

Ergonomics considerations for raising the efficiency of indoor lighting fixture

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Abstract:

Lighting plays an important role in human life in general and in the internal spaces in particular, whether from a functional and aesthetic point of view, light leads human movement within the space, and without light it is not possible to determine the aesthetic and sensory character of the internal space of the user's environment, as the use of light in the right place and for lighting within the surrounding human environment and not applying the rules Ergonomics leads to annoying or weak incandescent lighting that is insufficient for the desired function or is highlighted on a part that has no importance, and here comes the role of ergonomics in linking the desired function of each lighting unit and the surrounding space and achieving the highest functional efficiency of each lighting unit . **Problem of research :** Improving the working environment is one of the most important factors to increase human productivity, Since proper lighting is one of the most important factors of the work environment, Its effects on people and workplaces are far-reaching and dim lighting can have a negative impact on productivity, job performance, job satisfaction and human physical health , Given that people receive 90% of their information visually, and the failure to apply ergonomics rules in lighting units in the work environment, whether housing, office, or others, leads to eye fatigue, irritation, and blurred vision, whether due to poor lighting, intense glare, or ill-considered lighting. It can also cause bending forward or backward in order to see better, which creates awkward physical postures that can contribute to diseases of the musculoskeletal system and other physical diseases A large part of the poor lighting is due to non-application of ergonomics rules based on careful study of the product and the surrounding environment. With the user and the measurements of the human body and the function that each unit performs in its correct place and with the required intensity. **research aims :-** • Improving the efficiency of indoor lighting units • Determining some ergonomics rules that must be available in the interior lighting units. **research importance :-** • The effective role of the designer lies in achieving compatibility between the user and the work environment surrounding him, especially the surrounding lighting units, which help him to accomplish his daily tasks in a better and faster way. Human body measurements to achieve the highest productivity and reduce or prevent negative effects on the body and achieve the desired function of lighting with the highest efficiency. **research results :** 1- The science of ergonomics is concerned with achieving compatibility between the user and the surrounding environment, and this is achieved by studying the problems faced by the user, an accurate study based on the measurements of the human body and a study of the proportions and surrounding spaces in the work environment. 2- Achieving ergonomics rules on lighting units surrounding the human being allows interaction and harmony with the work environment, which leads to increased productivity to employ lighting elements in their proper places and control the intensity of lighting appropriate for each desired job. 3- The research presented some ergonomic considerations on which the interior lighting units must be based to match the measurements and needs of the human body to perform the desired function better and with higher efficiency. 4- The considerations for each lighting unit differ according to the function required of it. The directed office lighting is different from the diffuse lighting, and it differs from the ground or decorative lighting. 5- Comfort is one of the most important elements that we reach when applying the rules of ergonomics, and not only comfort, but up to the point of enjoying the work environment. 6- The optimal use of lighting units with their appropriate intensity and the invention of new ways to automatically close the lighting units, which leads to rationalization of energy consumption, a more sustainable orientation, and a reduction in wasted energy.

Keywords :

Ergonomics , Efficiency, Lighting

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