SOLAR POWERED BUILDINGS IN NIGERIA: CHALLENGES AND OPPORTUNITIES FOR THE FUTURE

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ABSTRACT
In our quest for sustainable development and the achievement of a safe environment, numerous alternatives to power supply have been exploited. The challenge of erratic and insufficient power has for decades bedevilled our dear nation resulting in the proliferation of the use of generators in multiple locations within the built environment. This solution apparently is the people's response to the nations decaying infrastructure but invariably produces an environment which is unsafe to its inhabitants. In recent times, reports have shown that the emissions arising from this practice have caused the death of occupants.
It is common knowledge that the use of solar energy as an alternative power source is not yet ubiquitous in this country. In recent times, innovation in the area of thermal solar and photovoltaics provide possibilities of its introduction in the building fenestration and facade. This study however examines some existing solar powered facilities in Abeokuta Nigeria. The Challenges and benefits of this scheme will be investigated while deriving essential design information for architects and allied professions. The future is bright but there is a great need to prepare for it.

Keywords: Solar energy, Alternative power, environmentally friendly

Introduction

The price of crude oil has quadrupled in the international market since the mid 1990s till date. This has had impact on the automotive, manufacturing, building industries creating a shift of focus to renewable energy sources. The global concern on Climate Change also poses a challenge on the design, sustenance of safer and cleaner environment. The creation of a future devoid of uncomfortable condition, pollution, and poor living standards has arisen from this concern.
Professionals in the fields of environmental design, technology, engineering and management should be seriously bothered about this development. The design, construction and maintenance of energy efficient buildings for the Nigerian environment will mark a stride towards proactively meeting global expectations.
This paper attempts to understand the level of integration of solar systems in community projects in some selected parts of Abeokuta while seeking to unearth the challenges militating against its widespread adoption.

Discussion and Conclusions

The initial capital investment for alternative power supply using solar systems is observed to be enormous but on the long run it offers such advantages as quiet operations, environmental friendliness, maintenance free operations and high reduction in cabling for external lighting.
However this study revealed that a number of challenges are militating against the success of the solar alternative power supply. The challenges include the following:

a. The quality and conditions of components if not properly ascertained before installation may affect operations adversely.
b. Lack of a well structured maintenance programme for the installations. Technical officers who understand the operations of the systems know the critical areas that should be monitored.
c. Proper installation of the PV panels determines the amount of power collected. Many believe that the roof top is the best position for installation irrespective of the designed slope of the roof.
d. Most installations are not considered at the design stages of buildings therefore resulting in land wastage and low efficiency of the systems.

Therefore, it is important for the relevant regulatory institutions to monitor the quality and conditions of components sold within or imported into the country considering the high financial implications involved. In addition, design professionals should take up the challenge to propose alternative energy sources to their clients so as to achieve complete integration of the systems within the design. Architect and Engineers in Nigeria really need to work together more than ever to be able to deliver the quality of services expected. Training of technician to be able to maintain smooth running of systems should be embarked upon to concretize the efforts of the design professionals.

Lighting is considered a major factor that promotes community security and more attention should be given to exterior lighting to improve the quality of life of residents.

In the event that the above suggestions are implemented we shall soon see wide acceptance of solar and other forms of renewable energy options being widely accepted in Nigeria.

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