

Design And Development of AAC Block Pusher Machine

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Abstract- Simple Automation can evaluate, engineer and deploy industrial automation solutions that work. We design solutions to be simple so your workforce can focus on their task and not be confused with complicated controllers and machinery. We have experience of our diploma knowledge to solve industrial automation solutions. You can trust that Simple Automation can provide you with the best solution for any of your automation needs. Your choice is Simple. Advantages commonly attributed to automation include higher production rates and increased productivity, more efficient use of materials, better product quality, improved safety, shorter workweeks for labour, and reduced factory lead times. Higher output and increased productivity have been two of the biggest reasons in justifying the use of automation. Despite the claims of high quality from good workmanship by humans, automated systems typically perform the manufacturing process with less variability than human workers, resulting in greater control and consistency of product quality. Also, increased process control makes more efficient use of materials, resulting in less scrap.

Worker safety is an important reason for automating an industrial operation. Automated systems often remove workers from the workplace, thus safeguarding them against the hazards of the factory environment. Another benefit of automation is the reduction in the number of hours worked on average per week by factory workers. About 1900 the average workweek was approximately 70 hours. This has gradually been reduced to a standard workweek in the 40 hours. Mechanization and automation have played a significant role in this reduction. Finally, the time required to process a typical production order through the factory is generally reduced with automation.

I. INTRODUCTION

The HKS Industry produces AAC (Autoclaved Aerated Concrete) blocks, which are a lightweight, precast, foam concrete building material suitable for producing concrete masonry unit like blocks. Composed of quartz sand, calcined gypsum, lime, cement, water and aluminium powder, AAC products are cured under heat and pressure in an autoclave. This blocks are invented in the mid-1920s, AAC simultaneously provides structure,

insulation, and fire and mould-resistance. AAC products may be used for both interior and exterior construction, and may be painted or coated with a plaster compound to guard against the elements. In addition to their quick and easy installation, AAC materials can be routed, sanded, or cut to size on site using standard power tools with carbon steel cutters.

The blocks of AAC are cuts with the help of thin wires. In these wires the tension created in the wire with the help of pneumatic system. The whole dice of block is in the motion of forward and backward direction which is travels on carrier. The twisted of couple of wire used to impressions of wire on the dice of clay to create shape of AAC bricks. Industry has rail tracks arrangement with carrier on which blocks of cement pushed towards the cutting system. The whole block has weight about 45-50 kg and total weight of block and carrier has approximately 70-80 kg. The mixture of cement, aluminium powder and gypsum paste is poured into the square shaped metallic bucket. After this, mould gets cold and metallic bucket removed from upside. This dice of blocks are pushed toward cutting section. Workers group of 3 to 4workers push the carrier toward the cutting section. They push this carrier using hand. At cutting section, whole block is cut into small pieces of thickness size of brick. But there is a problem, when workers start pushes carrier to the cutting is not take place less man power because more force. Also, small pieces from the corners are gets damaged by workers action. So, side bricks are rejected due to damage. In every stroke of cutting, four to five corner blocks get rejected. Cause, company face more amount of rejection rate.

So we visited to this industry and identify the problem of rejection of bricks and identify how the block carrier heads forward in the cutting machine. So, the conclusion of the problem

we found, and we can use the gear mechanism and the block chain mechanism to solve the problem and to push the carrier to cutting section with the constant speed. 21st century is very fast-growing century in industrial area. Many of industrial equipment used nowadays is out dated or old. Due to this production rate gets lowered and also precision working not happened. Also, for doing work much more man power required.

To overcome this kind of problems automation system required. Automation system is precise in work also production rate gets increased. There are so many industries work on atomization for economic growth. Regarding this point one of the automation mechanisms is used in this project.

Problem is to eliminate rejection rate of AAC blocks, to increase product rate and reduce human effort. The mechanism contains motor, chain and sprockets, sensors and track on which pusher is placed. Developing countries like India which are not been auto-mated fully yet, hence involve huge man power and energy for manufacturing brick. Automation in the AAC block preparation plant improves the quality of product plus reduces the man power and energy consumption and also increases the production of block. Automation helps in enhancing the safety operation and deduction in the cost of block. This project work titled “AAC (Autoclaved Aerated Concrete) Block pulling machine”. This work provides a systematic literature review of blockchain-based applications across multiple domains. The aim is to investigate the current state of block chain technology and its applications and to highlight how specific characteristics of this disruptive technology can revolutionize “business-as-usual” practices. To this end, the theoretical underpinnings of numerous research papers published, along with several reports from grey literature as a means of streamlining our assessment and capturing the continuously expanding blockchain domain, are included in this project.

II. LITERATURE SURVEY

This work provides a systematic literature review of blockchain-based applications across multiple domains. The aim is to investigate the current state of blockchain technology and its applications and to highlight how specific characteristics of this disruptive technology can revolution “business-as-usual” practices. To this end, the theoretical underpinnings of numerous research papers published in high ranked scientific journals during the last decade, along with several reports from grey literature as a means of streamlining our assessment and capturing the continuously expanding blockchain domain, are included in this review.

Based on a structured, systematic review and thematic content analysis of the discovered literature, we present a comprehensive classification of blockchain-enabled applications across diverse sectors such as supply chain, business, healthcare, IoT, privacy, and data management, and we establish key themes, trends and emerging areas for research.

We also point to the shortcomings identified in the relevant literature, particularly limitations the blockchain technology presents and how these limitations spawn across different sectors and industries. Building on these findings, we identify various research gaps and future exploratory directions that are anticipated to be of significant value both for academics and practitioners.

- A. Aerated autoclaved concrete (AAC) blocks: a revolution building material in construction industry. Mallampalli.Ch, et al, have discussed about the reactions undergone while casting the block. They used gypsum for filler.
- B. Materials, Production, Properties and Application of Aerated Lightweight Concrete Ali J. Hamad, have discussed about the Ac block production in industry. The ratios are explained about in this literature on what stage aluminium powder should be mixed.
- C. Structure and properties of Aerated concrete N. Narayanan, et al, It explains about the strength parameters and durability. It has discussed about the various strength properties under certain conditions.
- D. Hygric, thermal and durability properties of Autoclaved Aerated concrete MilošJerma, et al, it explain about the hygric, thermal and durability properties of Autoclaved aerated concrete. They have compared 3AAC block with different densities and tested results of thermal property and durability.
- E. A Review of Autoclaved Aerated Concrete Products Robert G, et al, has discussed the various property and reaction taking place while producing AAC block. This also tells about the autoclave process in detailed about in pressure and temperature.

III. METHODOLOGY

The actual procedure of our project starts from after visit the company and observation of whole process of manufacturing of AAC blocks. Further, we were collect the videos of operations and started to identify different problems in that particular process. In such a good discussion from our team, we understood the different problems and solutions on those problems. This was most effective to get different ideas for understand and share to others. Most of the ideas, we got from there working labourers and supervisor. So, thanks to them from heart.

The main problem was, the dice of blocks are push into cutting section. Which was done by conventional method of pushing with manpower. Also in this method, the need of manpower is more and workers gets fatigue due to frequently operations was done. At a time, corners of the dice get

damaged due to the workers action of pushing. Since, lot of bricks are damaged and rejected. Cause the wastage of manpower, money and time.

So, to solve that issue we design a simple automation to make the flow of process is streamline. And due to this we achieved the economical savings of company.

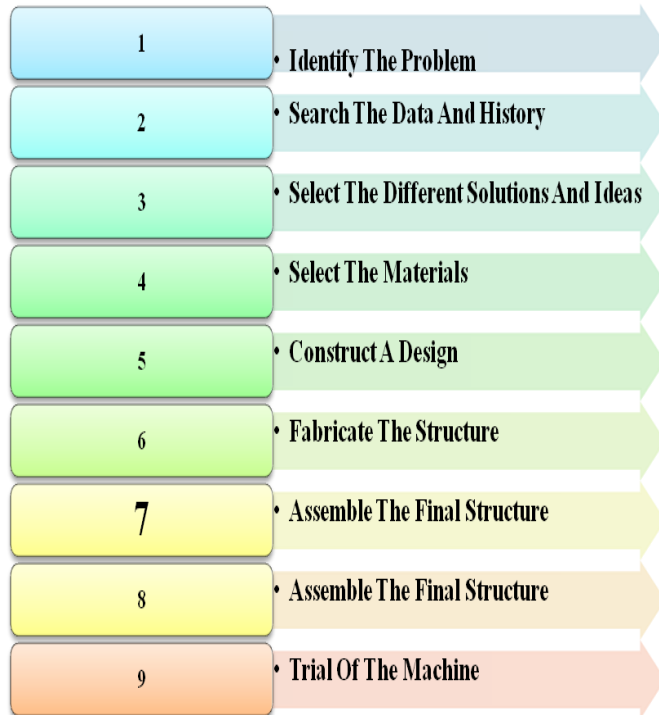


Figure No. 1

IV. CONCLUSION AND FUTURE SCOPE

The conclusion and recommendations part summarizes the whole report by highlighting all the chapters and their significance and the importance of the project and the achievements.

Scope for future development if any Automation is important and necessary for an organization. Today organization has a separate team that focuses only on automation. We are about business and weal ways want to make money. We always keep finding new ways to save money and automation is one of them. The only thing an organization is to keep in mind is which automation to go for and all set.

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