while berets are used in 1% of uniforms.

In the table 2 results of analysis of all types of kerchiefs are shown.

Table 2 – Kerchiefs analysis (fragment)
Analysis showed that geometrical patterns are most frequently used for the kerchiefs: it is about 76% while Ewers patterns present only 1% and monotone ones present 23%. The shapes of the kerchiefs are mostly square (47%), rectangular (46%) while 7% of them are triangular. About 59% of the kerchiefs have emblems or corporative names (49%) on them. Colors and geometrical characteristics are shown in the figure 7.

![Fig. 7. Frequency of: a – numbers of kerchiefs colors; b – kerchiefs geometry parameters](image)

Variants of the emblems are developed by using Xara Xtreme software. The variants are shown in the figure 8.

![Fig. 8. Variants of emblems](image)

![Fig. 11. Typical design of a suit jacket of uniform](image)

Ssuit jacket of the stewardess’s uniform, which is under development, is a combination of the typical design elements and their variations (fig. 13).
where \( F_1, F_2, F_3, F_4, F_5 \) – design characteristics of garment types. Each characteristic depends on several design parameters, which are shown in the fig. 2-7. The design characteristics are presented in the form of a code. The code is a series of Arabic numerals those related to the specific design solutions. For example, 1 – semi fitted silhouette, 2 – straight silhouette, 3 – fitted silhouette, and so on.

A measure of the objects similarity is the Euclidean distance \( \rho(X_p, X_q) \) that is calculated as follows:

\[
\rho(X_p, X_q) = \sqrt{(F_1_1 - F_2_1)^2 + (F_1_2 - F_2_2)^2 + (F_1_3 - F_2_3)^2 + (F_1_4 - F_2_4)^2 + (F_1_5 - F_2_5)^2}
\]

(2)

where \( X_p \) – garment type that belongs to the typological range; \( X_q \) – flight attendants uniform jacket.

Minimal value of the Euclidean distance shows the garment type, which is supposed to be used as a design prototype to construct the uniform jacket for the flight attendant.

Thus, the stewardess uniform, which is constructed based on the recommendations of the expert system, is designed and presented in the figure 14.

**CONCLUSION**

The main purpose of this study was achieved through the analysis of the assortment of flight attendants uniforms that are used around the world. Thus, the typical design of the uniform was defined. It allows finding a way to select the design prototype using the expert system that was previously developed. The stewardess uniform, which is constructed based on the recommendations of the expert system, demonstrates an example of expert systems implementation into the clothing design.

**ACKNOWLEDGMENT**

The results shown in the paper resulted from the Scientific Project “Development of the principles of heuristic clothing design to develop a prototype of the expert system for rapid change in production of clothes”, Grant of the Ministry of Education and Science of Ukraine № 0117U003889.

**REFERENCE**


About Pireta

Founded in 2017, Pireta is a spin-out company from the UK’s National Physical Laboratory. Pireta has developed a unique and patented free-form printed circuit process, allowing electronic systems to be assembled directly onto textiles. Pireta’s technology has no impact on the drape, handle, breathability or stretch-ability of the fabric. This is because, unlike printed conductive inks, the process used involves applying a thin metallic coating to the textile at the fibre level.

The thin metallic coating is applied to one side of the textile, allowing it to be discrete, adding tracks only where needed. Pireta currently use copper as the metal that is plated onto the fibres to add conductivity, this is due to its wide availability, moderately low cost and excellent conductivity. The process can be carried out on a wide range of materials such as knitted, woven and non-woven, synthetic, natural, glass and mineral based yarns, with excellent adhesion between the metallic and textile layer on any material.

Pireta’s 5-step process

Pireta incorporate a 5-step additive process for chemically bonding a metal layer onto fibres in a textile, using commercially available equipment:

- Step 1 – Pre-treat the fabric;
- Step 2 – Activate the fibres;
- Step 3 – Functionalise with nanometal;
- Step 4 – Develop to optimise functionalisation;
- Step 5 – Passivate to protect.

The process is additive, resulting in minimal waste and uses readily-available, non-environmentally hazardous and low-cost materials. It can be applied to finished garments or fabric on the roll, making it suitable for both niche and mass markets. Dyes and protective treatments can also be applied to the textiles once they have undergone the Pireta process. In addition, conductivity can be maintained across one hundred or more wash cycles due to the patterns being resistant to rubbing and highly durable.

What can Pireta technology be used for?

Pireta’s truly wearable technology enables the incorporation of smart textiles into a wide range of sectors including healthcare, wellness & fitness, defence, emergency services and elite sports. The integration of wireless technologies, such as NFC, RFID, Bluetooth and Wi-Fi into e-textiles and smart garments is also possible due to Pireta’s ability to implement sensors and transducers.

By allowing electronic systems to be assembled and interconnected directly on fabrics, Pireta’s technology is enabling a new generation of truly wearable smart garments and e-textiles.

For more information about Pireta’s truly wearable technology visit www.pireta.co.uk
POLINA SOTIROVA - FINALIST AT THE DESIGNBLOK, PRAGUE INTERNATIONAL DESIGN FESTIVAL

Полина Сотирова, студентка от магистърска програма „Теория и практика на художественото образование“ на Националната художествена академия-София участва в международния фестивал «Designblock» Prague, през месец октомври 2018 г. и е финалист в категорията „Diploma selection / Fashion collections“. Тя представи дипломната си работа „SACK ID“, която успешно защити през юни 2018 г. в специалност „Мода“. 
РЕКЛАМИ 2019

ADVERTISEMENTS 2019
TEXStyle EXPO
INTERNATIONAL EXHIBITION TEXTILE, APPAREL, LEATHER & EQUIPMENT

21-22-23 JANUARY 2019
AT THE EXHIBITION CENTER
CIC ALGER
ALGERIA

EXHIBITION PROFILE

Textile  Leather  Apparel  Equipment
Home Textile  Accessories  Footwear & Bags  Design & Print

EXHIBITION - CONFERENCES - B2B

"TEXSTYLE-EXPO" has affirmed as the largest trade show in North Africa and a reference for operators in the sector of Textile, Leather, Apparel and Equipment.

Textyle-expo
www.textyle-expo.com

Organizer
+213 41 745 563
+213 560 18 86 51
sales@textyle-expo.com
ANDTEX 2019
SOUTHEAST ASIA NONWOVENS AND DISPOSABLE HYGIENE TECHNOLOGY EXHIBITION & CONFERENCE

May 15 -17, 2019
BITEC - Bangkok International Trade & Exhibition Centre
Bangkok, Thailand

BE STRATEGIC
JOIN ANDTEX 2019

Supported by: Asia Nonwoven Fabrics Association (ANFA)
All Nippon Nonwovens Association (ANNA)
Indonesian Nonwoven Association (INWA)
Taiwan Nonwoven Fabrics Industry Association (TNFIA)
Hong Kong Nonwovens Association (HKNA)

For more information, please contact:
E.J.Krause & Associates Europe
Monika Blume <blume@ejkgermany.de>
Gudrun Tegge <tegge@ejkgermany.de>
Phone: + 49 (0) 211 610 730

www.andtex.com
MOROCCO FASHION & TEX
5TH MOROCCO INTERNATIONAL FASHION, TEXTILE & ACCESSORIES FAIR
OFEC, CASABLANCA / MOROCCO
28/29/30/31 MARCH 2019

WE ARE MEETING IN NORTH AFRICA FOR 5TH TIME

+90 216 575 2828 ext. 201
@info@pyramidsfair.com

www.moroccofashiontex.net
INTERFABRIC-2019 SPRING
VI INTERNATIONAL EXHIBITION OF FABRICS AND TEXTILE MATERIALS
AS PART OF CONGRESS AND EXHIBITION PROJECT ‘RUSSIAN TEXTILE WEEK’
MOSCOW, EXPOCENTRE, PAVILION 3
MARCH 19-22 2019

ANDTEX 2019
MAY 15-17, 2019 | THAILAND

53rd International Fashion & Shoe Fairs
16-18 | 02 | 2019
BRNO | CZE

FILTECH
October 22-24, 2019
Cologne – Germany
The Filtration Event
www.Filtech.de

GTTES
2nd GLOBAL TEXTILE TECHNOLOGY & ENGINEERING SHOW 2019
UAE'S EXCLUSIVE FASHION SOURCING FAIR
10th EDITION
FASHION | FABRIC | APPAREL | ACCESSORIES | MACHINERIES | HOME | FOOTWEAR | HAND BAGS & MORE!