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Research on the application of the construction technology of the residential exterior wall thermal insulation structure

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Abstract. The energy problem has become the main factor restricting the sustainable development of society and protecting the ecological environment. China's vast territory, changeable climate and environment increase the difficulty of building energy conservation and emission reduction, and restrict China's sustainable development strategy. It is urgent to reduce building energy consumption and improve energy utilization. The external wall insulation can effectively reduce the energy consumption of buildings. Through the analysis of the current situation of civil building wall insulation and energy-saving system, it is found that there are many problems in the construction, management and material application of external wall insulation; According to the concept of energy conservation, environmental protection and sustainable development, this paper puts forward countermeasures, hoping to have a certain reference significance for the external wall insulation construction of other similar projects.

Keywords: exterior wall insulation, Energy saving, Construction technology.

1. Introduction

Construction industry is a consuming industry that consumes a large amount of resources and affects the natural environment. With the continuous rapid increase of China's resident population and the continuous improvement of people's living quality, the comprehensive energy consumption of civil buildings is increasing [1], and it is urgent to solve the problem of shortage of civil building resources. The energy-saving development of the construction industry is an inevitable requirement of today's society. Energy-saving and thermal insulation building technology is to improve the housing conditions of the people in China and reduce the energy problems caused by building heating and cooling in winter and summer [2]. The development and use of building energy saving and thermal insulation technology is the basic means to realize building energy saving in China. The innovation of technological means is an important method to improve the production technology level and the comprehensive competitiveness of enterprises in the construction market. In this case, based on the external wall energy saving renovation project of A project community, based on the analysis and summary of the significance of external wall insulation in building energy saving and the current application situation, discuss the problems and solutions in the construction, so as to achieve the purpose of accelerating the development of external wall insulation construction technology [3].

Since the 1990s, the problem of building energy consumption has become highly valued in China. The central government and local people's governments at all levels have formulated and introduced a

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series of policies and regulations, to promote the development of building energy saving to a certain extent and thermal insulation technology. However, due to the influence of different factors such as climatic conditions and regional characteristics [4], the promotion and application of many energy saving technologies are often greatly restricted, which increases the difficulty of the relevant government departments; mainly reflected in the following main aspects: first, the huge management system of building energy saving technology, which increases the difficulty of construction technology application and management to some extent; second [5],the lack of necessary understanding of the applicable conditions of green energy-saving construction technology in some areas, leads to blindness in the selection of building energy saving technology. Through the analysis of external wall insulation construction technology analysis of project A, combined with the actual situation of the energy saving construction technology suitable for the promotion of the region, so as to promote the further development of the building external wall insulation industry.

2. Overview of construction technology of building exterior wall insulation

2.1. Exterior wall insulation

Exterior wall insulation is a composite wall with heat insulation function composed of polymer modified mortar, flame retardant polystyrene board, extrusion polystyrene board and other materials. The energy saving insulation project integrating building insulation, exterior wall waterproof and finish decoration, can not only improve the building energy efficiency, reduce the construction cost, but also meet the requirements of energy saving insulation of modern buildings [6]. Exterior wall insulation technology uses polymer modified mortar and other adhesives to cement polystyrene foam or extrusion board and other polymer materials with low density and high thermal resistance on the building exterior wall, and then lay decorative and protective decorative layer, give the building additional thermal insulation performance. In high latitude and cold areas, external wall insulation can prevent or delay the heat loss in the building at low temperature, stabilize the internal temperature; or in low latitude hot areas, exterior wall insulation can also prevent the influence of environmental temperature on the indoor temperature, isolate the heat outside the exterior wall of the building, and achieve the effect of heat insulation. Whether it is heat insulation or heat insulation, the external wall insulation system is to stabilize the internal temperature of the building within an appropriate range, and reduce the energy consumption caused by regulating the internal temperature of the building, so as to achieve the purpose of energy saving and emission reduction [7].

2.2. Exterior wall thermal insulation materials

The building materials used for external wall insulation are called external wall insulation materials, mainly including the following categories:

2.2.1. Extruded polystyrene plate (XPS)

Extruded polystyrene board is the earliest application, the most mature technology, the market share of the highest energy-saving insulation material. Because of the high closure rate of its internal structure, it has good water resistance and low water absorption rate, and also avoids the energy loss due to airflow convection. The extruded polystyrene plate has low thermal conductivity and high adiabatic performance, its chemical performance is relatively stable, can deal with all kinds of harsh climate conditions, and in a variety of high temperature and high humidity environment may still maintain excellent heat resistance for a long time. However, it has poor air permeability due to its high closure rate. When the temperature and humidity change greatly, the internal stress caused by its deformation is also relatively large, which is easy to produce local stress damage. In practical engineering, the external insulation system of extruded polystyrene board is prone to hollow, cracking and falling off.

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2.2.2. Foamed polystyrene plate (EPS)

Under the same thickness, the heat insulation effect of foamed polystyrene board is weaker than that of extruded polystyrene board, and its tensile strength and thermal conductivity are smaller than that of extruded polystyrene board, and its weather resistance is poor. But the foaming polystyrene board has good air permeability, high ductility and high bonding strength, so the construction difficulty is relatively low, and the construction speed is fast.

2.2.3. Phenolic plates

Phenolic plates have very small thermal conductivity, have good heat insulation, excellent fire resistance, and will not release highly toxic substances in the fire. The phenolic plates have a low density and a light weight. When the temperature varies greatly, it does not produce great stress, and it has good durability. But its water absorption rate is high, the water absorption is easy to crush after drying, low strength, poor impact resistance, small bending deformation, easy to crack and fall off under the action of external force.

2.2.4. Foamed polystyrene board

Foamed polystyrene plates are heat insulation and sound insulation material with the highest fire grade. It has low thermal resistance coefficient, good air permeability, stable chemical performance, not easy to be corrosion and pollution mildew, in the fire will not release toxic gas. But its low tensile strength, high water absorption rate, easy to deformation.

3. Case Analysis of the construction technology of residential exterior wall thermal insulation

3.1. Residential Project Overview

The total building area of Phase II of Project A is 13,894 square meters, and the unit building height is eight floors, with six floors and the first floor belongs to the semi-underground warehouse and storage room. The seismic fortification intensity is 7 degrees, the seismic performance grade is Grade 2, and the actual service life of the building can reach 70 years. The main body of the building adopts the mixed foundation of pile foundation-raft plate, and the superstructure of the building adopts reinforced concrete frame shear wall. The internal partition wall is filled with hollow aerated concrete block, the external wall filling is filled with aerated fly ash block, and the external wall of the building is decorated with water-proof and moisture-proof plastering [8].

The second phase of project A has 112 residential units, and since 2015, about 86 households have occupied it, accounting for 77% of the total. Since the first half of 2017, some residents have reported that the indoor temperature is low in winter, which can only be maintained at about 14 degrees Celsius, which cannot reach the 16 degrees Celsius stipulated by the national standard, and is far from meeting the comfort requirements of living. The heating pipeline used in the building complex is central heating, and the residential boiler room is secondary heating into the house, but the effect still cannot meet the heating needs of residents. In 2018, XX Municipal Government issued the special Regulations on building energy conservation, which made clear requirements for the heating and energy conservation of buildings, and set up special subsidies to ensure the smooth implementation of energy conservation renovation projects. After the relevant government departments decided that in order to meet the needs of residents in winter, the construction of the second phase of A project was carried out in September 2018. The external wall insulation project belongs to the energy saving renovation project of the existing buildings, and the most widely used construction technology in the building insulation technology has become the best choice of the project.

3.2. Construction scheme of external wall insulation of the project

A project phase ii external wall insulation structure construction mainly by the surface processing (basic processing, measuring line), insulation layer construction (paste anchor EPS, ESP polystyrene board grinding), protective layer construction (daub surface mortar, alkali grid cloth lattice cloth, daub surface

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paste) and decorative surface construction (coating water resistant elastic putty, surface coating or face brick construction) composed of four parts.

3.2.1. Wall base surface treatment and measurement and laying out

Clean up the surface of the external wall of the original building, eradicate the peeling, hollow drum, foaming and other defects that affect the construction, ensure the leveling and stability of the wall, remove the external wall hanging equipment, and ensure the safety of the construction personnel. Test the local flatness and vertical degree of the wall, and pop the horizontal and vertical control lines on the outer wall at a certain distance to ensure the straight and stability of the insulation material.

In the process of handling the base of Project A, since the building complex is not built long, it is not necessary to deal with the base too much, and most residents have installed air conditioning and some low-level households have installed stainless steel anti-theft isolation window, which brought great constant to the construction. Therefore, after consultation with the residents committee, the construction team decided to remove part of the air conditioning machine and anti-theft Windows that affect the construction, and install them again after the construction, so as to minimize the impact of the construction on the residents' lives. After the external wall equipment is removed, the base leveling treatment is carried out, the surface is coated with 5mm thick waterproof mortar mixed with 1% water reducing agent, and the first waterproof and impermeable treatment is carried out while leveling the base level.

3.2.2. Install the ESP thermal insulation board

ESP board paving follows the construction method of top-down, dislocation lap. The construction personnel use the crane to start the construction from the upper part of the building. The insulation board is 1 / 2 of the length of the insulation board, and the cutting length of the sporadic plate at the corner (see Figure 3.3) and the hole should not be less than 1 / 3 of the plate length. From top to bottom, the plate can reduce the influence of gravity on the plate bonding, and prevent the overall strength of the stress caused by the sliding of the bonding place on the upper plate and the plate weight on the lower wall. The construction method of misjoint and the bonding anchor can maximize the insulation plate into a whole, and the upper and lower joints between the plates often become a weak point in the structure. In order to ensure the bonding strength, the laying of the board should not exceed 2 layers to the anchorage, and the board should be anchored after suspending the construction. It is strictly prohibited to hang the empty board empty.

The bonding of ESP plate and the bonding of steel plate anchor bolt are combined. The main feature of this anchoring method is that on the basis of the traditional bonding anchoring method, an ESP insulation plate is directly fixed by resetting several new anchor positions. The head of the anchor bolt is made of high-strength nylon fiber and plastic composite, and the tail anchor bolt is made of rotary screw type expansion bolt. The limit value of the overall tensile force and bearing capacity strength of a single link bolt should be greater than 1.5 kn. It is suitable for the decoration construction of the building exterior wall and wall insulation layer mainly made of the building exterior wall envelope decoration, as well as the energy saving transformation of the large building exterior wall envelope structure with weak building base attachment protection ability. Although the construction of this process is more complex, the weight of the insulation wall is divided in the whole wall structure, and is fixed in the structural layer of the building through the anchor bolt, which greatly improves the overall strength of the insulation system and effectively improves the overall service life of the insulation layer.

3.2.3. EPS board grinding

EPS steel plate must be kept continuously for at least 24h before or after fixation, so as not to affect the overall strength of EPS steel plate. In the process of grinding the insulation board, you can use special friction agent or hand rub to polish the surface and the edge of the board thoroughly, eliminating the difference between the thickness between the floor and the edge, and in the use of the EPS debris

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scattered on the board should be cleaned at any time. If the joint is large, more than 50mm should be bonded with mortar grid strip, layered filling; less than 50mm can be directly filled with mortar.

3.2.4. Laying of grid cloth

The laying of the grid cloth uses the two-channel mortar plaster laying method. That is, apply a layer of bonding mortar slightly larger than the size of the mesh cloth on the surface of the EPS composite plate, then press the mesh cloth into the bonding mortar with a spatula, and then apply a layer of mortar evenly. The two lines of mortar clamp the mesh cloth in the middle, the curing time is not less than 72H, and the maintenance time should be moderately extended after precipitation. The next construction process can be carried out before the layer of mortar is evenly dried.

3.2.5. Selection of the finish layer

EPS composite external wall thermal insulation layer is a kind of light and flexible thermal insulation structure decoration surface material, which can be matched with flexible wall coating. The veneer foundation layer of the exterior wall insulation layer of EPS insulation board should give priority to the elastic coating to ensure the descriptive nature of the insulation structure and extend the service life of the structure. In the construction scheme of project A, the exterior wall insulation finish is covered with waterproof wall paint to enhance the waterproof coefficient of the structure and laid at a height of 1.5 m to prevent the erosion of surface water on the wall and improve the strength of external force during use.

4. Problems in the construction of energy saving and insulation of 4 A project

4.1. Construction environment problems

The total building area of Phase II of Project A is 13,894 square meters, and the unit building height is eight floors, with six floors and the first floor belongs to the semi-underground warehouse and storage room. The seismic fortification intensity is 7 degrees, the seismic performance grade is Grade 2, and the actual service life of the building can reach 70 years. The main body of the building adopts the mixed foundation of pile foundation-raft plate, and the superstructure of the building adopts reinforced concrete frame shear wall. The internal partition wall is filled with hollow aerated concrete block, the external wall filling is filled with aerated fly ash block, and the external wall of the building is decorated with water-proof and moisture-proof plastering.

The building is in line with the overall layout of the northern building facing south, and the overall layout of the “convex” room layout. Among them, the balcony of the south living room and the large area of floor-to-ceiling glass Windows, in order to meet the living requirements of room lighting, ventilation and beauty, the area of doors and Windows in the external wall accounts for 21% of the total area, and the proportion of doors and Windows is higher, and the energy consumption in the process of building use is also increased accordingly.

The area where the residential project of Project A is located belongs to monsoon climate. According to the temperature in winter is often below zero in the past 20 years, and is often accompanied by gale weather of 3~7; the daytime temperature in summer is higher than 25 degrees Celsius, often accompanied by precipitation above 100 mm, and the temperature difference between day and night is large. In order to ensure the heating and cooling demand of the residents, the embedded water circulation temperature control facilities are adopted. It is a typical northern building with cold in winter and has heating demand. Meanwhile, in order to reduce the high temperature in summer and improve living comfort, each household has 1-3 air conditioning equipment, which brings great challenge to the energy consumption of the building complex [9].

The second phase of project A has 112 residential units, and since 2015, about 86 households have occupied it, accounting for 77% of the total. Since the first half of 2017, some residents have reported that the indoor temperature is low in winter, which can only be maintained at about 14 degrees Celsius, which cannot reach the 16 degrees Celsius stipulated by the national standard, and is far from meeting the comfort requirements of living. The heating pipeline used in the building complex is central heating,

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and the residential boiler room is secondary heating into the house, but the effect still cannot meet the heating needs of residents. In 2018, XX Municipal Government issued the special Regulations on building energy conservation, which made clear requirements for the heating and energy conservation of buildings, and set up special subsidies to ensure the smooth implementation of energy conservation renovation projects. After the relevant government departments decided that in order to meet the needs of residents in winter, the construction of the second phase of A project was carried out in September 2018. The external wall insulation project belongs to the energy saving renovation project of the existing buildings, and the most widely used construction technology in the building insulation technology has become the best choice of the project.

4.2. Construction quality problems

4.2.1. Immature technology leads to inadequate base treatment

Empty drum and foaming occur on the original base wall of Project A, with wall peeling occasionally; After removing the problem wall according to the construction technology, the flatness of the external wall cannot meet the construction requirements, so the problem wall must be repaired. The flatness of the base wall can directly affect the final construction effect of the whole external wall insulation system. The size deviation between the surface layer and the modified surface layer is largely due to the flatness treatment of the wall base is not in place, and the base treatment is not in place will lead to the large bonding between the insulation layer and the base is not firm, which is easy to produce empty drum and cause serious construction quality problems such as inter-layer condensation and insulation layer peeling. Therefore, the base treatment size deviation of the external insulation system must also meet the requirements.

4.2.2. Technical defect The waterproof layer has poor water insulation effect

The waterproof construction effect of some floors of the external wall insulation structure of Project A is not good, resulting in the condensation phenomenon in the insulation structure and returning to the wall surface after the condensation of the wall vapor in the wall and the condensation affect the lives of the wall, forming a heat bridge damaging the insulation layer and expanding at the low temperature in winter,[9] destroying the safety of the insulation layer structure. The poor water-separation effect mainly consists of several aspects:

First, the waterproof treatment of the insulation layer is not in place, the base treatment mortar is not mixed with water admixture, resulting in the water inside the building and residential water from the wall into the insulation structure, the temperature decreases in the insulation layer condensation to form water droplets.

Second, the insulation structure construction, occasional precipitation, and plaster and bonding mortar not reduce water agent, the material itself water content is too large, and material moisture without full evaporation drying after two construction, the moisture enclosed inside the insulation structure, as the temperature changes, material internal moisture evaporation precipitation, and condensation inside the insulation structure.

Third, the construction treatment of the insulation layer is mixed with the water separation admixture, but affected by the low temperature climate in winter, the local condensate water inside the structure produces freezing and thawing cycle, seriously damaging the strength of the structure, resulting in the surface layer under the internal stress cracks, lost the original water separation effect.

4.2.3. The treatment loophole causes the cracking and shedding of the insulation layer

The external wall insulation system is composed of surface layer, bonding layer, insulation block layer and base layer, and each part may occur in different degrees of cracking problems and affect each other.

The external cause of the insulation layer cracking is the temperature difference causing uneven cracks in the overall structure; it is also possible that the thermal expansion coefficient between the insulation layer and the building destroys the integrity of the insulation layer by the thermal expansion

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of the original building and the shrinkage rate of the insulation system produces large-scale stripping between the building and the insulation layer, seriously reducing the bonding strength of the insulation layer, resulting in cracking and peeling. Affected by the climate [10], rain and snow erosion, wind also lead to problems such as insulation cracking, especially in the wall of the wind, affected by wind negative pressure, insulation layer will be affected by an outward suction, once the wind or insulation structure itself has cracking, quality problems such as adhesion, is easy to lead to insulation whole peeling. In addition, the stability change of the building caused by the geological influence of foundation settlement and earthquake will also seriously affect the overall strength and bonding strength of the insulation layer, leading to the cracking and peeling of the insulation layer.

There are also many internal factors affecting insulation layer cracking and peeling, such as: the base treatment is not in place, the base flatness tolerance is too large, so that the subsequent construction of material bonding is not in place, resulting in empty drum cracking and other phenomena. When the insulation block is anchored, the wrong seam is not laid according to the requirements of the construction plan, and the block produces long distance cracks, and the structural integrity of the reduction produces cracks. During the construction of the blocks, the construction is not carried out from top to bottom, until the internal stress between the blocks occurs due to gravity and material expansion and other factors [11], which destroys the structure from the inside out. The condensation problems caused by various reasons will also lead to the cracking of the insulation structure under the action of frost swelling factors. After the development and accumulation of cracking and adhesive problems, there will be more serious denation damage under their own action.

4.3. Construction material problems

4.3.1. Poor material quality and poor insulation effect of local wall

The quality of construction materials directly affects the quality and service life of the engineering.

After the renovation of the external wall of Project A, the overall room temperature of the community has been improved after energy saving insulation renovation; however, some residents complained that the heating room temperature did not meet the comfortable living requirements. After the property personnel counted the owners, these residents are concentrated in A concentrated range. After testing by a third party professional thermal testing personnel, a large area of heat source leakage was found in the southwest side of the 2-3 floor wall of no [12]. 13 building. After the professional thermal testing team analyzes the cause of the poor insulation effect in the area, 13 residential building belongs to the late stage of the construction plan, in the construction process of 13 material scheduling problems, temporary construction group purchased a batch of untested material construction, and use the rest after the cutting sporadic block material, and do not strengthen processing, directly led to the structure of the area integrity greatly reduced, the insulation effect appear obvious difference.

4.3.2. The first layer surface brick is not laid according to the design drawing, and the surface layer is seriously damaged

After 15 months of construction and renovation, different degrees of dirt occurred within 1.5 meters above the floor of external wall energy saving and insulation project in project A; 12 wall cracks, 8 damaged wall corners, and 3 serious wall depressions. According to the investigation of construction drawings and community residents, the wall cracks and damage are mostly caused by external force collision and accidental collision of vehicles; but the decorative protection blocks of the insulation layer on the construction drawing are not laid, but directly decorated. This directly leads to the strength of the external wall is insufficient, resulting in the wall in a short period of damage.

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5. Measures to deal with the external wall insulation construction problems of the 5 A project

5.1. Adjust the construction plan to avoid environmental impact

The construction of external wall insulation structure is strictly prohibited in winter, and low temperature and precipitation are the biggest factors affecting the construction. When construction temperature may not be lower than 5℃, 5 level of natural wind and fog climate conditions shall not be the construction work, otherwise not only affect the material maintenance time, material is frozen will destroy the product quality, thus cracking, water resistance, seriously affect the overall quality of the thermal insulation system. When the construction average air temperature is low, the appropriate amount of polymer adhesive or water reducing agent can be mixed into the bonding mortar to change the overall nature of the bonding mortar or reduce the bubbles in the mortar, so as to resist the influence of low temperature on the bonding curing.

It is forbidden to conduct construction in rainy days. Before the insulation structure is formed, the high water content of the material is too easy to lead to quality defects such as frost and condensation in the insulation system. When the rain and snow weather occurs in the construction process, the construction should be stopped in time to protect the construction working face, the curing time of the bonding layer mortar should be appropriately extended, and the construction can be carried out only after the surface is completely dry.

5.2. Optimize the construction technology of external wall thermal insulation

5.2.1. Base treatment of building exterior wall

Exterior wall insulation construction of the basic surface should not be too dry, before the construction of oil, release agent hinder bonding adhesion, raised, empty drum and loose parts should be made one by one and leveling, the basic surface shall not be layer, empty drum, cracks, basic surface shall not have powder, peeling, ash, alkali phenomenon. In the construction and transformation of the external insulation of the original building, the surface coating of the original wall should be completely removed, the empty and hollow part of the original veneer brick should be removed, and the too smooth parts should be polished to ensure that the insulation structure is closely bonded to the original wall to ensure the stable and reliable project quality.

The service cycle of project A building complex is short, most of the exterior walls are in good condition, and some of the cracked empty walls can be constructed directly on the surface of the exterior wall after foundation treatment. Part of the empty drum and powder wall are cleaned manually and cut around the treatment surface to ensure the bonding strength between the leveling layer and the wall; mechanically clean the wall within 1-2 meters of the open air duct to avoid the influence of oil pollution on the adhesion. After the problem wall is cleaned, the chisel wall is leveled with the waterproof bonding mortar to ensure the flatness of the base wall, and the construction of the next process can be carried out with the mortar hardening.

5.2.2. Application of composite thermal insulation materials

The use of composite materials in the external wall insulation construction can effectively improve the engineering quality and reduce the construction cost.

In this project, The base treatment plaster of the insulation wall and the bonding mortar are mixed with 15 mm long polymerization material short fiber, The incorporation of this fibrous material creates the fibrous skeleton in the mortar, Greatly improve the mortar bonding properties and tensile strength, Can resist the influence of mortar shrinkage and external impact on the adhesive layer, Effectively reduce the production of mortar dry crack; At the same time, the mortar with equal proportion of 20% mortar cement agent, The incorporation of the cementing agent can significantly improve the mechanical properties of the mortar, Reduce the amount of water used in the mortar, Improve the bonding strength of bonding mortar, Also greatly enhance the waterproof and impermeability of the base mortar, Can Have better bonding and impermeability ability under the same base treatment condition.

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Select 15% granular expanded verdellite in the selection of expanded polystyrene board (EPS). Compared with the general insulation block, the unit quality of this block has increased by 10%, but the insulation effect, strength, wear resistance and fire retardant have been improved to a certain extent.

5.2.3. Laying of surface layer mesh cloth

The surface mesh cloth is sandwiched between the two bonding mortar, forming a high strength overall structure with the mortar, which can effectively resist the impact of external factors, and the mesh cloth pulls the insulation block into a whole, to prevent the large area of stripping damage during the mild cracking and weak bonding.

The laying of the grid cloth should be made by two plastering methods. First, apply a layer of plaster paste with an area larger than the mesh cloth, and then press the grid cloth into the wet plaster paste. When the plaster paste is slightly dry and hard to touch, the second plaster paste should be applied. The door and window opening must be strengthened network processing, along the mouth corner to do the package processing. After the net cloth is stuck to prevent rain erosion or collision, easy to collide with the Yang Angle, doors and Windows should take protective measures, the feeding mouth part to take pollution prevention measures, surface damage or pollution should be treated immediately. After construction, the wall surface shall be protected from the collision of other objects within 5 hours, and the protective layer shall not be rained within 8 hours. After the protective layer is finally set, water shall be sprayed in time. When the average temperature is higher than 12℃, it shall not be less than 50 hours, and it shall not be less than 70 hours when lower than 10℃.

5.3. Strict control of material quality

5.3.1. Standardize the material procurement process

The procurement of construction materials should follow the following principles:

First, on the basis of fully ensuring the quality, we should buy the necessary materials at the most economical price. Two is to each kind of raw material price (goods) more than three, the best of the best. Third, the on-site supervisor, the on-site representative of Party B and the project department personnel shall be informed in advance of the admission of the materials before the construction. Fourth, the supervisor, the resident representative of Party B and the project department shall check and accept the incoming raw materials according to the sample materials submitted by the supplier. If neither party has any objection, the custodian shall be responsible for checking all the original materials entering the site and handling the corresponding warehousing procedures on the site. Fifth, the custodian personnel is responsible for receiving all the entry data with the qualification certificate, inspection result report and relevant data.

5.3.2. Strengthen the site management of materials

First of all, it is necessary to establish and improve the stacking management system and material stacking responsibility system of the site construction materials. The site construction materials should be carried out in strict accordance with the requirements of the site plan following the overall site planning, and the site staff is responsible for the specific responsibility. For inflammable, explosive and light materials, the corresponding site should be arranged for stacking, and the incoming quantity and the stacking density should be strictly controlled to ensure the safety of materials and personnel.

Secondly, it is necessary to further strengthen the management of the overall layout of the site. According to different construction stages, the changes of materials and materials, design changes and other actual conditions, timely adjust the stacking position on the site, keep the path smooth, and reduce the secondary tilt and reverse transportation. Understand and accurately grasp all the material construction progress and engineering materials related information anytime and anywhere, do a good job of balancing the material adjustment, correctly and reasonably organize the construction of all materials. The detailed preparation of the material preparation scheme must be strict and reliable, and

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ensure that it can be timely and accurately used to ensure the actual construction technology requirements.

In addition, the construction site must be responsible for the supervision and management of all materials and materials, the materials must be qualified; the number and configuration of material personnel shall be able to promote the normal production and processing. The construction operation management personnel shall also be responsible for the communication and coordination of the construction site to meet the smooth progress of the construction progress.

6. Conclusion

The application of external wall energy saving insulation technology can not only provide people with more comfortable production and living environment and good living environment, but also solve the problem of energy restriction of China's economic development "bottleneck" fundamental way, and energy saving construction technology is the basic technology of building energy saving, is an important way to enhance the technical level of construction industry, the sustainable development of China plays an important role.

Building energy saving heat preservation technology has great potential, but due to the heat preservation technology development time is relatively short, lead to the current building insulation technology in our country there are a lot of problems to be solved, this not only need the architects 'hard work, but also need the joint efforts of the social from all walks of life, believe that as long as we with scientific vision, realistic attitude, down-to-earth style of work together, China's building energy saving heat preservation technology can be faster and better development.

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