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PRODUCTIVITY IMPROVEMENT IN END SUCTION PUMP TEST BED USING MOBILE TROLLEY

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ABSTRACT

This project deals with the production department in the company, I decided to design a trolley for testing a pump within its trolley. The existing mechanism has some drawbacks, so I concentrated to eliminate the drawbacks by modifying it. This newly designed trolley is guided by guide ways, the lifting movement is provided by scissor lift. Due to the newly designed the productivity will increase. It is quite effective implementing with 2 trolley increase productivity. The Mobile trolley was reduced the part damage and increases the efficiency of the product. The pump damage, scrap and operator errors are also reduced. And also the requirement of skilled technician is reduced, which reduces the time consumed for various allowances.

Keywords: Mobile trolley, productivity improvement, optimization techniques.

I.INTRODUCTION

1.1 GRUNDFOS INDIA

The Indian operation grundfos pumps India pvt ltd started in the year 1998 is a 100% subsidiary of grundfos - Denmark. It has 20 brach/home offices with service centers and operates with over 200 dealers and distributors.The Chennai facility is a certified green building and green factory with a gold rating from green building council (U.S). This is the first industrial office building to be certified with such status in India.

The manufacturing facility in Chennai was set up to assemble reliable energy efficient pumps to save the customer and the country energy costs and reduce their impact on the environment. The future for grundfos India lies in bringing in new technology to suit the Indian markets and Indian customers. Grundfos pumps provide the ultimate solution to the pumping problems with the lowest life cycle cost to its users. Grundfos, the Danish pump major has always been in the forefront of delivering sustainable pump solutions with a clear vision for the future, etched on strong fundamental values.

1.2 GRUNDFOS GREEN BUILDING AND GREEN FACTORY

Fig. 1 Green building and green factory

Grundfos, the Danish pump major has always been in the forefront of delivering sustainable pump solutions with a clear vision for the future, etched on strong fundamental values. Like their products, their product innovation, in-house production process, usage and choice of materials and new technologies highlight their sincere desire on World's resource conservation, with minimal impact on the surrounding environment with 2 trolley increase the productivity.

1.3 ASSEMBLY PRODUCTS

The following list of products is assembled at grundfos pumps India Pvt Ltd in Chennai.

- NKG. NBG,NBE, NBGE.
- NK,NB-In this stage I done project
- CR, CRI, CRN.

The Industrial Engineering Terminology Standard defines time study as "a work measurement technique consisting of careful time measurement of the task with a time measuring instrument, adjusted for any observed variance from normal effort or pace and to allow adequate time for such items as foreign elements, unavoidable or machine delays, rest to overcome fatigue, and personal needs."

II.EXISTING 600A TEST BED:

Our Test Bed is connected to a system, which contains PCI-NT software, when see the result simultaneously at group of grundfos Pumps Company. Original reading can take also Denmark group. It is connected through internet PCI-NT means PLC COMPUTER INSTRUMENT-NEW TECHNOLOGY release version 02.64.00.209.

Fig. 2 600 amps testing bed for NB and NK pumps

Table. 1 Time study for current process

S.NO	Description	TIME IN SECS	TIME IN MINS	TESTED PER SHIFT
1	FOR 3-POINT TESTING	1526	25.4333	16
2	FOR 5-POINT TESTING	1749	29.15	14

They not achieve testing the all pumps from the assembly in a day it leads to occupy the workspace area.
Time for complete the testing of each pump has take more time.In 600 amps testing bed only utilizing two shifts in a day for reducing the stock of pumps.

Pump is lifted from pallet to test bed by using crane. If took the pump, while operator using a hand for handling the pump and move into the test bed, its lead to accident.
During the testing time one operator doing system work and another operator is idle for long time.
Pump alignment is done by pushing the pump manually in the test bed.

III.DESIGN OF MOBILE TROLLEY

Stainless steel is 100% recyclable, corrosion-resistant, durable and hygienic material. It is maintenance-free, and the environmental impacts of its use are almost non-existent. A C-channel is a structural element that is capable of withstand in Stool is simply defined as rigid linking between two members. It is a vertical supporting member between the C-channel and swivel caster wheel. Swells roller is made up of mild steel. Load primarily by resisting bending. Stool is simply defined as rigid linking between two members. It is a vertical
supporting member between the C-channel and swivel caster wheel. It is made up of mild steel.

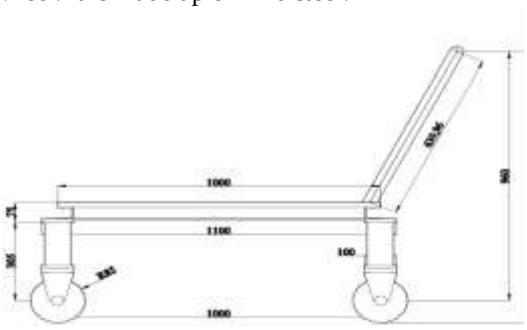

Fig. 3 Dimension of mobile trolley

IV.ANALYSIS OF MOBILE TROLLEY

4.1 Load:

To design mobile trolley can be find out load deformation by ANSYS SOFTWARE.In trolley placed pump vertical and horizontal,soi can find out causes of load type equivalent stress von miess stress. In analysis we got safe load distribution of base

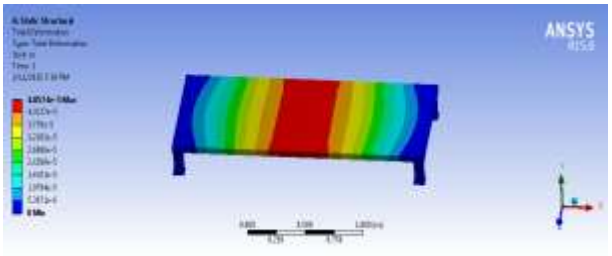

Fig.4 Load distribution of base

4.2 BASE:

Maximum value of stress distribution in static structural analysis is safe to make a design so the design is safe solution in ANSYS

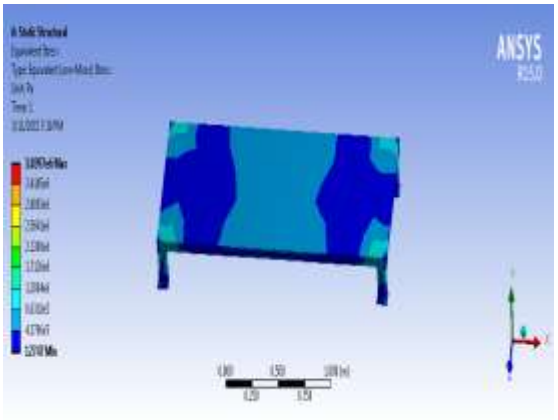

Fig.5 Solution of base

V.MODIFIED PRODUCTIVITY

Table. 2 Time study for new process

S.NO	Description	TIME IN SECS	TIME IN MINS	TESTED PER SHIFT
1	FOR 3-POINT TESTING	826	13.76	31
2	FOR 5-POINT TESTING	1007	16.78	24

VI.RESULT AND DISCUSSION

By this project it is proposed that the product of the 3 point testing can be improved by 15 products and the 5 point testing by 10 products. By the implementation of our proposal there can be a increase of the number of pumps being tested in the testing section and also the loading and unloading time can be reduced. The additional benefit will be the time reduction in the pump alignment in the test bed and reduction in the human effort. All these will result in the reduction in the number of shifts in the firm. The fabrication mobile trolley successfully completed.

VII.CONCLUSION

This project work has provided us an excellent opportunity and experience, to use our limited knowledge. I gained a lot of practical knowledge. Regarding planning, purchasing, assembling and machining while doing this project work. I feel that the project work is a good solution to bridge the gates between institution and industries.

It is important for an industry to make necessary action to increase the productivity in all aspects. The trolley which I designed increases productivity as well as reduces human effort with economical advantage. These merits are all because of trolley and its lifting action by scissor lift. I conclude that this fabrication of mobile trolley is used by achieving the increasing productivity.

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