

## Discussion on Application of Building Energy Efficiency and Green Building Technology

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### 1 Importance of Developing Energy-saving Buildings and Green Buildings

According to the related statistics, there are two billion square meters of new buildings putting into use, 90% of which are high energy consumption buildings. Faced with this situation, if the design standard of the energy-saving level is not high enough and lots of building energy consumption becomes more, the burden of the national economy will be aggravated. Construction takes an important part in developing our national economy, and as it is developing, its energy consumption may be more than transportation, industry, and other larger industries. With the help of anglicizing and projecting the date in developed countries, our energy consumption is more than 40% in the world end energy consumption. So it is necessary for our consumption to put energy-saving methods into use in order to relieve the ever-increasing energy consumption stress. Our consumption should make buildings with energy conservation and environmental protection as our goal and structure buildings. Meanwhile, it is efficient to decrease the use of energy. Using the low-carbon, green, recycled material can take effect on using resources intensively, which can accelerate the development of energy-saving buildings and green buildings. It can also be good for the correct use of energy-saving resources. Ultimately, the correct use of energy and resources can

relieve the contradiction between economic of supply and demand and social development. Make sure the safety of our resources to improve the city development.

### 2 Application of Energy-saving Technology in Green Buildings

#### 2.1 The Building Location and Layout

Construction planning design is an effective way to promote the energy efficiency in buildings and it is also an important part of the energy efficiency. In order to improve the energy efficiency, architects study the energy efficiency in buildings from the building layout, the functional partitioning, streets, the building orientation, the distance between buildings, summer and winter wind directions, the solar radiation, the exterior space and environment and so on. For example, building energy consumption makes a great effect on the layout scheme, such as, corridor forms, the distance between buildings, the heights and the shape coefficient. So when we design the building, we should combine the specific environment and climate features to make good use of the available natural conditions, such as, light, rain, green plants and geography. Make sure to create a good indoor climate and decrease the dependence on construction equipment, which can realize the green energy-saving.

#### 2.2 Application of External Wall Insulation Technology

**Abstract:** Recently, our country has a serious environment pollution problem, and people are looking forward to a high-quality environment. It is necessary for everyone to do something by themselves and build up the consciousness of preventing the environment. For construction, its size becomes larger and larger, but the use of material and equipment becomes more and more. So it is important to introduce the green energy-saving technology. Green Building Technology not only meets lots of customers' need, but also improves the competitiveness in construction. This passage talks about the application of building energy efficiency and green building technology which can be the reference for the related work.

**Key words:** Energy-saving technology; Green buildings; Explore

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Our country has a vast territory and there are big differences among each area. Compared to the humidity southern climate, the temperature in the north is a little bit lower. The application of external wall insulation technology can enhance the building's thermal performance efficiently and meet the energy-saving project of green buildings' need. Generally speaking, the thicker the material of external wall insulation is, the bigger the variable course depth is and the higher the parameter is, the more obvious the effect for heat preservation will be. During green buildings are being making, this kind of external insulation technology is widely used, which plays an important part in cold winter, reduce the loss of the indoor temperature and keep the original temperature. And in hot summer, it can not only avoid the influence of the solar radiation and the raising of the outdoor temperature, but also reduce the workload of the air conditioning and refrigeration equipment. It is showed that, all of these methods can increase the function of heat off in summer and strengthen the effect for heat preservation in winter, which reduce not only the electric load of summer cooling but also the energy consumption of winter heating. All above can the reduce building energy consumption.

### 2.3 Characteristic of Indoor Environment in Green Buildings

Indoor environment in green buildings is the main characteristic of natural lighting, so it is important to design the natural ventilating as well as possible and make the appearance of the system integration and the multidimensional optimization come true. With the help of all kinds of functions, integrate and improve the organic system to reduce the building energy consumption. About 50% of general building energy consumption is used for heating, cooling and lighting to provide people's comfortable indoor environment. The energy consumption of air-conditioning system is mainly used for heating and cooling, the air treatment equipment, the compression refrigerating machine, the heating and cooling energy

consumption of the aerodynamic system, the circulating water system in the air conditioning room, the energy consumption of fan and water pump as well. So reducing the energy consumption of cold and heat sources is the key to the

integrated energy systems. It can reduce the load in system design, control the new air quantity and lower the design standard of the indoor temperature and humidity.

### 2.4 Make Full Use of All Kinds of New Clean Energy

From the exploitation of new green energy, solar energy is one of the most important contents, and it is clean, efficient, endless, cheap and many other advantages. Solar energy is widely used in heaters, air conditioners and batteries among the housing construction. Compared to other countries, solar energy in our country is much richer, 2/3 of our areas have a duration of sunshine of more than 2500 hours, and some areas even have more than 3000 hours, which provides a good guarantee for exploiting and using solar energy. At present, the main reason for the widely use of solar energy is the low efficiency of energy conversion. But we must see the development of this problem. At the same time we must believe that with the rapid development of china's science and technology, solar energy will be more widely used and the energy conversion will be higher. Except all above methods, we can see many examples of application of energy-saving technology in green buildings. For example, put the water system into the construction system and make good use of the water resource to reduce the water waste. Besides, use the day lighting technology to reduce the lighting energy consumption.

### 2.5 Utilization of Renewable Energy

With the rapid development of solar energy technology, solar batteries are widely used in green buildings, which is also called solar photovoltaic. It has many advantages as follows: free fuel, Parts which have no wear and do not

need to be replaced, no more operation system, no stationary system composition and mounted position, no noise, no noxious pollutant and pollutant emissions.

Because of the small volume, flexible mounting, stabilized energy, work without extranet, it can be used in distant suburbs, which can reduce the energy consumption. With the development of the technology, solar batteries have developed a kind of construction. In some areas, they are considered as the composition of the facade elements which can produce many special ultimate visual experience.

## 3 Conclusion

As awareness of energy conservation and environment protection is improving, the design of green buildings and energy saving technology can achieve living conditions improvement, ease the energy crisis efficiently and promote sustainable economic development. When architects are working, they must not only pursue the architectural effect, but also strengthen the concept of green buildings. By studying new technology, new knowledge and new material, they reinforce architectural energy - saving design to promote the application and development of green buildings.

## References

- [1] Gong Pingping. Talk about Application of Building Energy Efficiency and Green Building Technology. Jiangxi Building Materials, 2017,(03):51+57.
- [2] Yang Zhipeng. Development of Application and Research on Green Buildings and Building Energy Efficiency Technology. China Building Materials Science & Technology, 2017, 26 (03): 51+57.
- [3] Ma Ji. Application of Green Building Energy Efficiency Technology in Real Estate Development. Construction Materials & Decoration, 2017, (06):54-55.
- [4] Zuo Wendong. Research on Green Building Energy Efficiency Construction Technology. Building Technique Development, 2017, 44(03):156-157.