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HAZARD IDENTIFICATION ASSESSMENT AND CONTROL MEASURES IN IRON AND STEEL INDUSTRY

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Abstract:

A critical part of any safety and health program is the identification, assessment, elimination and/ or the control of hazards in the workplace. In Steel Plant, due to complex nature of the operation, systems, procedures and methods always involves some amount of hazards. It is impossible to eliminate all hazards, so the goal is to eliminate and/or control the hazards with critical and high potential and to reduce the rest of the hazards to the lowest reasonable risk level so as to protect workers from harm. The risk assessment is to identify and analyse hazards, the event sequences leading to hazards and the risk of hazardous events. This project deals in the control of hazards in various units of stainless steel plant using Hazard Identification Risk Assessment and Control measures (HIRAC) technique to identify, analyze hazards and recommend necessary control measures for them.

Keywords: Plant Profile, Safety Management, HIRAC, Hazard Identification, Assessment of Risk and analysis, Control Measures.

1. INTRODUCTION

The last two decades has seen many technological innovations that have contributed to automated, more reliable and cost effective safety management technique, equipment and systems. Responsiveness & competence needs to be created among the Indian Industry about tools & methodologies of safety techniques to understand and mitigate the hazards they are dealing with on a day-to-day basis, and create a safe working environment, for its own machinery, employees and community around. The code of practice on safety management system will be very useful for engineering industries in order to eliminate hazards and for providing safe work environment to employees. The safety and protection of people, equipment and the environment is a serious concern in the Engineering industries. Many industries have recognized the Advantage of Safe Work Environments and are progressively adopting Safety Management System to prevent hazardous events, avoid production & manpower Loss and other fallouts associated with industrial accidents. Safety management System also assists industries to enhance employee knowledge of operations, improve technical procedures, maintain accurate process safety information and increase overall facility productivity. all the persons having access to the work place are considered for preparing HIRAC and risk controls. Legal and other statutory requirements pertaining to Occupational Health and Safety are identified, documented and implemented as part of risk control. Risk involved in each hazard is assessed taking into account the probability of occurrence and the severity of harm Safety Management system is a proactive and systematic approach

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for identification, evaluation, mitigation, prevention and control of hazards that could occur as a result of failures in process, procedures, or equipment. Increasing industrial accidents, loss of life & property, public scrutiny, statutory requirements, aging facilities and intense industrial processes, all contribute to a growing need for Safety Management Program to ensure safety and risk management.

2. LITERATURE SURVEY

The safety and health of the people who work in the stainless steel industry is our top priority. All injuries and work-related illness can and must be prevented to make our industry a safe and reliable place to work. The stainless steel industry is committed to the goal of an injury-free, illness-free and healthy workplace. As part of our efforts to develop a sustainable industry, we aim to set the benchmark in safety and health. Despite the progress achieved in recent years, improvements are needed in our safety performance. As Chairman of ISSF's Health and Environment Committee I am delighted to introduce the fi rst "ISSF Safety Book." It includes case studies that describe the good practices that our member companies have developed at their plants. Safety Management System can be defined as a businesslike approach to safety. It is a systematic, explicit and comprehensive process for managing safety risks. As with all management systems, a safety management system provides for goal setting, planning, and measuring performance. A safety management system is woven into the fabric of an organization. It becomes part of the culture, the way people do their jobs. Particulate and CO emissions from reheating furnaces depend mainly on the fuel type. Next to the choice of fuel measures to minimise these emissions include a careful control of combustion conditions, such as excess oxygen levels, aided by computer control systems. Rolling is classified according to the temperature of work piece rolled. If the temperature of the metalis above its recrystallization temperature, then the process is termed as hot rolling. For hot working processes, large deformation can be successively repeated, as the metal remains soft and ductile.

3. METHODOLOGY

A hazard assessment is an evaluation of a work place, or work situation, as to the potential for hazards that an employee may encounter while performing the job. After you have chosen a place to start, perform a walk-through of the work area, looking for hazards as indicated in this training. The intent of this tool is not to review these complex processes, as they require some amount of training and review to be effective. Instead, the goal here is to provide a basic six-step risk assessment process that can be put into place with a minimum of instruction and understanding. Once a hazard has been identified, the risk associated with the hazard must be examined. Before starting a risk assessment; it is useful to identify factors that may contribute to the risk. A review of regulations, previous injury reports, audits, inspections, and other areas can be used to judge whether the hazard being observed actually can or has caused an injury. Semi-quantitative risk matrix where the likelihoods and severity have been assigned numbered levels that have been multiplied to generate a numeric description of risk ratings. The values that have been assigned to the likelihoods and severity are not related to their actual magnitudes but the numeric values that are derived for risk can be grouped to generate the indicated risk ratings. In

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this example, Extreme risk events have risk ratings greater than 15, High risks are between 10 and 15, and so on. A matrix is used to provide guidance as to whether the risk is acceptable or needs to be addressed.

4. RESULT ANALYSIS

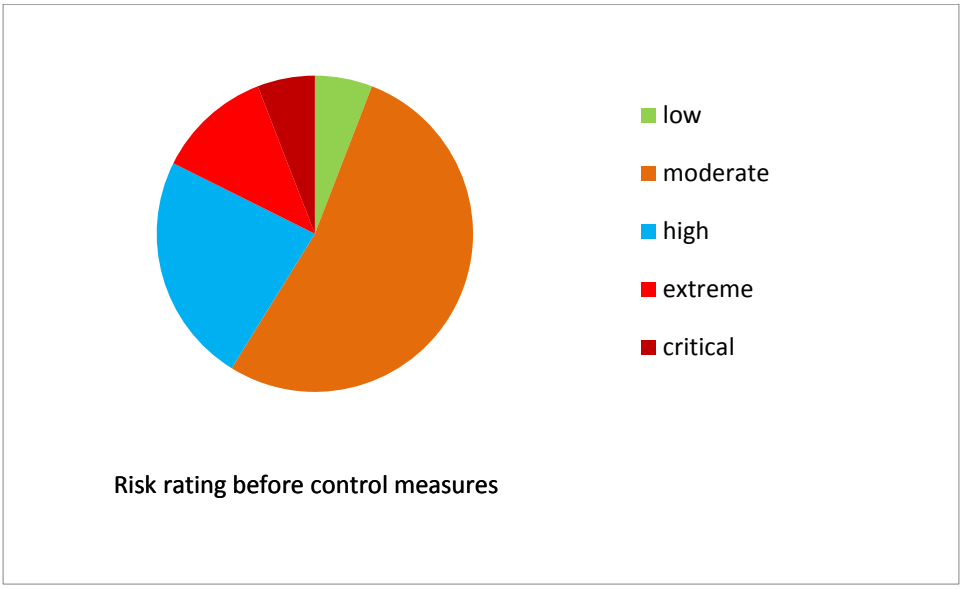

Fig.1. Risk Rating Chart Before Control Measures

Range of hazard	Number of hazards
Low	1
Moderate	9
High	4
Extreme	2
Critical	1
Total	17

Table.1

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The risk analysis for each hazard to be analyzing and control measures mentioned. Totally in plant seventeen hazards were found. In this before control measures low range hazards(1), moderate range hazards(9), high range hazards(4), extreme range hazards(2) and critical range hazards(1). After implementing the control measures the hazards associated risks should be reduced to low range of hazards(13), moderate range hazards(4), and high, extreme, critical range hazard is zero level.

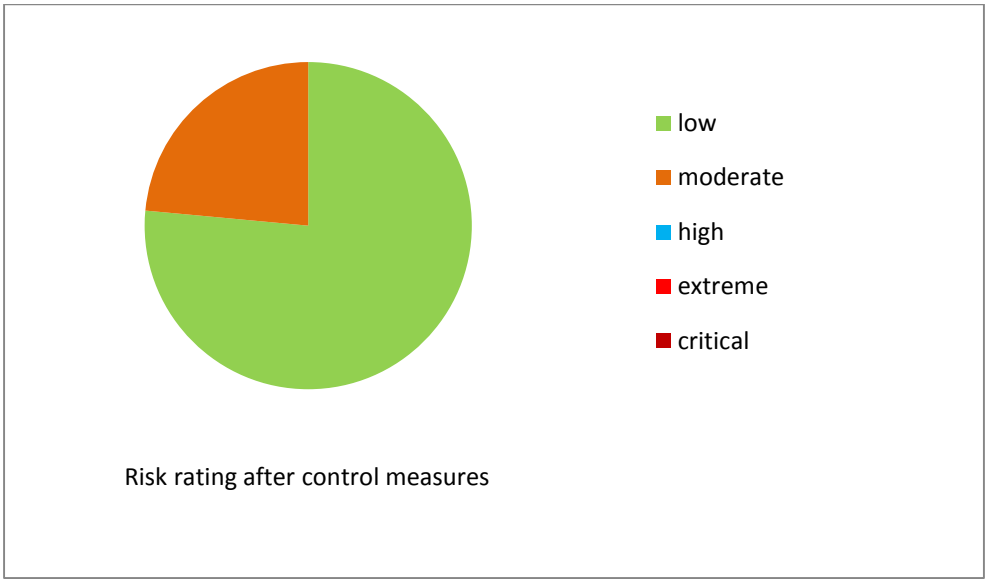

Fig.2. Risk Rating Chart After Control Measures

Range of hazard	Number of hazards
Low	13
Moderate	4
High	0
Extreme	0
Critical	0
Total	17

Table.2.

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CONCLUSION

This Project deals with the Hazards identification risk assessment and control measures in steel plant by using the tool HIRAC. This tool will help to identify the various hazards in plant and assessment of risk to control hazards takes place in a steel plant. Assessment of risk analysis and control measures will be prepare to reduce the worksite accidents takes place in steel plant. Risk analysis and control measures implemented. After that comparison of risk rating before implementing control measures and after implementing control measures mentioned.

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