ERGONOMICS AND MATERIAL HANDLING IN CNC AND FETTLING IN FOUNDRY

Stalin.V[1] and P.Dhiravidamani[2]

Abstract— ***Improper working practices, twisted posture, bad posture etc. at working site may cause instant and chronic effects on workers. The core reason for these effects is poor ergonomics and improper material handling in the workplace. Ergonomics is an engineering discipline that addresses the effect work environments and tasks have on the employee. Ergonomics involves workstation set-up and design, body posture, prevention of computer related injuries and more. Ergonomics education is often included in physical therapy treatment for back and neck injury, and chronic pain. Material Handling is the field concerned with solving the pragmatic problems involving the movement, storage, control and protection of materials, goods and products throughout the processes of cleaning, preparation, manufacturing, distribution, consumption and disposal of all related materials, goods and their packaging. The aim of the project is to implement proper ergonomics and material handling in the industry.***

Index Terms—**Ergonomics, Material Handling, posture,**

I. INTRODUCTION

My project is about implementing proper ergonomics and material handling in the CNC and fettling unit in the foundry. Inadequate ergonomics will lead to many physiological problems and inadequate material handling leads to minor to major accident or even to fatal accident. So developing and sustaining proper ergonomics and material handling is essential**.**

A. Ergonomics

Ergonomics, or "human factors", is the science of designing equipment, the workplace and even the job to fit the worker. It covers a broad spectrum of factors that make up the fit between humans and work. Ergonomic research enables designers to create equipment better suited to the human form so that it puts less stress on the body, as well as controlling external factors such as light, temperature and noise so workers can be at their most productive for longer.

Ergonomics is the design of a workplace to ensure there is a good fit between the workers and what they interact with in their environment. Ergonomics is important because it Makes workers be in better health and shape and be more effective as they work in pleasant environments. Ergonomics generally improves productivity in companies.

Ergonomics is important because we can get injured if we spend a large amount of time in a position that is not proper. If you sit crooked or keep your wrists bent constantly, you might get pinched nerves or something similar. Get up and walk around and stretch.

Purpose

[Ref 1] The purpose of this program is to effectively eliminate or reduce work-related Musculoskeletal Disorders (MSD's) and hazards by providing management support and employee involvement in the identification and resolution of hazards and by providing training and evaluation on an on-going process.

B. Material Handling

Material handling is the movement and storage of material at the lowest possible cost through the use of proper method and equipment

Other definitions are:

[Ref 6] Material handling embraces all of the basic operations involved in the movement of bulk, packaged, and individual products in a semisolid or solid state by means of machinery, and within limits of a place of business".

- Material handling is the art and science of moving, storing, protecting, and controlling material".
- Material handling is the preparation, placing, and positioning of materials to facilitate their movement or storage".

Objective

- To increase equipment and space utilization.
- To reduce costs
- To increase capacity
- To improve customer service
- To improve working condition

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CNC

Numerical control (NC) is the automation of machine tools that are operated by precisely programmed commands encoded on a storage medium, as opposed to controlled manually via hand wheels or levers, or mechanically automated via cams alone. Most NC today is computer numerical control (CNC), in which computers play an integral part of the control

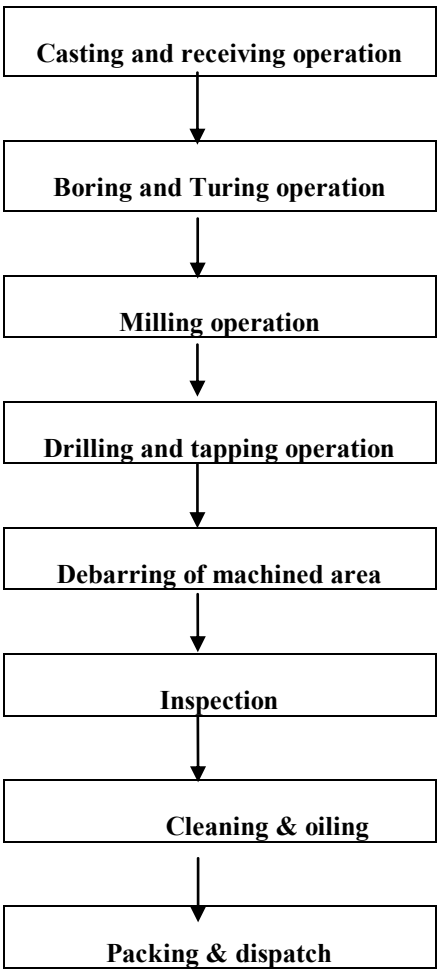

Table 1: Machine shop layout

II. METHODOLOGY

1. Assessment of improper ergonomics and material handlings by using checklist:

Assessing all possible defects in ergonomics in the workplace by providing a checklist to the workers to get the data about the effects caused by improper ergonomics and assess the identified effects.

Workers details

Name:

Age:

Location:

Operation:

Designation:

Working hours:

Hazards

Disorders	Y or N
Wrists pain:	
Fore arms pain:	
Back pain:	
Neck pain:	
Shoulders pain	
Hand:	
leg pain:	
Reduced the range of shoulders motion:	
Tension, headache	
Numbness	
Burning in the hand	
Tingling:	

Others:

SAFETY OFFICER HOD SUPERVISOR

Table 2: checklist

2. Implementation of proper ergonomics and material handling:

Implementing the adequate solution for each assessed effect came up with and checkout for results.

III. RESULT

By performing checklist analysis among CNC and fettling operators all the ergonomical and material handling hazards have been assessed and solutions have been recommended for each and every ergonomical and material handling hazard on different operation basis. Soon all the recommended solutions will be implemented resulting in reduction of ergonomical and material handling hazards.

IV. CONCLUSION

Thus by implementing checklist analysis method, the risk related to ergonomics and material handlings are assessed. The assessed ergonomical and material handling risk will be eliminated or controlled by provided ergonomical solution

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