

UDC 687.01

PRINCIPLES OF PLANNING ECOLOGICAL PRODUCTS OF LIGHT INDUSTRY

**ПРИНЦИПЫ ПРОЕКТИРОВАНИЯ ЭКОЛОГИЧЕСКОЙ ПРОДУКЦИИ
ЛЕГКОЙ ПРОМЫШЛЕННОСТИ**

*N.S. MOKEEVA, E.K. NARIBAYEVA, K.K. ABILKALAMOVA, M.O. UTEULIYEVA
Н.С. МОКЕЕВА, Э.К. НАРИБАЕВА, К.К. АБИЛКАЛАМОВА, М.О. УТЕУЛИЕВА*

**(Novosibirsk Technological Institute (branch) Moscow State University of Design and Technology,
Almaty Technological University, Republic of Kazakhstan)
(Новосибирский технологический институт (филиал)
Московского государственного университета дизайна и технологии,
Алматинский технологический университет, Республика Казахстан)
E-mail: kamilya.abilkalamova@mail.ru**

In an article descriptions of modern principles and conceptions of light industry's garments planning are given. Its classification is developed and described. It is offered as direction of development of ecological fashion in Kazakhstan is planning clothing from natural colored wool without dyes.

В статье приводится описание современных принципов и концепций проектирования изделий легкой промышленности. Разработана и описана их классификация. Предлагается направление развития экологической моды в Казахстане в виде проектирования одежды из неокрашенной шерсти, разделенной на естественные природные цвета.

Keywords: ecological fashion, modern principles of ecological clothing planning, classification, natural colors, not dyed wool.

Ключевые слова: экологическая мода, современные принципы проектирования экологической одежды, классификация, естественные цвета, неокрашенная шерсть.

The concern of society ecological problems became one of the reasons of forming of new design conception, radically relooking methods and design values. This conception supposes plugging of designer project in a really existent cultural context taking into account ecological factors. Destruction of natural environment in various forms grew into a world process which consequences resulted in the necessity of cardinal changes for many areas of human activity. Planning and production of apparel products was not an exception.

The aim of the work is perfection of process of planning competitive ecologically oriented clothing, adhering to politics of import replacement.

Direction of "green" or "ecological" design is an attempt of harmonization of "human - nature" relations and bringing in them responsibility from the human side [1].

The basic principles of ecological goods and clothing production are [2]: using ecologically safe materials, which carbon track is minimized or in general is absent; using natural materials from the plants grown without chemical fertilizers; abandonment from testing on animals and from using natural fur and skin of animals; processing and secondary using raw material; safety of using good, absence of harm to the health; creation of style not subject to the changes of fashion tendencies; reduction of expense of electric power; increase of efficiency of water consumption; reduction of wastes of production.

The most important ecological problem in textile industry is the troop landing of liquid wastes of finishing production in the environment, because the most harmful untapped substances are accumulated exactly in them [3]. The new safe methods of fabrics dyeing consist are in using of natural dyes or in the safe method of pigments causing to the structure of material. The most harmless are natural dyes, because they are synthesized by nature. Their

application in textile industry is perspective and developing direction.

Other way of safe dyeing of materials is the technology of the waterless dyeing Air Dye, developed by the Californian company Air Dye Solutions, that supposes implantation of dyes in the fibers of fabric under constraint air. Fabric is first warmed up, and then exposed to the gas attack of dye. Advantage of such method is reduction of amount of the used water and extras of heavy metals [4].

Also the way of reduction of liquid wastes of finishing materials production is using of achroos fibers of natural colors. In a modern fashion natural colors are very valued and one of main constituents of ecological fashion. Other conception of ecological fashion is processing of productive wastes in new materials, allowing to get rid from the superfluous products of consumption - Recycling. As early as 1995 of mark of Armani Jeans started the line of Recycled Denim, a company Ralph Lauren started the line of Ralph Lauren Recycled Jeans [4]. The line of secondary synthetic is produced by brand of Stella McCartney, the main shoe brand Christian Louboutin created ecotrash shoes, Nike with the brand of New Balance created sneakers that on 95% consist of the processed plastic bottles [5].

Upcycling direction [4] supposes using as a feedstock for making of new garments imperfect bits and pieces, wastes, former in the use clothing.

Another way of decision of wastes problems was offered by the Indian technologist working on the August Fashion brand Sidkhartkha Upadkhya. Direct Panel on Loom technology is the machine-tool, connected to the computer that makes all component details of garment by designer preset parameter which is after sewn together. Technology saves raw materials, garments executed by such technology are unique and practically not subject to the printing-down [4].

Other direction of wastes reduction is Zero Waste method that means cutting out of fabric without wastes. The idea of the zero-waste cutting exists from old times, as an example folk suits. Dorothy Burnham in 1973 wrote first book about cutting without losses. Holly McQuilan and Timo Rissanen in every spring in New Zealand, and in autumn in New York organized exhibition of "YIELD: Making fashion without making waste" that presents designers who want to minimize affecting environment [5].

The innovations in materials area is also about harmonization of relations between human and surrounding environment. One of the perspective directions in this area Bio Couture - "growing" of materials. Bacteria which productive a cellulose were first got in 2007 by American scientists Malcolm Brown and David Nobles. Susanne Lee placed bacteria which productive a cellulose in the green tea and after a while time she found out material and made a jacket.

The process of growing lasted about three weeks. Now they work on perfection of functional and consumer properties of material [4].

Industry cannot ignore influence that its productive methods are rendered on the Earth. "Patagonia" company in 2015 produced the collection of jeans and they used only organic cotton, grown without application of pesticides, herbicides or synthetic fertilizers. Also at production they expended on 84% less water, on 30% less energy, and on 25% less carbon track of production. At the same time company provides workers the best salary and the best terms of labor, that is certificated by Fair Trade - society of trade [7].

The results of analysis of modern ecological conceptions of clothing creation can be divided into two large directions: ecological and ethical. Classification of principles of ecological products of light industry planning is presented in Fig. 1.

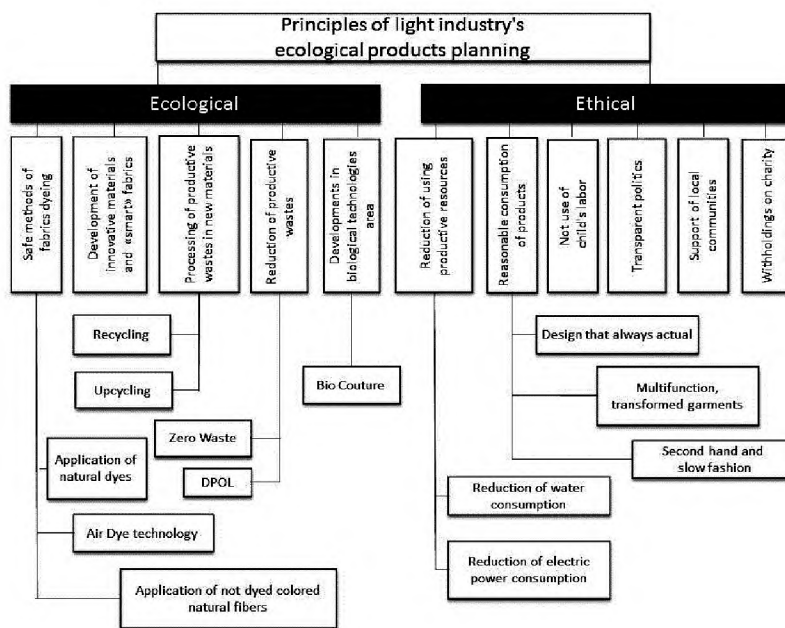


Fig. 1

Eco-design in Kazakhstan is at the beginning. It is necessary to spare so important attention to the ecological problems of design at products development, as to the artistic and technical problems. It is about moral life-span of garments, use of products and materials that is present in a wide enough order, and the consumption of that does not do damage to the environment, economically use of re-

sources, promoting to secondary application of material.

In according to all these conceptions was developed technology of sorting colored sheep wool which allows to get the natural colored fuzz that not needs in dyeing. This type of raw material in Kazakhstan is in a enough amount, a production and consumption of such products do not harm to the envi-

ronment, and the products made from such raw material will allow to replace an import the commodities produced in the country.

The problem of the not dyed colored wool production is engaged in enterprise of New Zealand, Australia and Great Britain. It is uses mainly by craftsman for making products of the folk applied arts.

It is known that from the point of view of physiological influence all colors and their combinations can be divided into two basic groups:

- A. the simple, clean, bright colors and contrasting combinations;

- B. the difficult, little saturated colors, and also achromatic, nuance combinations.

The colors of group "A" operate as strong, active irritants. They satisfy to the necessities of people with the healthy, untired nervous system. They are children, teenagers, young people, peasants, people of manual labour, people possessing seething temperament and open, direct nature.

The colors of group "B" calm than it is excited; they cause difficult, ambiguous emotions, need more protracted contemplation for their perception, satisfy a requirement in the thin and refined feeling, and such necessity arises up for the subjects of high enough standard of culture. The people of middle and elderly age prefer all these reasons of color of group "B", with the tired and thinly organized nervous system and intelligentsia [8].

CONCLUSION

In this connection it is recommended to use the products made from wool of natural colors, at planning and production of everyday clothing for the people of middle, senior and elderly age.

In this work is offered classification of modern principles of planning of the ecologically oriented light industry products. In connection with that sheep wool in Kazakhstan is present in a enough amount, the use of natural colored wool does not harm to the environment, and the products made from such raw material allow to replace an import the commodities produced in the country.

1. *Малинин А.Г., Ушкина И.М.* Последствия дизайн-деятельности // *Мат. 47-й Междунар. научн.-техн. конф. преподавателей и студентов.* – Витебск, Витебский гос. технолог. ун-т, 2014.

2. *Мода без отходов. Часть 2* / [Электронный ресурс]. – Режим доступа: http://www.be-in.ru/places/23036-new_green/ - Заглавие с экрана. - (Дата обращения: 15.11.2015).

3. *Калинников Ю.А., Ващурина И.Ю.* Природные красители и вспомогательные вещества в химико-текстильных технологиях – реальный путь повышения экологической чистоты и эффективности производства текстильных материалов [Электронный ресурс] // *Российский химический журнал (Журнал Российского химического общества им. Д.И. Менделеева)* – 2002. - №1. – Режим доступа: <http://www.chem.msu.ru/rus/jvho/2002-1/77.pdf> - (Дата обращения: 15.11.2015).

4. *Eco-fashion: 5 sustainability-технологий* [Электронный ресурс]: Look at me. Интернет издание о креативных индустриях. – Режим доступа: <http://www.lookatme.ru/flow/posts/fashion-radar/122203-5-sustainability-technologies-> Заглавие с экрана. - (Дата обращения: 15.11.2015).

5. *Мода без отходов. Часть 1* [Электронный ресурс]. - Режим доступа: <http://surfingbird.ru/surf/e8vuA5731#.VjoAHLfhDIU> - Заглавие с экрана. - (Дата обращения: 15.11.2015).

6. *Экологичная ткань из древесной массы* [Электронный ресурс]: *Bemeto.ru* Первый русский эко – портал - Режим доступа: <http://www.bemeto.ru/ecoclothing/ekologichnaya-tkan-iz-drevesnoj-massy/> - Заглавие с экрана. - (Дата обращения: 15.11.2015).

7. *Patagonia's sustainable denim – because denim is filthy business* [Электронный ресурс]: *WGSN* портал о фэшн – индустрии. - Режим доступа: <http://www.wgsn.com/blogs/patagonia-denim-denim-filthy-business/> - Заглавие с экрана. - (Дата обращения: 15.11.2015).

8. *Миронова Л.Н.* Цветоведение. – Минск, 1984.

REFERENCES

1. *Malinin A.G., Ushkina I.M.* Posledstviya dizajndejatelnosti // *Mat. 47-j Mezhdunar. nauchn.-tehn. konf. prepodavatelej i studentov.* – Vitebsk, Vitebskij gos. tehnolog. un-t, 2014.

2. *Moda bez othodov. Chast' 2* / [Elektronnyj resurs]. – Rezhim dostupa: http://www.be-in.ru/places/23036-new_green/ - Zaglavie s jekrana. - (Data obrashhenija: 15.11.2015).

3. *Kalinnikov Ju.A., Vashurina I.Ju.* Prirodnye krasiteli i vspomogatel'nye veshhestva v himiko-tekstil'nyh tehnologijah – real'nyj put' povyshenija jekologicheskoj chistoty i jeffektivnosti proizvodstva tekstil'nyh materialov [Elektronnyj resurs] // *Rossijskij himicheskij zhurnal (Zhurnal Rossijskogo himicheskogo obshhestva im. D.I. Mendeleeva)* – 2002. - №1. – Rezhim dostupa: <http://www.chem.msu.ru/>

rus/jvho/2002-1/77.pdf - (Data obrashhenija: 15.11.2015).

4. Eco-fashion: 5 sustainability-tehnologij [Jelektronnyj resurs]: Look at me. Internet izdanie o kreativnyh industrijah. – Rezhim dostupa: <http://www.lookatme.ru/flow/posts/fashion-radar/122203-5-sustainability-technologies-> Zaglavie s jekrana. - (Data obrashhenija: 15.11.2015).

5. Moda bez othodov. Chast' 1 [Jelektronnyj resurs]. - Rezhim dostupa: <http://surfingbird.ru/surf/e8vuA5731#.VjoAHLfhDIU> - Zaglavie s jekrana. - (Data obrashhenija: 15.11.2015).

6. Jekologichnaja tkan' iz drevesnoj massy [Jelektronnyj resurs]: Bemeto.ru Pervyj russkij jeko-portal -

Rezhim dostupa: [http://www.bemeto.ru/eco-clothing/ekologichnaya-tkan-iz-drevesnoj-massy/-](http://www.bemeto.ru/eco-clothing/ekologichnaya-tkan-iz-drevesnoj-massy/) Zaglavie s jekrana. - (Data obrashhenija: 15.11.2015).

7. Patagonia`ssustainable denim – because denim is filthy business [Jelektronnyj resurs]: WGSN portal o fjesln-industrii. - Rezhim dostupa: [http://www.wgsn.com/blogs/patagonia-denim-denim-filthy-business/-](http://www.wgsn.com/blogs/patagonia-denim-denim-filthy-business/) Zaglavie s jekrana. - (Data obrashhenija: 15.11.2015).

8. Mironova L.N. Cvetovedenie. – Minsk, 1984.

Рекомендована кафедрой дизайна АТУ. Поступила 31.08.16.