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Review on Study and Analysis of Various Automated Construction Materials Tracking Technology

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Abstract - *This paper covers the literature review of various automated construction materials tracking technology by various researches on in field of construction project as the proper amount of inventory will ensure that all construction activities will be able to carry out according to the planned schedules. Inadequate amount of inventory will result in job stoppage due to materials required for conducting the work could not be specified at time they are needed, waste of labour working hours, and schedule delays Efficient progress monitoring systems can help automate progress inspections, reduce the risks of error, facilitate proper and timely corrective actions, and prevent deviations in terms of cost and schedule. This will help to understand the need of implanting the automated monitoring system Paper shows the reveal that there is a need for more proper technology to be implemented in construction project in order to facilitate materials tracking process and at the same time, reduce dependency on paper work reports in inventory management.*

Key Words: *material tracking, Inventory management , construction projects*

1. INTRODUCTION

The Construction Industry Institute (CII) (CII 1986) has defined materials management as "the planning and controlling of all necessary efforts to insure that the correct quality and quantity of materials and equipment are appropriately specified in a timely manner, are obtained at a reasonable cost, and are available when needed." Materials management is a system, not the organization responsible for performing these tasks It is an indispensable part of the project management which can be integrated with engineering to provide an end product that meets the client's requirements and is cost effective(Saurabh 2016). Accurate and timely information of the progress in a regular repeated basis is needed for a well maintained and efficient project control that will ensure cost and time efficiency of the project. Hence, an efficient on site data collection, a timely data analysis and a communication of the results in a well interpreted way are major concerns for construction companies(loannies2015)

Recently, there have been efforts on automating project monitoring which have shown the potential for effective construction project control. One of the automations applied to the construction industry is the adoption of Building Information Modelling (BIM). Commercial inspection software packages that use BIM model to facilitate inspection process such as LATISTA, Autodesk BIM 360 Field, Field 3D, xbim, etc. Offer to the inspector the ability to use a mobile device (Tablet PC) instead of paper documents. These software packages are very effective at issues regarding document management, but the inspection process itself has not been automated since the inspector still has to manually navigate around the BIM model while visually inspecting the building.

The lack and incomplete of up-to-date information regarding on-site stock is caused by the poor tracking and locating of materials in construction sites. Thus, there is a need for a proper inventory management in order for the materials to be tracked and located easily; and without employing additional costs. Tracking of materials and components in construction project is not an easy task (saurabh2016) agreed that materials tracking still remain as a big problem in construction jobsites. (sang2018) in their research examined three case studies of subcontractor-fabricator relations. In two of the cases, there were work stoppages due to lack of materials. They calculated baseline productivity and the loss of labour efficiency in each case. Their research concluded that inefficient materials management could lead to an increase in the field labour hours of 50% or more.

This can eliminate paperwork, lower product and operational costs, and reduce cycle times. However, there is not much use of modern ict tools (e.g. Wireless communication, bar-coding and radio frequency identification (RFID). To the facilitate materials management processes for tracking materials quickly, accurately and easily (narimah2015)

1.1 AIM

Various Automated Construction Materials Tracking Technology by which process or procedure is performed inventory management of material

2. LITERATURE REVIEW

Sang young lee, research about the various radio-frequency identification (RFID) process automation reducing the labour, speeding work of execution of critical

business processes. RFID recognition about 99 % of input and output and location indicated based on tracking management system it helps improve supply chain efficiency.[I]

Pradip D. Nimbalkar, studied the automated monitoring system in construction of road project and his research work about the need of implementing various automated monitoring system, creating awareness and interest about learning and implementation rapid developing monitoring system of road project. Bell and mccullouch (1988) suggest the barcode application in construction industry [II]

Saurabh Badjate he was found various automated tracking system can be successful the project and 50 % of the reducing inventory management cost.His used RFID Tags, Readers, Barcodes, GPS, GIS collect data about the material with reasonable accurancy, Identify, material tracking, location of material. [III]

Mingyuan Zhang, Study the various sensor-based technology adopted in construction industry for the safety management like various accidents in construction projects, locating sensor based technology.

Purpose of safety management

- Quality inspection of construction material
- Management for workers like health and safety.
- Structural health monitoring.
- Safety training and education.
- Highly dangerous operations management.[IV]

Piotr Nowotarskia, Real Time Location System, (RTLS) can be used in construction for tracking people and assets. This idea with results of the research performed with Bluetooth RTLS system used for tracking objects in the building planned renovation. [V]

3. CONCLUSION

Overview of literature that shows the automated materials tracking system was found feasible and can be successfully applied on future construction projects. The integrated, automated materials tracking system consisting of passive RFID tags, reader. Handheld pc is able to collect data about the materials with reasonable accuracy, identify and track materials, and locate materials in the supply chain

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