AJEMA GLOBAL RESEARCH NETWORK

AMERICAN Journal of Engineering, Mechanics and Architecture
Volume 2, Issue 4, 2024 ISSN (E): 2993-2637

Problems of Lighting in Modern Sewing Industries

Abduzhabbarova Maktuba Tukhtasinovna
Associate Professor, Tashkent University of Architecture and Civil Engineering

Abstract: This article provides information on the issues of natural and artificial lighting in the main production workshops of clothing enterprises, as well as provides valuable information about the problems of workshop lighting and their solutions.

Keywords: Sewing, enterprise, main, workshop, product, production, lighting with natural light, coefficient, artificial.

Introduction

One of the most important factors determining the quality of the air surrounding a person in production conditions is the lighting of industrial buildings. Good lighting requirements are essential for most production rooms. To achieve this, it is necessary to provide the workplace with the necessary lighting, to evenly illuminate the object of work, to achieve a comfortable change of color between the object of work and its base, as well as to ensure that it does not shine as a result of the return of light from the light source and its work surface [1].

In order to achieve the goal, in turn, the spectral composition of light, the comfortable lighting requirements related to the colors of the construction structures surrounding the production enterprise and the equipment placed in the room are necessary not only to create the necessary working conditions in the rooms, but also for human vision. It is also of great sanitary-hygienic importance for organs and nervous system.

Many jobs in sewing enterprises (such as ironing and sorting fabrics and separating useless parts, cutting them, sewing, ironing) are characterized by significant fatigue of the organs of vision, i.e., by the level of illumination of workplaces. The work in the production of sewing depends on the inspection authorities, and the requirements for the quality of the products produced in this field are very high, and one of the factors that create the basis for improving the working conditions and increasing the labor productivity is the workplace is the light that determines the rational illumination [2].

Research materials and methods

The main processes in the production of sewing are related to the discharge of specific works on the supply of light, and the workshops and rooms are illuminated in a combined (natural and artificial) way [3].

For example, we can see that the artificial lighting system was used in the sewing shop of the company "SAGBON TEXTIL ENTERPRISES LTD CO" in Tashkent due to the lack of natural light. Natural light is directed into the workshop through the windows on both sides of the building, and artificial light is mainly provided by fluorescent lights (lamps). In the main workshops, work is done in one shift during the day, with added light (natural and artificial) during the day (Pic. 1) [4].

Picture 1. "SAGBON TEXTIL ENTERPRISES LTD CO" sewing shop of the joint venture in Tashkent.

The coefficient of natural illumination (c.e.o.) is used for standardization. This coefficient is taken as a percentage of the illumination under the open sky [5].

Artificial light is provided through a common system in the preparation shop where brackish separation, sorting, and gas measurement are performed, and natural light is provided from two sides. The work of defect separators belongs to the level of high-precision work III-b, the work performed requires a special strain of the organs of vision, in which the smallest difference object is 0.3-0.5 mm, must be medium, contrast-small or medium. The results of joint light measurement showed that its average value (according to NLC-natural light coefficient) is 0.99±0.06% in the workplaces of brackish dividers, which is QMQ 2.01 According to .05-98 "Natural and artificial lighting", 1.2% is the norm [6].

Although the duties of those performing measurement work in the preparation workshop do not require special strain on the organs of vision, the monotony of the work, constant monitoring of the progress of the work increases the demand for light. The work in this professional group belongs to the IV grade, in which the smallest object of differentiation is required to have an average accuracy of 0.5-1 mm. The results of the research showed that the combined light indicators in the workplaces of those performing gas measurement work are within the limits of hygienic standards.

In the shearing workshop, workplaces are also illuminated by added lighting: natural light is transmitted from both sides, artificial lighting is transmitted through fluorescent lamps connected to the general electric lighting system. Spreading of fabrics, cutting and drawing with chalk are performed in connection with the state of strengthening of the organs of vision. The tasks of cutters and chalk-drawers, according to their nature, have a high accuracy of 0.3 to 0.5 mm of the smallest difference object, these works belong to class III b, the background is medium (in dark), the contrast is required to be small (moderate). The results of the measurement of the light supply in the mowing shop show that the combined light supply in the workplaces of chalk painters and mowers is insufficient and meets the requirements of QMQ 2.01.05-98 "Natural and artificial lighting" showed that he would not.

The work of assemblers in the cutting shop is included in the IV degree of vision work with the average accuracy of seeing the smallest object of difference from 0.5 to 1.0 mm. The illuminance

of these workplaces corresponds to 1.01±0.04%, and the combined illuminance according to NLC (natural light coefficient) is equal to 0.9%.

In the sewing workshop of a garment industry, fluorescent lights are installed on a number of sewing machines at a height of 1 m above the surface of the work surface. According to the characteristics of the work of the organs of vision, the work of seamstresses belongs to the high-precision discharge (III), in which the object of differentiation is not large, 0.3-0.5 mm, the background and contrast gas there depends on the color of the threads will depend. As a result of measuring the lighting supply in the sewing shop, it was shown that the level of lighting in the workplaces of seamstresses (0.9±0.03%) is insufficient, it is 1.2% according to the norm. The tasks of pressers and ironers in the work of visual organs are of the IV grade with average accuracy, the background and contrast depend on the color of the product being produced. The level of illumination meets the hygienic requirements in these workplaces (Table 1) [6].

Table 1. Lighting in the main workplaces of sewing production, m+t

Workplaces	The work discharge	Artificial light,lk		Additional light, NLC, %	
		measured	the norm	measured	the norm
fault dividers	III	200±24,3	300	0,99±0,06	1,2
gas measuring staff	VI	150+16,0	200	0,98±0,06	0,9
reapers	III	200±12,8	300	0,96±0,05	1,2
chalk makers	III	100±27,4	200	1,04±0,04	1,2
completers	IV	150±21,9	200	1,02±0,04	0,9
tailors	III	200±18,9	400	0,9±0,03	1,2
ironers and presses	IV	200±16,2	200	1,07+0,07	0,9

The measurement of artificial illumination showed that its value was on average 200 lk in the workplaces of defect separators and mowers (the norm should be 300 lk), surveyors, with chalk It was found that the light in the workplaces of draftsmen and assemblers was between 100 and 150 lk (according to the norm, it should be 200 lk), and in the workplaces of seamstresses, this indicator showed 200 lk, which is more than the norm. Less than 2 times, only the light in the workplaces of pressers and ironers was found to be within the standard limits according to QMQ 2.01.05-98 "Natural and artificial lighting". The main work performed by workers in sewing enterprises is classified as III and IV of work performed through high and medium precision vision organs, in which the smallest object of differentiation is 0.3-0.5 and 0.5-1 mm, and different background and contrast are used depending on the color of the threads.

Studying and measuring the level of lighting supply shows that during the working day there is insufficient and uneven lighting in workplaces. It was found that the values of the coefficients of natural lighting and lighting in the added state meet (conform to) hygienic requirements only in the workplaces of those who perform measurement work and assemblers, and in other workplaces, the NLC is lower than the norm. In particular, NLC was observed to be much lower than the norm in the workplaces of seamstresses-motorists, its value was 0.99%, according to the norm, this norm should be 1.2% for the side system of joint lighting.

The result

In terms of the parameters of the light environment of the main production shops, the joint illumination of the level of harmfulness of the working conditions in the main workplaces (NLC %) was carried out according to the increased level of hygienic standards. The working conditions of those working in permanent workplaces in the main production shops are characterized as harmful and with an increase of 0.8 times the standard value of NLC (0.8 NLC) it is included in class III and level 1.

The reasons for the low level of illumination in the workplaces of sewing production are the insufficient number of artificial lighting lamps and the irrational location of artificial lighting

devices in the workplaces of seamstresses, the failure to replace burned-out lamps in time, and the constant cleaning of lamps and windows.

Conclusion

In order to ensure adequate and uniform lighting in the workplaces of sewing enterprises, it is necessary to install additional lights to the general lighting system, and to install fluorescent lights in the workplaces of seamstresses, and it is necessary to keep them clean. (should not be less than once every 3 months.)

References:

1. M.T.Abdujabbarova,"Arxitekturaviy loyihalash. (Sanoat binolari)" O'quv qo'llanma.TAQI, Toshkent. 2020 yil.
2. Безнощенко Г.Б., Малышкина Н.А. Производственно-гигиеническая характеристика и условия труда работниц швейного объединения //Депонирующее руководство. -Омск, 1989.
3. Н.Н.Ким и другие. Архитектура промышленных предприятий, зданий и сооружений. Москва, "Стройиздат". 1990 год, стр 466-470.
4. Modern Formation of Sewing Enterprises in the Cities of Uzbekistan. Solid State Technology Volume: 63 Issue: 5 Publication Year: 2020. 6967-6972 page.
5. ҚМҚ 2.01.05-98 " Табиий ва сунъий ёритиш"
6. Самигова Н.Р "Гигиено-физиологиеческие основы оптимизации условий труда работников швейных производств Узбекистана" 14.00.02-Гигиена. диссертация.Т-200 5.-С 43-45
7. Абдужаббарова М.Т. Историческое формирование швейных фабрик в Узбекистане. Научный журнал, №7, 2017 год. «OMEGA SCIENCE» международный центр инновационных исследований. Г. Уфа, 95-97 стр.
8. Abdujabbarova M.T. "Sanoat binolarida sanitar-gigiyenik mehnat sharoitini ta'minlash". Zamonaviy arxitektura ta'limi va integratsiyasi, RIAA. TAQI – 2018 y, 64-66-b.
9. Abdujabbarova M.T., Tukhtaeva M., Nazarenko T.V., Begmatova D.A. "Industrial Production of The Republic of Uzbekistan". The American Journal of Applied sciences, 2022. 39-47 p. Doi: https://doi.org/10.37547/tajas/Volume 03Issue11-08 .
10. Абдужаббарова М.Т. Развитие промышленного производства Республики Узбекистан в годы независимости "Меъморчилик ва қурилиш муаммолари" Илмий –техник журнал. № 4 (2-қисм). Самарқанд-2020 й.138-143б.
11. Abdujabbarova M.T. Tikuvchilik korxonalarini loyihalash qoidalari. "Shahar qurilishi va ho`jaligini innovatsion rivojlanish muammolari va yechimlari" RIA onlayn konferensiya materiallari. Samarqand. SamDAQI, 2021-yil 5-noyabr. 20-23 b.
12. Abdujabbarova M.T., Begmatova D.A., Nazarenko T.V. «Sistem technical principles of enerji efficienci of buldings» Science and innovation» international scientific journal Volume 1 Issue 8 UIF-2022:8/2 | ISSN: 2181-3337. 15.12.2022 427-433 p.
13. Абдужаббарова М.Т. Требование к размещению швейных предприятий и выбор площадки для строительства. "Ishlab chiqarishning texnik, muhandislik va texnologik muammolari innovatsion yechimlari" mavzusidagi ilmiy-texnik anjuman maeriallari. Jizzax politexnika instituti. 2021-yil 29-30-oktyabr. 660-663 b.
14. Abdujabbarova M.T. Sanoat binolarini zamonaviy badiiy yechimlarini shakllanishi. "Bino va inshootlar zilizilabardoshligining dolzarb muammolari" nomli RIAA. TAQI, T-2020 y, 18-19 mart. 234-238-bet.
15. П.П. Сербинович, Б.Я. Орловский, В.К. Абрамов. "Архитектурное проектирование промышленных зданий" – Москва, 1972.