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ENERGY-SAVING TECHNOLOGIES IN MODERN ARCHITECTURE AND THEIR IMPORTANCE IN THE CONSTRUCTION PROCESS

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Abstract:

This global climate in the article change and energy resources limitedness under the circumstances energy saver of technologies architecture and construction in the field importance illuminated . Modern buildings in design energy efficiency provide for the purpose applicable construction shell insulation , energy economical windows, high effective engineering systems and again recovering energy sources integration technologies analysis Also, energy saving economic , ecological and operational advantages of the building to live convenience and stable internal environment in creation place seeing published. In the article passive and asset design approaches The importance of energy is also highlighted . effective buildings build of reaching stable development for important factor that based on given.

Keywords

Energy efficiency, energy saving, architecture, sustainable construction, insulation, ISHS systems, solar panels, re recovering energy, passive design, sustainable development

Introduction

Current global climate today change and of resources limitedness in conditions , energy efficiency architecture and construction of the field the most important priority from directions to one became modern architecture not only aesthetic in terms of attractive , maybe ecological and economic also stable to be demand This view in terms of energy saver of technologies buildings design and build in the process importance is incomparable Energy Saver Technologies Home Types about from learning before they about to the information has Let's be . Energy saver technologies (or energy effective technologies) – this any service (e.g. heating , cooling , lighting , production) release (provide) in the process of or known one task minimum amount of execution energy to spend provider methods , devices and systems . Main purpose — usefulness without loss energy consumption reduce , that with together , economic and ecological benefit to bring . Energy to the effectiveness achieve for one how much technologies These are used . following main to groups to be possible :

1. Construction The efficiency of the building envelope (shell) . external shell (walls , roof, foundation , windows) heat to a minimum unloading solution doer role plays . High

Quality Insulation : Walls , roof and on the foundations thick and effective heat insulation materials (e.g. mineral wool , foam) polystyrene (use) heating and to cool expendable energy noticeable at the level reduces . Energy effective windows and Doors : Two - or three laminated glass package (glass layers inert gas between with filled) and low-emissivity (Low-E) coating from the windows use heat loss reduces , same at the time natural the light provides .

2. Engineering systems efficiency of the building internal systems energy reasonable use need . Effective Heating , Ventilation and Air Cooling (ISHS) Systems : High to efficiency has was heat pumps (ground) or air sourced), centralized ventilation devices (heating recuperation with) and smart thermostats energy consumption optimizes . Smart Light Systems : LED lamps (fluorescent to the lamps up to 80% compared less energy spends), action sensors and into the light of day sensitive sensors only necessary when the light turn on through electricity energy saves .

3. Repeat recovering energy sources integration . This is the building's own needs for energy working release opportunity means . Photoelectric Panels (Solar Batteries): Building to the roof installed panels electricity energy working releases , this and from the network buy removable to energy was demand reduces or even " zero" energy consumption " (Zero-Energy Building) goal to achieve help The sun gives Water Heating Systems : Solar from energy using , drinking and household water heating systems .

Construction In process Importance

Energy saver technologies construction to the process integration importance in the following manifestation will be :

1. Long term economic It also brings benefits . Energy saver materials and systems installation elementary investment increase possible , but this expenses quickly energy of payments decrease on account of The building is covered . whole service to do deadline during operational expenses noticeable at the level decreases .

2. Ecological stability and the environment protection Making . Energy consumption decrease electricity at the stations digging removable fuels to light was demand This reduces the in turn , greenhouse gases (CO2) and other harmful waste to the atmosphere separated exit reduces . Construction project ecological in terms of responsible to be stable to develop contribution Addictive .

3. Building quality increase and to live convenience the most important is considered . Stable internal Climate : High insulation and effective ventilation systems of the building inside permanent and comfortable the temperature provides . Health and Well-being : Good insulation voice conductivity reduces , that with together , recuperative ventilation systems clean and from the filter past the air delivery in the building air quality improves .

4. Active and Passive Design shape there is about him / her the following saying our passage Construction in the process energy saving passive design (of a building) shape , orientation , windows location such as natural from factors with use) beginning and asset technologies (solar panels , heat pumps) with strengthening necessary . Construction

without starting before energy audit transfer and relevant technologies selection optimal results provides .

Conclusion as in other words , modern in architecture energy saver technologies just additional opportunity not , maybe inevitable is a necessity . Their construction to the process deep integration not only of an individual project , but also whole construction of the field stable the future provides . Energy effective buildings are not only nature to protect , maybe future generations for economic and comfortable to live environment create on the way important is a step .

References :

1. International Energy Agency (IEA). Energy Efficiency 2023: World Energy Outlook. Paris: IEA Publications, 2023.
2. United Nations Environment Program (UNEP). Global Status Report for Buildings and Construction 2022. Nairobi, Kenya: UNEP, 2022.
3. Hegger , M., Fuchs, M., Stark, T., & Zeumer , M. Energy Manual: Sustainable Architecture. Munich: Birkhäuser Architecture, 2008.
4. John, S., & Pérez-Lombard, L. "Energy efficient building technologies: A review." Energy and Buildings, vol. 198, 2019, pp. 1–15.
5. Kibert , Charles J. Sustainable Construction: Green Building Design and Delivery. 5th ed. New Jersey: Wiley, 2022.
6. Kazakhstan Institute of Architecture and Construction. Heat insulation materials and their efficiency . Tashkent : Uzbekistan Construction publishing house , 2021.
7. American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE). ASHRAE Handbook: HVAC Systems and Equipment. Atlanta: ASHRAE, 2020.
8.Uzbekistan Republic Construction Ministry . In the buildings energy efficiency according to normative documents collection . Tashkent, 2020.

