SPRAY PLASTER TECHNIQUE-A REVIEW

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Abstract: The spray plaster is one of the greatest technology to provide a level and smooth surface ready for further decoration. Spray plaster can be applied as a self- finished white texture requiring no further decorating. Spray plaster is one of the technology used for the protective and decorative coating of walls and ceiling and for moulding and casting of decorative elements. The most common types of plaster mainly contain either gypsum ,lime , or cement but all work in a similar way .The plaster is manufactured as a dry powder and is mixed with water to form a stiff but workable paste immediately before it is applied to a surface. The reaction with water liberates heat through crystallization and the hydrated plaster then hardens. Plaster is usually suitable for finishing rather than load bearing and when thickly applied for decoration may require a hidden supporting frame work usually in metal.Spray plaster benefits both the contractor and client by substantially reducing the time and cost of the project. The benefit of spray plaster is to ensures the consistent uniform finish.Spray plaster gives the result with no further cracking. The spray plaster gives a resultant of good quality of finish .The spray plaster is generally an environmentally friendly which saves the time with no shrinkage and no wastage of time .The speed of completion through spray plaster is very high.Spray plaster can be used as a surface preparation for concrete, plaster boards , block work, stone and similar. It also allows a plasterer to skim a drywall more than five times faster to using the hand float to apply it..

Keywords- Spray plastering, decoration, Construction Technique, Smart Construction Methods

1- INTRODUCTION

Plastering is the term used to describe the material spread over the surface of irregular and coarse textured wall, column, and ceiling to provide a smooth, hard and leveled finish which can be painted for good appearance. In actual 'Plastering' is an art, truly recognized for constructing the base. It refers to the construction done with plaster which includes a layer of plaster on an interior wall or plaster decorative moldings done on ceilings or walls. The process of creating plasterwork is called 'Plastering'. It's a unique skill to plaster the wall, level it and achieve a good and even finishing. Plasterboard is to form the sub-base for ceilings, partition walls. An adequate and rigid frame made up of timber battens is needed for it. Fix runner boards made from spare lengths to harden the ceiling side by side. It will provide ease of access in the roof void and will be supporting for electrical cables.

Plastering not only makes the surfaces smooth but also creates a good finishing to the walls, ceiling and roofs. Ghar Expert provides you details about the material requirement for Manual plastering, Advantages and disadvantages of Cement plaster, Precautions for Cement plaster, Cement plaster inspection checklists, Preparation for Cement plaster, Tips for Cement plaster, etc.

Minimize the defects in 'Plaster Work'

Tips to minimize the defects in 'Plaster Work' are given below.

- Carry 'Plastering' out with skilled mason.
- Maintain the bond of brick works properly.
- Remove the efflorescence of the brick by rubbing brushes on the surface and wash them with clean water.
- Use the bricks of superior quality.

- Make the water used for 'Plastering' free from salt.
- Plaster the surface with enough water so that it may not absorb water from the plaster.
- Avoid excessive troweling.
- Provide Damp proof course at convent place in the building.
- Close pot holes with wet brick bets and mortar before starting the plaster.
- Make square or rectangular form of the patch if any patch is to be repaired.

2- LITERATURE-REVIEW

All the literature was searched from authentic generals and conferences from the online data based on Integral University, Lucknow.

In starting generally web searched is done by using some common keywords like spray plastering etc. After detailed search on publication regarding contribution of spray plaster technology to achieve project specification by time.

The selection criteria of paper is identify need of the topic or the purpose of this thesis.

1. **Yehiel Rosenfeld et al (1990)** he tells about the evolution of TAMIR (Technion Autonomous Multipurpose Interior Robot. In this , the robot performs the construction work in three fields in the interior finishing work a- wall building b- plastering and c- tile setting .In this system , the robot itself can do the plaster work in the interior of building.

2. **Johan Forsberg et al (1998)** tells that he faced many problems during the plastering work of their building construction of apartments and office buildings. Hearised the two prototypes for the navigation of robot uses a range measuring sensors scanning in one or two planes.

3. **Thomas Bock et al (2007)** states that robot were originally introduced in the production of industrialized building components and modular housing. Then mobile robot were developed for special on- site construction tasks. Automated construction site used robotics for logistics and assembly.

4. **A.G. Entrop et al (2009)** specifies that in order to come to a sustainable built environment the construction industry requires new energy saving concepts. One concept is to use Phase Change Materials (PCM), which have the ability to absorb and to release thermal energy at a specific temperature. This paper presents a set of experiments using different amounts of PCM in self-compacting concrete mixes.

5. **Gui Ponce de Leon et al (2011)** tells that Scheduling a project at the right level, at the right time, is an important consideration in project planning and scheduling. During management-level planning, when executive and senior management are involved, project-level schedules prevail. Schedules become detailed as the planning horizon switches from the whole of the project to project stages or phases; with assumptions tested and information firmed-up, management can engage in detailed planning.

6. **J. Kurz et al (2012)** his paper tells us about the plaster which is done in a commercial and residential building. He used the technology of mobile plastering robot at construction site which is operate by skilled operator. The machine do the plaster in a less time.

7. **Dr. Shiv K Sahu et al (2013)** states that the concept of text mining is nothing but the mechanism of extracting non-trivial and interesting data from the unstructured text dataset. Text mining is consisting of many computer science disciplines with highly oriented towards the artificial intelligence in general such as the applications like information retrieval, pattern recognition, machine learning, natural language processing, and neural networks. The main difference between the search and text mining is that, search needs users attentions means based users

requirement search action will perform whereas text mining is the internal process which attempts to find out information in the pattern which is not known before.

8. **Mr. Dhiren K. Paghdar et al (2013)** states that Drywall (also known as Plasterboard, Wallboard, Gypsum board, Or Gyprock) is a panel made of gypsum plaster pressed between two thick sheets of paper. It is used to make interior walls and ceilings.

9. **Dionysios I. Kolaitisa et al (2013)** tells that Phase Change Materials (PCM) can be used for thermal energy storage, aiming to enhance building energy efficiency. Recently, gypsum plasterboards with incorporated paraffin-based PCM blend shave become commercially available. In the high temperature environment developed during a fire, the paraffins, which exhibit relatively low boiling points, may evaporate and, escaping through the gypsum plasterboard's porous structure, emerge to the fire region, where they may ignite

10. **Julkaisija et al (2013**) tells that the construction industry continues to be very conservative compared to manufacturing industry. In many cases when the new automatic products are not complementary to the old ones, they are scarcely implemented, and their use is kept to minimum. Moreover, if these products introduce inconveniences to the whole construction cycle, they are openly rejected. On the contrary, in the manufacturing industry the people and the environment respond very positively to technological innovation**.**

11. **Alexander Braun et al (2014)** states that on-site progress monitoring is essential for keeping track of the ongoing work on construction sites. Currently, this task is a manual, time-consuming activity. The research presented here, describes a concept for an automated comparison of the actual state of construction with the planned state for the early detection of deviations in the construction process.

12. **Okmen et al (2014)** states that The Critical Path Method (CPM), which is used to schedule construction activities that depend on one another through network relationships, is deterministic with regard to the duration assigned to the execution of the activities and the results produced in certain values. Unfortunately, construction activities are performed under uncertain conditions. Project risks cause variations in activity duration, and in turn the entire network is affected uncertainty.

13. **Akash S. Tambi et al (2014**) tells that the construction industry is labour intensive and construction work is conducted in risky and dangerous situations. The importance of construction automation has grown rapidly in developed countries. In developing countries like India, the construction industries need automation technologies such as new machineries, electronic devices etc. The infrastructure project requires more numbers of skilled labour, good quality of work, increases productivity etc. The problems associated with construction work such as decreasing quality of work, labour shortages, and safety of labour and working condition of projects.

14. **Daria Petrosova et al (2014)** study based on the risk management he tries to say that construction refers to a number of industrial processes with highly increased risk. There must be big amount of accidents occurs in doing the plaster work manually with large wooden shuttering. He wants to say that through spray plaster he can reduce the accidents.
15. **Olivier Buzzi et al (2014)** experimented the two methods to measure the bulk volume of soil specimen which are having irregular shapes. The methods are the wax method and the plastic bag method. He tells us about the new coating of hand spray plaster.

16. **Mahesha P.K. et al (2014)** he tells that in an economic sector, the business of building construction plays an important role . He tells that the building construction is divided into two groups commercial infrastructure and residential building. For doing manually plaster in both types of building contains a large amount of labour cost. So with the help of spray plaster we can reduce the cost of plastering.

17. **Nikolay Ivanovich et al (2014)** in his study we are able to know about the mechanized technology of application of dry building mixes is a separate highly qualified branch in a field of finishing work. Application of dry mixtures is one of the most important factor in improving the quality of finishing works.

18. **Olga Gamayunova et al (2015)** refers that spray plaster technique can be applied mostly in large structures .Without special training workers cannot realized all the possibilities of modern materials and technology and therefore will not be achieved economic effect.

19. **Teng Long et al (2015)** states that plastering machine is one of the best construction machine in the construction industry which is largely promoted in building construction . He states that work efficiency is improved by using plastering machine and then manual labour intensity is reduced. He proposed a method of laser sensor to calculate the distances between the plaster board and the wall. It calculates the errors of the bracing pieces perpendicularly and the deflection angle of plaster board.

20. **Elsevier et al (2015)** investigated that the supply and demand in a labour market in the segment of construction is not in an appropriate manner .so through the technique of spray plaster we can do our plaster in a large amount with the help of lass labour.

3- DISCUSSIONS

When choosing a plastering machine building companies should come from those tasks that exist at the moment, and consider prospects of the company for the near future. It is also important to have an idea of the scope of work to determine what types of mixes will be used. Necessary to compare plastering machines by their main characteristics: performance, range solution supply, weight machines, and cost. But do not forget about such characteristics of the machine, as the volume of hopper, size, grade, height of feed solution, etc.

4- CONCLUSIONS

- The study is limited to the plastering job in multi storey residential building only.
- The study is limited to Cements, Sand and Mortar only.
- The main concerning limitation of the spray plaster machine is to apply plaster at edge core is very difficult & finishing is note established at the edge core of beam & column & some specific places.
- Secondly the operator cum mason is required for the handling of spray plaster machine because some time manual plastering should bed proceeded by mason at edge core.
- Robotics machine are available for plastering work.
- Mechanized plastering does have limitation where in method phases challenges.
- For major projects spray plaster machine prevails the role to make the project economical.

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