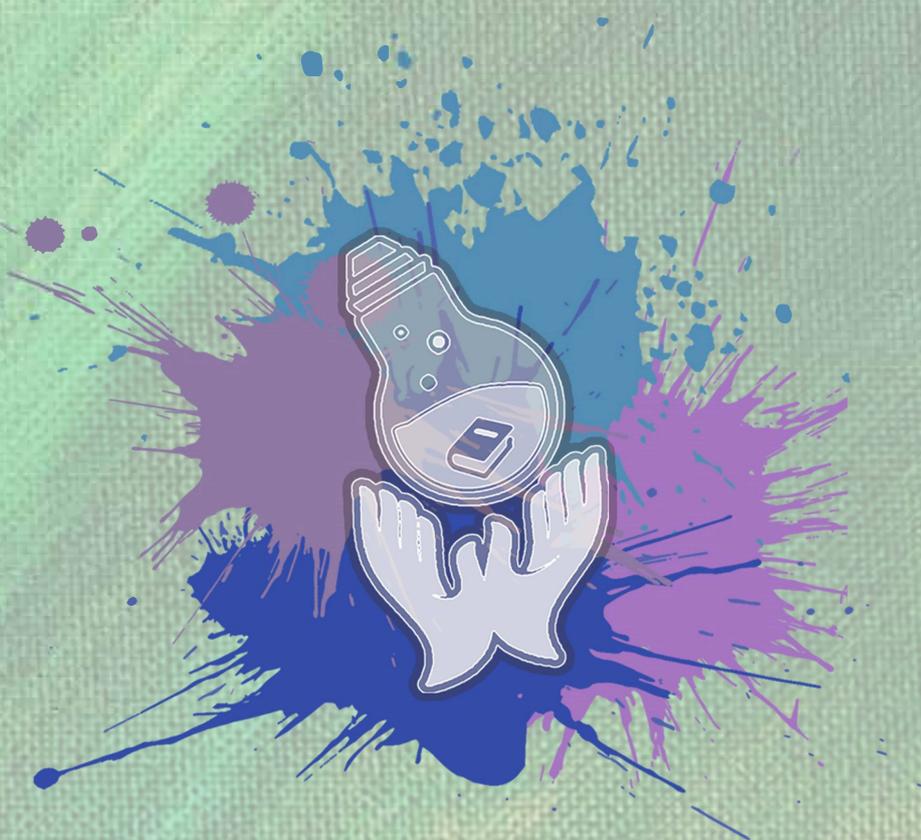




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ON SITE MANUFACTURING (OSM) CONSTRUCTION THROUGH LIFTING SYSTEM FOR A MODERN HIGH-RISE BUILDING

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Abstract:

In line of high-rise construction there have several issues are state like timeframe of the development, the accident that occur throughout construction and weather that impact material handling from bottom to the highest of the building. This innovation is to enhancements within the construction of high-rise buildings by applying the thought of not sporting a tower crane to transfer materials from the bottom up create the development space safe and forestall accidental staff. this is often within the kind of a mixture of two ideas coming back from upbrella from Netherlands and massive cover from Japan. Moreover, the methodology of this analysis innovation is beginning by the table study, review of sure article from Netherlands and Japan are the most to induce a brand-new technology in high rise construction methodology. This two-technology country have a quickest thanks to develop a brand-new construction methodology. aside from that, the everyday model model of lifting system to be contemplate in new and fashionable methodology of construction the high-rise building particularly in IBS sector.

Keywords:

Big canopy; lifting system; high rise construction; accident on site; heavy transport.

1.0 INTRODUCTION

On site construction or conventional construction system begin and start from bottom to up level storey of building construction. However, an innovation of building construction through mechanization process may revolutionize and industrialised the method of construction in different way. It may initiate the precast components of Industrialised Building System (IBS) from centralized factory outlet to site to be installed on site from bottom to upper level or storey of building. Therefore, the used of cranes to lift the components is common method of construction. Tower crane is a plant used in lifting system of construction components and material that will be used for high rise construction. However, the risks and safety factor play significant role in managing this conventional method of lifting instead productivity and quality issues.

The completed Highrise comes in Japan, United Arab Emirates (UAE), Netherlands, Malaysia, and different developing countries are recorded the undefeated of assorted technique of construction and lifting system the used of *Big Canopy* concept by Obayashi in Japan influenced the various project in Netherlands (van gassel, 2005). The completed project of Kuala Lumpur Tower utilised the *slip form* system for vertical construction and a prestigious building of Petronas Twin Tower for Kuala Lumpur City Center (KLCC) development shown the milestone of lifting system of building components to be placed (Yasmin Ashaari, 2010). The method of construction introduced in Canada by Upbrella for lifting system of high rise in Canada shown another innovative approach in method of lifting the component for building construction. The combination of big canopy concept and self-crawling structural framing system using precast component had been suggested this innovation project.

2.0 LITERATURE REVIEW

Since the years of 2000, a lot of high-rise building was construction victimisation the standard lifting system approaches. it's a time to contemplate an initiate production processes for production capability. Therefore, high-rise buildings may be created in AN economical and safe means.

Most of the high-rise buildings were built using traditional working methods and had logistics problems in the busy inner cities (Frans van Gassel,2002). In Japan, the image was bad, too many fatal accidents happened on the construction sites and craftsmen preferred to work in other industries. In addition, the space for constructing high-rise buildings was minimal, especially in the big cities. This is why in the nineties; the leading Japanese construction firms started to develop and use mechanised and even automated construction systems for high-rise buildings.

In the Netherlands, only one experiment (Delftse Poort) with a comparable construction system is known to exist. Dutch contracting company Ballast Nedam has built a residential building called Westpoint, which is 111 meters high. It was built in a traditional way. This was a chance to erect this building using particular a construction system, but in the preparation phase, the process designers had too little insight into the costs, production time and risks, so they decided to build it in a traditional way. Now the building is ready, a simulation has been made of the production process involving the use of an automated construction system. This paper provides the results of this study. Mechanisation is to shift physical tasks from people to equipment, and automation is a shift of control tasks from people to computers and communication devices (Van Gassel 1995)

The purpose of this investigation is to gain insight on how this lifting construction system gives a faster way and simplest construction work for high rise building that will give a safer workplace. The advantages additionally if the thought of this project archive, the corporate or contractor could scale back quantity of value for a project that be a serious downside for all form of industry. Regarding this lifting construction, a system is to extend the number of victimisations formed panel or industrial building system, particularly in high rise building construction.

3.0 METHODOLOGY

The critical view in various literature has been the basis of this prototype mechanism to be initiate. It was discovered in previous extensive literature review for past time of successful construction project in various countries of development stages. Therefore, the literature in conferences proceeding, academic articles, refereed journal dan case study report had been used to obtain such idea of innovation for this offsite manufacturing in modern construction. The success story of Upbrella from Canada and big canopy in Japan was identified as the innovative frameworks of lifting system for low rise and high-rise building

The project will produce the typical prototype model of lifting system to be consider in new and modern method of construction the high-rise building especially in IBS sector. The repeating of construction flow and process will improve the prototype model developed. Therefore, in this project, the approach to the prototype model will the method taken to this study. The data obtained from the simulation of the prototype model will be utilize to further developed for a real prototype by industry in later stage and cycle. The size of 1:50 prototype model will be automatic control the lifting system by using the remote device and related software.

4.0 ANALYSIS AND FINDING

An unrestricted automatic construction system has been developed to scale back the entire value of high-rise concrete building construction. it had been applied for the primary time ever to the development of a 26-story concrete condominium project settled within the Yedo Metropolitan space in 1995. the method incorporates four major elements such as a synchronously rising unrestricted temporary roof, a parallel material delivery system, manufacture and unification of construction materials and a fabric management system. It ensures smart quality, improves operating and environmental conditions. It's also to reduces the development amount, manpower, and waste; and improves overall productivity. (Wakisaka, Furuya, Inoue, and Shiokawa, 2000)

This lifting construction system is the idea that may give the simplest ways of construction for high rise building. This idea may give a good and safer workplace for the workers to avoid the hazard and bad weather. Moreover, this system may start with the permanent roof that is a shelter for the workers to make an assembly of the precast item such as floor, wall, column, and beam. Lifting the construction system been use avoid of using tower crane in a high-rise project as a conventional work.

The main advantages of this study give a reduced amount of delay about a certain project that may cause an increase in cost. This system also may give a secure workplace that only not for workers but for materials. After the roof had been installed, the cover will be attached to the building floor and it will reduce the amount of falling object to the ground. Moreover, this idea can give more practice to make construction at a small the site had been given.

5.0 CONCLUSION

With the above general overview in previous literature, especially in innovation of high-rise construction system in Malaysia, there is a compulsory for this type of system to reduce the amount of time and money during for construction process. The enhancements of propose innovation product was highlighted toward the reduce of using tower crane on site construction to make an installation of certain industrialize building system materials or precast system. Lifting construction that proposed could give a good quality end of product and improve safety for the workers especially for high rise construction method.

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