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Comparison and Analysis of Pulping Process and High Pressure Water Gun Technique

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Abstract. With the rapid development of housing industrialization, the application of aluminum alloy template has become an important prerequisite for the development of housing industrialization. Aluminum alloy template pouring wall has good stability, high bearing capacity and good molding effect. In order to strengthen the adhesion between the concrete joints in the process of secondary structure construction, the concrete joints are usually roughened. This article through to the traditional centrifuge hair with water cannon roughcast technology were analyzed, the advantages of high pressure water gun roughening process, operation process and construction control key points, to solve the technical problems encountered in large area concrete cut wool processing, can for the secondary structure construction plastering construction provides valuable experience, has good popularization and application value.

Keywords. High pressure water gun, sizing, hair, aluminum mold

1. Introduction

Rendering of secondary structure construction process, in order to strengthen the old and new concrete surface or the adhesive force between concrete and other structure layer, which due to the need of construction and structure, to divide second pouring concrete to form a whole, to ensure the integrity of the structure, improve the cement concrete road surface adhesion, usually have to be rough handling at the junction, The surface of the concrete is chiselled, not only to remove the floating slurry but also to form a concave and convex surface, rather than a smooth surface, in order to effectively solve the cement concrete slurry skin smooth surface hidden danger [1]. At present, the commonly used processes in China are mainly divided into two categories: artificial roughening and mechanical roughening.

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2. The Construction Technology

2.1. Grouting Construction Process

2.1.1. Grouting Construction Technology

Preparation of tools and materials → making of slurry → throwing slurry → curing [2]

(1) The construction technology of the wall beat pulp method is to use the special "pulp beat" to beat the prepared binder to the wall, and form a burr, so as to achieve the purpose of the wall wool treatment.

Figure 1. Centrifuge beat.

Figure 2. Stirring electric drill.

Material: 15mm*15mm*1mm steel wire mesh, 32mm diameter PVC pipe or other high hardness lightweight materials. The beating surface size is 320mm*240mm, so that the wire mesh is folded by 7-8 layers and fixed on the end of the PVC rod. This is shown in figure 1.

(2) Preparation of Slurry. Add 8% building glue to cement mortar to form slurry, then add cement, mix well, and fully stir evenly using machinery [3]. This is shown in figures 2, 3 and 4.

Figure 3. Stir to finish the paste.

(3) Grouting. Wet the wall half an hour in advance, and use the opposite side of the racquet to add slurry, so that the slurry is gradually evenly distributed on the wall [4]. This is shown in figure 4.

Figure 4. Grouting to finish the surface.

Grouting requirements: binding layer grouting within 5mm, the hair tip bulge is not less than 3mm, touch with hands to have burr feeling, the grouting rate to reach more than 95%, and the grouting can not be powdered.

2.2. High Pressure Water Gun Hairpulling Construction Technology

Specify the location of equipment → connect water and electricity → connect high-pressure pipe → test machine → clean wall hair

2.2.1. Equipment Selection

Hair equipment by special ultra-high pressure plunger pump, relief valve group, the ultrahigh pressure piping, hair gun, hair cover, automatic pressure regulating system, precision of water treatment systems, water shortage protection device, GPS positioning and remote communication system, etc, choose equipment should be according to the actual situation (interior and exterior wall) to choose the appropriate device [5]. This is shown in figures 5 and 6.

Figure 5. High pressure water gun hair pulling machine.

Figure 6. Connect the water cannon to the construction floor.

2.2.2. Connecting Water and Electricity

(1) Connect the cable to the secondary distribution box;

(2) Ensure that the water source is clean, so that the precision purification and filtration system of the equipment can work normally, otherwise it will cause serious damage to the equipment.

(3) You can't work directly on the human body

(4) Do not connect power during construction

2.2.3. Connect High Pressure Pipe

When connecting the high-pressure pipe to the construction floor, pay attention to the fact that the high-pressure pipe cannot be bent, and there is no debris or other building materials stacked at the construction site to ensure the tidiness of the construction site.

2.2.4. Commissioning

(1) Conduct the first test against an open place to check whether the instrument is normal;

(2) Pay attention to the high pressure water hair gun is not allowed to face the human body at any time, so as to avoid personnel injury.

2.2.5. Wall Pulling Treatment

(1) Each high-pressure water hair pulling machine is equipped with 2 people, one captain and one operator;

(2) The captain shall operate the remote control, and the operator shall wear protective clothing and try the machine again in an open place. After the water pressure reaches the rated value, the hair-pulling operation can be carried out.

(3) To achieve the hair depth is not less than 0.5mm; Not less than one wire per square centimeter; There is no obvious dust residue on the wall, ensuring that the wall is clean and the quality of the wool is qualified. This is shown in figure 7.

Figure 7. High pressure water gun hair finish the picture.

3. Economic Benefit Analysis

A comprehensive comparative analysis was conducted between the traditional pull-pulling process and the high pressure water gun pulling technology. The comparative analysis was shown in the following table 1.

Table 1. Comparison and analysis.

The serial number	Compare the project	High pressure water jet drawing construction	Traditional operation construction
1	practices	Ultra-high pressure water jet is used to coat the surface of the wall, and it can be directly pasted to the porcelain after drawing	First sizing and sizing, hanging net, leveling, and then tile
2	The working environment	The ground has only a small amount of water and mortar, which can air dry naturally in a short time	A large amount of dust and slag inclusion are generated at the operation site, and the operation environment is poor.
3	Quality of work	After drawing the brick can more effectively prevent the empty drum, falling and other quality problems	May be due to operational reasons, the quality of the process can not be guaranteed, in the room after a period of time there

			will be ceramic tile cracks, empty drum, drop and other quality problems
4	Machinery and equipment input	The equipment input is more than 800,000 yuan, and only two people can rotate each equipment	With a simple set of tools, you have to keep working,
5	The efficiency	One device can pull about 500 square meters in 8 hours	According to 8 hours per day to deal with the wall of about 150 square meters
Economic benefit analysis	High pressure water jet wool drawing construction saves the time-consuming and unreliable process such as plastering, pulping and net hanging, and the construction efficiency is three times that of the traditional process, with good economic benefits. Using HIGH PRESSURE WATER WOOL pulling MACHINE TO pull wall wool, save plastering, PULping, hanging net and other time-consuming and unreliable process, construction efficiency is three times of the traditional process, has good economic benefits. Taking a single building construction area of 15,000 square meters as an example, the cost is about 1.5*80= 1.2 million yuan, while the new process only needs equipment investment of about 80,000 yuan, the quantity can be - a dry package of about 15 yuan/square meters, the cost is about 8+15*1.5= 305,000 yuan. The total economic benefit is about 120-30.5= 895,000 yuan.		

4. Conclusion

Without the traditional method of plastering leveling, hanging net, save material labor, time and labor. Can effectively break the surface cement slurry layer, can make cement paste, ceramic tile glue better infiltration into the wall, to achieve permanent; And because of water, can play the role of maintenance wall and cleaning wall surface. Avoid the second leakage, no longer appear empty drum, cracking, falling off and other problems, no need to rework. After the hair treatment, the dust particles are washed away, the surface is clean and roughness, the bonding strength of the waterproof coating is more guaranteed, and the permanent brick working surface is created. The experiment shows that the fracture layer appears inside the ceramic tile or between the ceramic tile and the ceramic tile glue after pulling hair, which has no effect on the wall. The working efficiency of high-pressure water wool drawing is several times that of other processes, which can fully meet the requirements of interspersed construction, saving and efficient.

Author in Brief

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