

Lighting conditions in assembling electrical industry

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Introduction

Proper lighting is a prerequisite for obtaining a good working environment (Miguel, 2010). Good lighting includes quantity and quality requirements, and should necessarily be appropriate to the activity/task being carried out, bearing in mind the comfort and visual efficiency of the worker (Picolli *et al.*, 2004 apud Pais & Melo, 2011). Apart from the advantages in the health and welfare for the workers, good lighting also leads to better job performance (faster), less errors, better safety, fewer accidents and less absenteeism. The overall effect is: better productivity (van Bommel, 2006; Veitch *et al.*, 2008 apud Pais & Melo, 2011; Begeman, 1997 apud Morghen *et al.*, 2009).

Materials and methods

A descriptive study was developed to review lighting in assembling electrical industry. Fifty-four workplaces were evaluated. In the evaluations of lighting levels, the measurements were carried out for a sufficient time for the stabilization of the value of the level of illumination. To develop the measurements it was considered the day period they were made and the weather. The measurements were made using a meter lux brand Gossenr, model Mavolux 5032C.



Results and Discussion

In some workplaces evaluated the type of activity implies performing demanding visual tasks with small details (control and test), it should be provide values of illuminance between 1000 to 1500 lux, while in other workplaces evaluated implies performing tasks with normal visual medium details (assembling, crimping wires, packaging, office), the values of illuminance must ensure from 500 to 750 lux [Norma DIN 5035 (1990)].

Fig. 1 - Characterization of the lighting workplaces

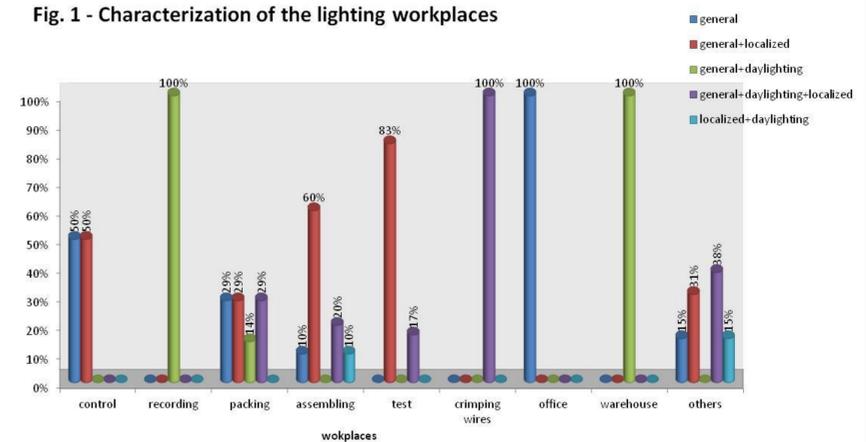


Fig. 2 - Workplaces vs recommended values

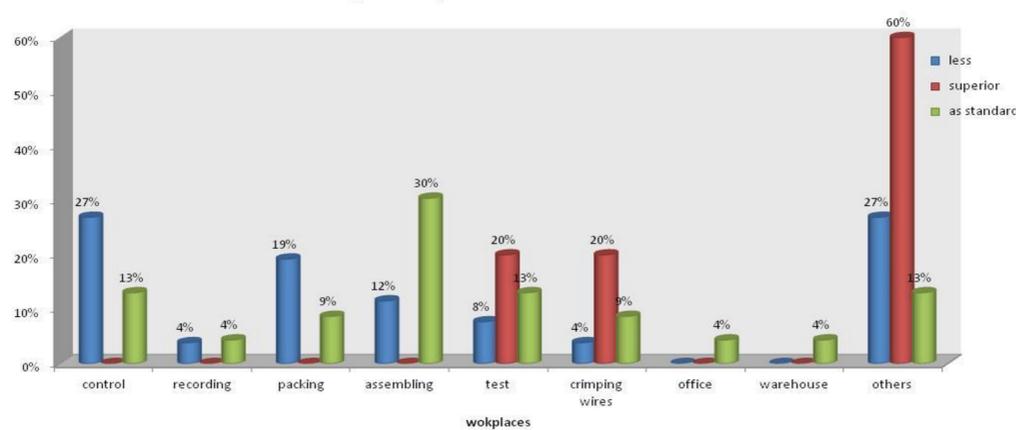
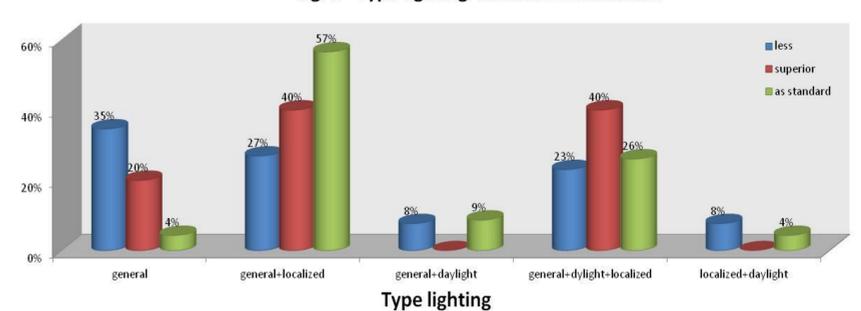


Fig. 3 - Type lighting vs recommend values



All workplaces have general lighting, the majority has lighting localized (except for the recording, storage and office) and many have daylight (excepting the office and control) [Fig. 1].

Approximately half of the workplaces are below the normative recommended values (control, others, packing and recording), and the type of lighting in these workplaces is the general lighting and localized together with the daylight [Fig. 2; Fig. 3].

About 10% of workplaces show higher values than the standard (crimping wires, others and test). The lighting is usually combined with daylight and localized [Fig. 2; Fig. 3].

Poor lighting may increase the risk of accidents (Veitch, 2001 apud Pais & Melo, 2011; Reinhold & Tint, 2009), lower productivity and increase the number of undetected defects (Sousa *et al.*, 2003).

Conclusions

Results show that lighting conditions in the majority of the workplaces are below recommended guidelines and the normalized values are more representative in workplaces with general and localized lighting.

In addition to the natural lighting should be provided artificial lighting adequate for the type of tasks to perform and also to decrease the risk of accidents.

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