

Discussion on Application of Energy Saving Technology in Green Building

Zhineng Tong
Department of Architectural Engineering, Jiangxi Science and Technology Normal University, NanChang, JiangXi, China

Abstract. In the green building, in order to realize the sustainable development, it is necessary to use energy saving and environmental protection technology as far as possible in the design, construction and use of the building, reduce energy consumption, and realize the construction of the green building which is suitable for people to live. Green buildings run through the design, construction and use of the building, so we should consider the implementation and utilization of green buildings from the whole process.

1. Introduction
Green buildings have various energy conservation and environmental protection requirements from design, construction, use, maintenance to demolition. This means that we should consider the use of environmental factors in the design stage, but also try to reduce the adverse effects on the environment caused by the construction process, and ensure that the construction can provide low cost, comfortable and healthy space for people in the process of operation, and to reduce damage on the environment when removing it.

2. Energy saving technology roadmap and elements

2.1. Design method
The importance of building energy efficiency design is a very important link in comprehensive building energy conservation, which is beneficial to eliminate energy consumption from the source. The whole building and the external environment design is based on the analysis of buildings surrounding climate environmental conditions, through site selection, planning, external environment and body orientation design, make the building a good external environment, to achieve the purpose of energy saving.

2.2. Reasonable site selection
The site selection is based on the local climate, soil quality, water quality, topography and surrounding conditions. In the architectural design, it is necessary to maintain the suitable microclimate environment in the whole life cycle of the building, and create the condition for the building energy conservation, at the same time, do not destroy the balance of the whole ecological environment.

2.3. Reasonable external environment design
After the construction site is determined, its micro climate characteristics should be studied. According to the demand of building function, it is necessary to improve the existing micro climate environment and create favorable environment for building energy saving through reasonable external
environment design. The main methods are arranged around the trees and vegetation in the building, not only can effectively block the sand, can purify the air, shade, and noise; create artificial natural environment, such as setting the water near the building, use water to balance environmental temperature, wind and rain fall collection.

2.4. Reasonable planning and shape design
Reasonable architectural planning and shape design can effectively adapt to the harsh micro climate environment, including the overall volume of the building, building shape and building shape combinations, building, sunshine and orientation and so on. Like the Mongolia round flat package, conical roof can effectively adapt to the harsh climate of the grassland, to resist the wind to reduce the effect of the cooling area of the building; for coastal humid areas, the introduction of natural ventilation is very important for energy saving, in the planning, through building the dayside and nightside form different back pressure, too the formation of ventilation even in no wind, the formation of wind tunnel in body building design, the natural wind in the room, have good ventilation effect, so as to achieve the purpose of energy saving.

2.5. Energy saving design of building doors and windows
According to statistical data, in our country, 40% of the high energy consuming buildings are dissipated through the doors and windows. Therefore, it is very important to solve the problem of energy saving of doors and windows.

2.6. Energy saving design of building envelope detail
Detailed energy saving design is also important for the overall energy efficiency of buildings. Thermal bridge should adopt reliable insulation measures and "broken bridge"; the outer side of the window around the wall, shall be insulated; the gap between the door and window frame and the wall, should adopt efficient thermal insulation material block; with a full glass curtain wall, between the wall, floor or wall beam and the gap should be filled with insulation material.

2.7. Reasonable architectural apace design
Reasonable space design is used in the construction of the functional requirements of the premise of fully meet, the space of the building were reasonable (plane and vertical separation, separation) to improve indoor thermal insulation, ventilation, lighting and other micro climatic conditions, to achieve the purpose of saving energy.

3. Process measures and application of energy saving materials

3.1. Application of energy saving wall
The wall retaining structure in our country as the traditional inorganic materials, such as masonry, concrete, cement mortar, now need to energy-saving insulation, the introduction of a large number of organic insulation materials such as moulded polystyrene foam board, extruded polystyrene foam board, rigid polyurethane foam, because these organic insulation materials insulation performance than traditional wall materials the insulation performance is strong, so the organic insulation materials are widely used in building, formed a kind of inorganic materials and organic materials composite wall. In this way, new requirements for construction technology are put forward. A typical thermal insulation wall is a composite of organic and inorganic materials. The wall, in addition to the traditional load-bearing and sound insulation requirements, has also increased the requirements of thermal insulation. Inorganic materials and organic materials are required to be combined into a whole and can act together in the natural environment. Therefore, new requirements are made for the material properties and construction technology of the wall.

Crack is one of the key technology of wall insulation engineering to solve, because once the insulation layer, anti crack protective layer cracking, wall insulation performance will be changed a lot,
not only can not meet the requirements of energy conservation, even endanger the safety of wall. There are many factors influencing crack resistance, by mortar and enhance network crack protective layer composed of the whole system has anti cracking performance of the key role. The deformation should be greater than the most unfavorable condition of its deformation and the deformation of the flexible base and ultimate tensile mortar, thus ensuring the anti crack protective layer cracking resistance requirements. In the composite mortar reinforced net (such as fiberglass mesh cloth), on the one hand can increase the tensile strength of the anti crack protective layer, on the other hand, can effectively disperse stress, can be originally may have wider cracks (crack) dispersed into many smaller cracks (cracks), thus forming the anti cracking effect. It is important for early alkali resistance coating material and surface coated on glass fiber cloth, glass fiber varieties and has the decisive significance to the long-term alkali resistance.

3.2. Application of energy saving doors and windows
The doors and windows is the main channel of energy exchange between the inside and outside the building, so the energy-saving doors and windows has great significance to the overall building energy saving, energy-saving doors and windows apart from improving the thermal performance of the glass and the frame of the fan itself and try to use hollow glass and seal the hollow glass, should also be heavily fan lap from the glass and frame joints and the window frame to proceed, because each joint close to ensure to reduce air circulation. Doors and windows from the design, construction and materials should be the installation of doors and windows must use the construction process of reserved opening, prohibited the use of edge edge build installation mouth or install the second building, according to the doors and windows of different materials to decided to adopt the welding process, expansion bolts fixed windows and doors, no matter what the process should ensure that the installation is firm, the design should try to increase the opening gap of the overlap so as to reduce the opening gap width, according to the material selection of various doors and windows sealing strip for sealing, to ensure the air tightness of windows, doors and windows on the metal frame in the bridge with plastic and rubber insulation material enough space under the condition that the length and width of the bridge shall be guarantee, and shall ensure that does not destroy the bridge in the installation accessories, doors and windows and the wall around the junction gap using polystyrene board or polyurethane material Filling may not be filled with cement mortar to ensure its tightness and so on.

3.3. Application of energy saving roof
Usually the roof insulation is a low volume density, low thermal conductivity, low water absorption, a certain strength of the insulation material set in the waterproof layer and the roof between, according to this is the method, the choice of a lot of insulation materials, Gas concrete blocks, cement or asphalt perlite plate, cement polystyrene board, cement vermiculite board, polystyrene board, all kinds of lightweight aggregate concrete slabs, bulk cement and cement and other cementing materials are cast with perlite, vermiculite, Cerm site, pumice, waste polystyrene, slag, etc., using loose material directly or bagged in the spire roof or ceiling above the expansion of perlite, glass wool, rock wool, waste polystyrene particles. Pouring a rigid polyvinyl chloride foam and fly ash, cement as the main material of the foam concrete. Anti-piling method will be the main waterproof layer below the insulation layer, which can effectively protect the waterproof layer, to facilitate the construction overhaul, but because of the higher cost, residential construction has not been widely used.

4. Conclusion
In today's world, in the background that the pursuit of low-carbon emissions intensified and the requirements of people on the health and energy increased. Green building is our development of changes and adaptations to the surrounding environment. The elements of building behavior are the consumption, change and transformation of natural resources. Green building behavior has an important impact on the environment in all respects, and will also have a significant impact on the sustainable development of economy and society. People's material living standards have gradually
improved, and people are increasingly pursuing spiritual and physical and mental enjoyment. To achieve sustainable development in green buildings, it is necessary to carry out architectural design, construction and use of energy-saving and environmentally-friendly technologies to minimize energy consumption, reduce people's natural disturbances, and ultimately build buildings suitable for people to live. Green building throughout the building design, construction and use, from the whole process to achieve the full range of green building.

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