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Folk Latter With Crane Using Scanner

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ABSTRACT

In our day to day life science plays important role. We are habitual to automation world many discoveries takes place to redeem human effort. Such as remote control is utilized operate TV AC fan and cars etc. Moreover to survive easily in challenging life we started to reduce wastage of time and labor simultaneously security system helps to scan the object with the help of crane and scanner as well. In this project the folk letter scan the object by using RFID Scanner and command crane to place identified object at appropriate place. Meanwhile, with the help of this crane we optimize a good security system. By this invention we can save more time and labor and make our security system more efficient and active. This paper describes the radio frequency identification (RFID)-based steel coil identification system for supply chain management in the steel and iron industry. During crane operation, coil information is automatically updated by reading an RFID tag which is attached to the coil. One of the technical challenges associated with the RFID-based coil identification is the fall of the identification performance due to neighboring metallic objects. In order to cope with this problem, a system was developed in two directions. First, an effective tag attachment method considering the work process and the environmental conditions was proposed.

Keywords: Bluetooth, RFID Scanner, Crane, arduino, L.C.D.

I. INTRODUCTION

This paper is a report of Radio Frequency Identification (RFID) technology and its potential applications in the commercial construction industry. RFID technology offers wireless communication between RFID tags and readers with non-line-of-sight readability. These fundamental properties eliminate manual data entry and introduce the potential for automated processes to increase project productivity, construction safety, and project cost efficiency. Construction contractors, owners, and material suppliers that believe technology can further develop methods and processes in construction should feel obligated to participate in RFID studies for the advancement of the construction industry as a whole. RFID can increase the service and performance of the construction industry with applications in materials management, tracking of tools and equipment, automated equipment control, jobsite security, maintenance and service, document control, failure prevention, quality control, field operations, and construction safety. Contractors need to understand and take immediate advantage of the time savings; low labor costs associated with new technologies, and lower rework costs that RFID systems ensure. Lack of standardization, high costs of implementation, slow technology development and deployment risks, and the elimination of unskilled labor are all contributors currently preventing the adoption of new RFID technologies in the construction industry. Despite these drawbacks, this report analyzes the direct benefits of material management pilot studies conducted by Bechtel, Rohm & Hass and the National Institute for Standards and Technology (NIST). Furthermore, potential RFID applications, economic development, and challenges of implementing these RFID ideas in the commercial construction industry are also presented. According to Venture Development Corporation's latest market study, the RFID market is expected to grow

approximately 23% annually; RFID interest is at its highest point ever and it is continuing to grow. Future case studies and project RFID sampling are needed to increase contractor and owner awareness of the potential savings of human life, project-scheduling times, and project costs. RFID technology would enable work to be done at lower labor costs than presently being used.

II. METHODS AND MATERIAL

Method of crane lifting a labour material the lifting of objects generally occurs on construction sites, in factories and other industrial situations. Correct lifting can move large objects efficiently and reduce manual handling operations. Incorrect lifting however, can lead to disastrous accidents. Every year, incorrect lifting procedures cause injuries, loss of work time and property. People, machinery, loads, methods and the work environment, are all important factors for correct lifting. Provided that enough safety measures are fully implemented, lifting accidents can be reduced.

Local legislative requirements that apply to lifting operations include Factories and Industrial Undertakings (Lifting Appliances and Lifting Gear) Regulations enforced by the Labour Department, and Shipping and Port Control (Cargo Handling) Regulations enforced by the Marine Department. The Labour Department also published the code of practice for "Safe Use of Mobile Crane and Tower Crane" in 1998, and provides the trade with guidance for the safe use of cranes.

Personnel related to the lifting operation include "competent examiner", "competent person", "crane operator", "slinger", "signaler" and others working nearby. The "competent examiner" is responsible for regular examinations of the lifting appliances or lifting gears. He shall be: – appointed by the employer or the owner of the lifting appliances/lifting gears; – a registered professional engineer within a relevant discipline; – properly trained with relevant practical experience. The "competent person" is responsible for regular inspections of lifting appliances or lifting gears. He shall be: – appointed by the employer or the owner of the lifting appliances/lifting gears; – properly trained with relevant practical experience. The "crane operator" is responsible for operating the crane correctly and safely. He shall: – be at least 18 years of age and hold a valid crane operation certificate; – be physically fit; – be familiar with hand signals for communication.

The "slinger" is responsible for attaching and detaching the load to and from the crane. He shall: – have received appropriate training on general safe lifting operations; – be capable of selectings lifting gears suitable for the loads; – liaise with the operator and direct the movement of the crane safely. The "signaller" is responsible for relaying the signal from the slinger to the crane operator. He shall: – have received appropriate training on general safe lifting operations; – be able to direct the movement of the crane and loads.

Machinery :– refers to lifting appliances and all lifting gears. The lifting appliance includes a crab, winch, teagle, pulley block, gin wheel, crane, shearleg, excavator, pile driver, pile extractor, dragline, aerial rope way, aerial cableway transporter or overhead runway, etc. The lifting gears include a chain sling, rope sling, ring or similar gear, link, hook, plate clamp, shackle, swivel or eyebolt.

A. Mobile Crane

- The mobile crane shall only be operated on a firm, level ground that adequately supports the weight of the crane and loads.
- Before lifting, fully extend outriggers and ensure their stability on the ground.
- The weight of the load shall not exceed the Safe Working Load.
- Never abruptly swing or stop the crane.
- Loads shall not be dragged on the ground.

Move the load at a safe speed - use low speeds within several metres of the load's destination.

- Adjust the boom length to ensure the crane is operating within the extent of the safe operation radius.
- When moving uphill or downhill, the boom angle shall be adjusted to the safe.

B. RFID Scanner

Radio Frequency Identification, or as it is more commonly known, RFID, is an automated identification and data collection (AIDC) technology. From access cards to passports to toll tags RFID has now become

ubiquitous as an integral part of our daily lives. The basic concept is simple. An object to be tracked is identified with a transponder or 'tag'. Periodically, the tag unilaterally 'beacons' it's unique ID number or is requested to broadcast these data by an RFID reader. The reader captures tag data and passes these to middleware, which filters, aggregates and formats the data for presentation to a business application. Various types of RFID technology exist but the most common are passive (no battery) and active (with battery).RFID is widely used for the identification and tracking of people, assets and inventory. The core benefits are that it provides identification without requiring line of sight can be read at short to very long range and can be encoded with significant amounts of data. These attributes distinguish it from other AIDC technologies. Historically, the ports market was an early adopter of RFID and today represents a proven, growing field for this technology. However, what started as a market focused on the use of passive RFID for security purposes has since evolved to a predominantly active RFID market for long range asset tracking and process automation, including: Network asset visibility: tracking assets such as trucks and containers across multiple supply chain nodes. Operational control: providing visibility and process automation within the port or terminal. Safety: ensuring the safety of personnel and equipment, typically within a facility environment.

Security: providing access control and securing assets and inventory.

III. RESULTS AND DISCUSSION

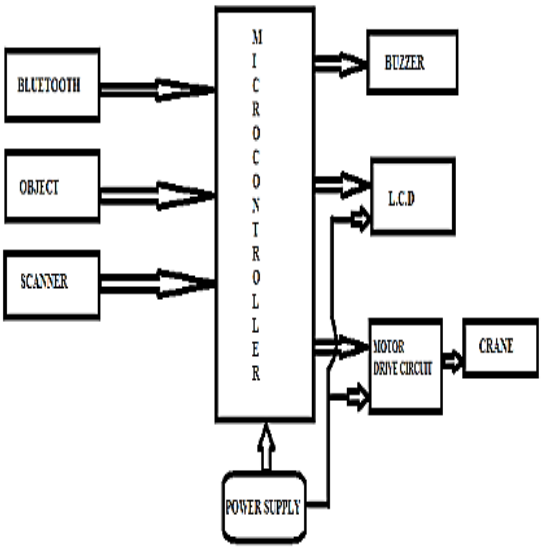
The objective of this proposed research is to test the feasibility of applying Radio Frequency Identification (RFID) technology into tower cranes in the form of an information scanner that will not only improve materials management and project performance, but also facilitate the use of Building Information Modeling (BIM) to enhance efficiency on construction sites in urban areas with limited space. RFID is a globally accepted technology that has enjoyed great success in the area of supply chain management, particularly for inventory management. Materials management that uses RFID for automated tracking and locating activities are promising to greatly improve construction productivity on construction sites, and sensor technologies and sensing systems enable contractors to identify the locations of different materials as they are moved around the site. However, at present these locations are tracked using GPS devices, with an accompanying lack of accuracy, precision and robustness. The introduction of a smart tower crane system should minimize human intervention and improve the effectiveness of existing materials management systems. In general, a tower crane is fixed to the ground and covers the whole site in projects involving the construction of tall buildings in urban areas. Consequently, an RFID reader installed on the jib of the tower crane will be capable of overseeing the entire construction site and reading the RFID tags attached to all the materials anywhere on the site. Since the typical reading range between the tag and reader for an active RFID system is up to 100 m with the help of batteries (3-5 years battery life), a reader mounted on a tower crane will easily scan tags on materials on the ground, thus providing coherent and continuous real-time materials' information. The scanned data from the reader on the crane will support materials management, providing complete and accurate information for scheduling, planning, resource allocation, and so on. This research will be the first step in the development of an innovative approach that supports better utilization of existing equipment and technology in the construction industry. This smart tower crane system has the potential to have an enormous impact on urban construction management by improving materials management and performance without the need for complicated devices and by maximizing the automated tracking and locating of materials, especially in limited areas such as construction sites. Ultimately, this system could be applied to various types of materials management, including not only tracking and locating but also arrival scans, continuous inventory checks, theft inspection, real-time scheduling assistance, jobsite layout, coordination of trade components, and so on. These applications will be directly compatible with BIM technology.

Description of Load (s) to be lifted:

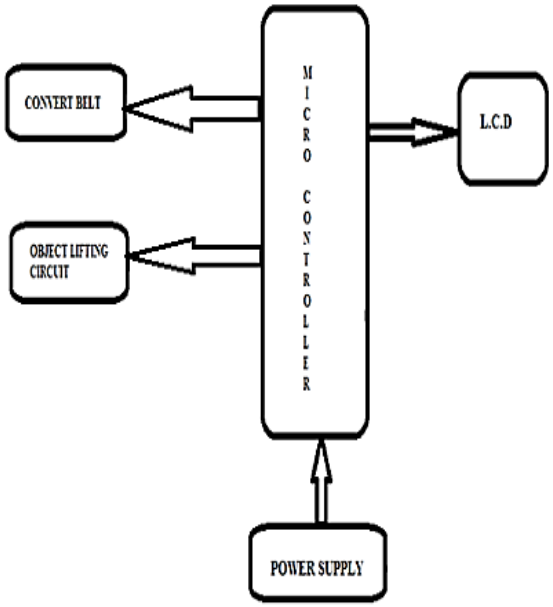
Sufficient information must be provided to give a clear, but brief, description that will clearly identify the lift(s) to be undertaken. A separate risk assessment form will need to be completed for every time the crane is moved to a new position, unless the risk assessment has taken into account the hazards associated with all positions

A. Block Diagram

- **Movable Circuit**



- **Fix Circuit**



B. Hardware Specification : Crane

A crane is a type of machine, generally equipped with a hoist rope, wire ropes or chains, and sheaves, that can be used both to lift and lower materials and to move them horizontally. It is mainly used for lifting heavy things and transporting them to other places. It uses one or more simple machines to create mechanical advantage and thus move loads beyond the normal capability of a human. Cranes are commonly employed in the transport industry for the loading and unloading of freight, in the construction industry for the movement of materials and in the manufacturing industry for the assembling of heavy equipment.

C. RFID Scanner

Radio-frequency identification (RFID) is the wireless use of electromagnetic fields to transfer data, for the purposes of automatically identifying and tracking tags attached to objects. The tags contain electronically stored information. Some tags are powered by electromagnetic induction from magnetic fields produced near the reader. Some types collect energy from the interrogating radio waves and act as a passive transponder. Other types have a local power source such as a battery and may operate at hundreds of meters from the reader. Unlike a barcode, the tag does not necessarily need to be within line of sight of the reader and may be embedded in the tracked object.

IV. CONCLUSION

This chapter presented various issues associated with the Radio Frequency Identification systems and has identified research gaps which are acting as a Constraint in the improvement of the performance of RFID systems. This thesis further report the solutions of research gaps identified during the above literature Survey.

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