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Exploration of Configuration Includes that Impact Energy Utilization in Office Buildings

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Short Communication

The Buildings in Brazil in the residential, commercial and public sectors represent, according to the National Energy Balance in 2015, 50% of the total electricity consumption of the country. According to the National Energy Plan 2030, buildings energy consumption is projected to grow 3.7% per year by 2030. Thus, understanding of the architectural variables that influence the consumption of buildings has significant importance to contribute to the reduction of the expected energy demand for these buildings. The aim of this work is, therefore, the analysis of the architectural variables in the 102 office buildings of medium and large electricity consumption in the city of Belo Horizonte for which the monthly consumption per square meter was obtained. Then, the sample was segmented considering the following parameters: air conditioning system type, window-to-wall ratio, existence of glass facades, average absorptance of the walls, type of glass, existence of solar protection and construction decade. This segmentation was statistically treated using the frequency of occurrence of the listed building features and their influence on consumption of the sample was analysed. The results indicate that naturally conditioned or mixed-mode air conditioned system buildings consume up to 58.7% less electricity per area in comparison with buildings with central conditioning systems in the city. This is explained by the fact that Belo Horizonte is a city with a mild climate with high percentage of comfort hours when natural ventilation is used. This discussion becomes important once it is believed that the analysis of such data can contribute to presenting guidelines to designers and legislative bodies to improve the building design decisions in order to achieve lower electricity consumption in buildings [1].

As per the Energy Demand Study, the total populace is assessed to increment from 6 billion individuals in 2000 to around 9 billion continuously 2050. This normal development, notwithstanding the expansion in power utilization of the populace, impacts in an immediate way the general energy utilization structure, making the need to consider choices ready to diminish this development impacts. According to Perezin the business area, office and retail structures have the highest electricity utilization and CO_2 discharges. Places of business in the US represent 18.0% of power consumption and 3.2% of absolute energy utilization. In Spain, the places of business represent 33% of the business building area energy utilization and are liable for the utilization of 2.7% of the all out energy consumed in the country. In the UK business structures consume 17.0% of power and 2.0% of absolute energy utilization. In Brazil the structures in the business areas and public administrations address 14.5% of all out power utilization in the nation. Therefore, in Brazil as in different nations, the development, activity and utilization of the structures mean a critical portion of power accessible of the nation and consequently address an incredible potential for energy protection. Hence, it is of principal significance to guarantee that the personal satisfaction presented by the structure and its offices are viable with the base norms of liability and utilization furthermore, they are viewed as available resources to carry out energy protection programs are considered. Energy utilization in structures is connected with gains or hotness gains or misfortune through the structure envelope which, notwithstanding the inner burdens created by the occupation, the gear utilization of hardware and by fake lighting, bring about the utilization of cooling frameworks, in addition to the own lighting gear and frameworks [2].

The execution of energy productivity systems in structures decreases top energy interest, yet in addition diminishes the utilization of energy overall and the effect that structures have on the climate. A decent design configuration ought to incorporate examinations of their energy execution, as every choice taken during the plan cycle can impact the warm and light presentation of the structure. The venture associations and independent direction must be set accurately permitting the variety of engineering reactions of the different issues to create coordinated outcomes. Aloof structures, with low energy utilization, that have environment control procedures will give a more prominent potential chance to adjust to environmental change.

The different boundaries that impact the structure's utilization ought to be researched and checked for the

Plausibility of configuration change with the goal that the structure turns out to be more productive. The engineering ought to accept the job of limiting the climatic impacts and not to heighten them or bother them. Evaluate the energy productivity of a building is a more troublesome undertaking than in gear by and large, on the grounds that the effectiveness covers a transaction of variables for example, engineering and ecological factors like outer temperature and stickiness, frameworks, among others [3].

Investigations of the effect on a few structural elements, for example, the state of the structure, opening rate in veneers, tones and concealing gadgets, showed that there was critical minor departure from absolute utilization and energy costs by adjusting valuable factors.

Environment qualities may likewise impact the energy utilization in structures and to limit these impacts, the design should have the option to offer warm conditions viable with human warm solace inside it, paying little mind to outer climate conditions. In this manner, the engineering ought to accept the job of limiting the climatic impacts and not strengthen them or exasperate them [4].

In nations where energy effectiveness guidelines previously combined or in solidification, a significant boundary to be raised is the

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power utilization as per the typology of structures. These studies are called benchmarks, which are a significant apparatus to advance the productive utilization of energy in business structures. Having a huge information base made is the beginning stage to proposing new models for development, for performing assessment of existing standards and work on the administration of structures of various exhibitions. With regards to the Brazilian reality, as indicated by the National Energy Plan 2030[16], the energy utilization of structures is projected to develop 3.7% every year through 2030, which would address an increment of 55.5% in power interest over the course of the following 14 years. In this area are the business structures that consume 14.5%of the power in the nation and a few investigations can possibly further develop effectiveness in energy utilization [5].

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