



FTMRS SOLAR

# Abuja office building energy storage renovation plan





## Overview

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Can existing office buildings be converted into life-cycle net-zero energy use?

The most distinguishing innovation of this study is to explore the feasibility of converting existing office buildings into life-cycle net-zero energy use and greenhouse gas emissions. A novel retrofitting design approach is proposed to identify the optimal retrofitting solution to achieve LCNZE or LCNZC with maximum lifetime payback cost.

How to achieve life-cycle net-zero buildings?

Retrofitting design approach for strict life-cycle net-zero buildings is still quite rare. The innovation of this study is to propose an integrated design process to determine optimal retrofitting solutions and achieve life-cycle net-zero.

How does retrofitting affect operational energy of a building?

The impacts of retrofitting measures on operational energy of the building is assessed through fundamental thermodynamic and first principle equations. Energy transfer through thermal transmission, ventilation, infiltration and solar radiation is calculated using the governing equations of heat conduction (Luo et al., 2019).

Can retrofitting optimisation transform existing buildings into life-cycle net-zero energy?

The scope of this study is to propose a retrofitting optimisation approach for transforming the existing buildings into life-cycle net-zero energy or life-cycle net-zero carbon.



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### Appraisal of Awareness and Implementation ...

Jul 1, 2021 · This study investigated the extent to which building professional firms in Abuja, Nigeria are aware and implement the different energy ...

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### Appraisal of Awareness and Implementation Levels of Energy Efficiency

Jul 1, 2021 · This study investigated the extent to which building professional firms in Abuja, Nigeria are aware and implement the different energy efficiency design strategies available for ...

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### Retrofitting existing office buildings towards life-cycle net ...

Aug 1, 2022 · Therefore, the innovation of this paper is to propose an integrated design process to transform existing office buildings into life-cycle net-zero energy consumption or greenhouse ...

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### SUSTAINABLE DESIGN STRATEGY FOR OFFICE BUILDINGS

May 10, 2019 · Buildings account for about 40% of global energy consumption and contribute 30% of all CO2 emissions. This research project investigated extant office building development in ...

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### Abuja thermal power storage demonstration project

May 20, 2024 · ng . The report is also available in Chine stalled independent power plant project (GIPP) in Abuja. China Machinery Eng Today, the U.S. Department of Energy's (DOE) Office ...

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### Deployment Of Smart Technologies For Improving ...

Jan 31, 2016 · Abstract--This paper examined smart technologies and energy strategies for improving the energy efficiency and reducing GHG emissions in office buildings in Nigeria. In ...

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### SUSTAINABLE DESIGN STRATEGY: ASSESSMENT OF THE ...

Oct 29, 2025 · Title page Title: SUSTAINABLE DESIGN STRATEGY: ASSESSMENT OF THE IMPACT OF DESIGN VARIABLES ON ENERGY CONSUMPTION OF OFFICE BUILDINGS ...

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### Potentials of Integrated Smart Façade for Office Buildings in Abuja...

This study presents a detailed review highlighting some possible solution to energy consumptions in buildings through integrated smart Façade green retrofitting in existing buildings façade. ...

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### Appraisal of Awareness and Implementation Levels of Energy ...

This study investigated the extent to which building professional firms in Abuja, Nigeria are aware and implement the different energy efficiency design strategies available for deployment in ...

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Building Professional Practices Knowledge and ...

Jun 30, 2022 · Abstract This study investigated the extent to which building professional practices in Abuja, Nigeria are knowledgeable and integrate 29 energy efficiency design features in ...

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Integrating Green Architecture Principles in the Design ...

Abstract The growing concerns over the adverse effects of buildings on the environment and the need to achieve users' thermal, visual, acoustic, spatial, and indoor environmental air quality ...

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