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“DESIGN AND FABRICATION OF FORK LIFTER - A REVIEW”

Shadab Khan ¹, Rahul Mishra ²

¹P.G. Scholar, Dept. of Mechanical Engineering, IES, Bhopal, MP, India

²Assistant Professor, Dept. of Mechanical Engineering, IES, Bhopal, MP, India

ABSTRACT

In today's life, there is a wide variety of forklifts, from the large heavy loading truck to the one that works among narrow aisles. Forklifts have become one of the basic transportation tools we use in our lives. With all the forklifts in existence, we find that there are some improvements that can be made to bring the forklift to a better performance. Existing forklift design has its limitation in rotation and the structure has potential safety risk and run stress analysis on important parts and subassemblies using finite element method (FEM). Results show that the new design is safe to use under working conditions.

Keyword: Manual Pallet Truck , manufacturing, pallet, lifting, handling systems, hydraulic stacker

I. INTRODUCTION

Material handling equipment is mechanical equipment used for the movement, storage, control and protection of materials, goods and products throughout the process of manufacturing, distribution, consumption and disposal. The main processes on the shop floor of any industry include production and manufacturing of various components and the Material Handling is done by various Cranes and Hydraulic Stackers. The material handling system is responsible for safe and speedy movement of products from Storage Rack to Machine Press and Machine Press to Storage Rack. Also the movement of manufactured components to the storage facility. Thus the material handling processes are of utmost importance on a shop floor. Various equipments like Cranes, Conveyors, and Hydraulic Stackers (Fork Lifts) etc. are used. Each of these has a set number of degrees of freedom. To increase the functionality of these equipments we either need to combine them or make modifications.



Fig.1 Fork lift truck

II. LITERATURE SURVEY

VamsiKrishna and Porchilamban created and fundamentally broke down a twin blast stacker masthead for better efficiency Bulk material taking care of assumes an essential part in the powerful activity of process businesses. In Visakhapatnam steel plant is one such shore based process industry working at 120% of appraised limit of 3.0 MT/annum. Fluid steel is growing its ability to 6.3 million ton for every annum, around 24MT/annum of mass materials are to be taken care of in Visakhapatnam steel plant(VSP).. The dependability of the twin blast stacker is most extreme vital for stacking the materials in the capacity yard for better coordinations. The maturing of twin blast stacker with the delayed activity brought about uneven loads or jolts on MAST HEAD. This has brought about regular disappointments of MAST HEAD. The plan alteration has been confirmed by demonstrating the MAST HEAD utilizing SOLIDWORKS Version 2012 and broke down utilizing FEM bundle ANSYS 14.5. The Necessary pressure fortifying has been made in light of the primer examination by expanding the thickness of the spacer and watched that the anxieties are inside as far as possible and are talked about in the subject RESULTS. In this way the plan has been solidified and the created drawing has been discharged for execution.. [1]

Sivasubramanian et al planned a change to the traditional self-loader stacker utilizing CAE The fundamental point of this paper is to outline and alter stacker component for a seal squeezing machine. In a direction producing organization, stacker frameworks are critical types of gear used to deal with materials which are in mass e.g. seal, confine and so on. Seal squeezing machine is utilized to put the seal on the bearing which shields the bearing from outside particles and keeps the grease from spilling. The ebb and flow stacker framework being utilized is a solitary stacker framework in which just 60 seals can be set at once which gets over in 10 minutes. So a system is required which can oblige more seals with the goal that the reloading time increments from 10 minutes to 2 hours. For such a reason, more stackers would be required and in this way such a framework would be known as a multi-stacker. By utilizing a multi-stacker instrument the man/machine association is lessened, specialist weakness is diminished, machine sit without moving time is decreased and general misfortunes are diminished.. [2]

Vianen et al built up a reproduction device to reschedule the stacker-reclaimer task to enhance efficiency of a dry mass terminal. They accomplished noteworthy decrease in holding up times of freight trains at the mass load terminals. [3]

Miao et al built up a passage stacker multi organize fork demonstrate utilizing PC supported outline. They enhanced the stacker security and dependability utilizing transient powerful examination in Ansys. [4]

Sahu and Bhatele contemplated the execution of a stacker-reclaimer over long separation drive activities. [5]

Tian and Hu improved the pivot point position of luffing system in a compartment achieve stacker. The luffing instrument of achieve stacker is the center of enormous arm lifting component. The pivot point position in it impacts specifically the far reaching exhibitions. The numerical model of three pivot focuses was built up through the power investigation of luffing instrument, which plans to diminish the greatest power of hydro-chamber and lessening the oil weight of pressure driven framework. A progressive requesting strategy was used to enhance the multi-target issue. The enhancement computation was introduced by utilizing the hereditary calculation in Matlab. Exploratory outcomes show that the streamlining upgrade the extensive execution of achieve stacker. What's more, this likewise gives critical establishment to the parameters plan of luffing component[6].

Xiao et al directed limited component basic examination of the trolley casing of a stacker-reclaimer running system. Keeping in mind the end goal to plan and improve the trolley edge of stacker-reclaimer running instrument, it is extremely helpful and proficient to exploit ANSYS, which can guarantee security as well as diminish time and cost. The stacker-reclaimer is a typical constant and productive mass materials stevedoring and transporting gadget on the planet, running instrument is situated in base of the entire machine, which assumes an essential part of supporting the machine and the running capacity of the machine. In this manner, the security and unwavering quality of the running instrument is extremely huge and basic in the protected activity of the entire machine. To ensure firmness and hardness of the steel structure, it is done that the static examination of the key segments the trolley outline by utilizing limited component investigation programming. Through watchful investigation and research, it demonstrates that the plan of

the parts meets totally prerequisites of genuine conditions. The Finite Element Analysis of Trolley Frame of Stacker-Reclaimer Running Mechanism Based on ANSYS. [7]

Daniel et al examined the resultant worries in the pulley of a stacker-reclaimer. The primary point of this venture is to lessen the pressure follow up on the pole. This venture prompts the pressure improvement of the pole. By creating a center plate we lessened the pressure created on the pole. In this way, that there is increment in shaft life. By applying different thickness of the center plate we increment the life of the pole. There is a possibility for lessening the heaviness of the part by utilizing light weight material. The heap appropriation on the pole is even with the supporting circles. Along these lines, that we lessen the aggregate load follow up on the specific contact on shaft. The fundamental segments are shaft, plate, barrel, and center. Outlining units of this kind requires exact counts of all heaps in static conditions. In this paper the part cross area was investigated. The pressure examination utilizing ansys is performed on the cross area of get together of the reclaimer pulley considered as a kind of perspective for the current outline and notwithstanding for the changed plan which is the primary undertaking of this venture. The cross segment of the model was investigated with the straightforward stacking conditions. With that the barrel avoidance is limited in the cross segment examination [8]

Singh and Parikh executed limited component examination to lessen stacker weight by considering the anxieties following up on the stacker base plate. Be that as it may, they didn't totally outline another multi stacker framework for enhancing efficiency. In a course producing organization, stacker frameworks are vital types of gear utilized for taking care of mass materials. In this work, another multi-stacker plan has been intended to supplant a traditional bearing seal stacker framework. The new framework can oblige 720 seals at any given moment. This course of action expanded the time hole between two stacking cycles to upto 2 hours when contrasted with only 10 minutes in the more established setup. Likewise, the normal machine sit out of gear time was decreased by over 85%. This brought about an efficiency upgrade of more than 7%. Subsequently, a multi-stacker system demonstrates very helpful to decrease man/machine connections, specialist exhaustion and machine sit still circumstances in the bearing business seal squeezing machine profitability. [9]

Syed Sajid Ahmad Syed Nisar , Prof. K. I. Ahmad Prof. M. Sohail Pervez involved in quickly developing mechanical age each industry needs speed in assembling to adapt up to client's necessity. The essential target of this undertaking is to build up a base weight and minimal effort modern beds for taking care of motor squares. From this we accomplish quicker transportation. Material dealing with is an exceptionally wide point of science talk, consequently the fundamental thought behind growing such a plan to show the circumstance of beds usage in enterprises and related influencing factors. The last model is a blend of institutionalize process and the effortlessness ideas.[10]

III. CONCLUSION

The technical parameters describe the structural features and performance. It includes the general parameter, dimensions, weight, performance, wheels and electronic.

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