



Assessing The Occupational Risk Factors And Safety Culture Of An Electronics Manufacturing Industry

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Abstract—This paper aims to integrate the risk factors and Safety Culture in SFO Technologies Pvt Ltd. A project phase is an opportunity for learners to connect what they have learned in class with how it applies in the real world in an operational setting. It is a professional and practical learning experience that gives meaningful, practical work connected to a student's subject of study or career interest. A chance to gain new skills and explore and grow one's profession. It provides the chance to infuse the workplace with fresh ideas and energy, to nurture talent, and even to create a pipeline for future full-time workers.. A huge benefit to taking a safety internship is being able to directly learn about the field of occupational safety. The student intern becomes a part of the worker's safety and health program and can see how it is administered, the types of protective equipment used, safe work practices utilized and many other aspects of the operation.

Keywords— Ergonomics, Job safety analysis, Assessment, ErgoA. checklist

I. INTRODUCTION

SFO Technologies Pvt Ltd, (NEST Group) , the main business of NeST Group, was founded in 1990 and offers complete ODM Plus solutions to a variety of markets, including healthcare, communications, energy & industrial, aerospace & defence, and transportation. SFO is known for combining its own intellectual property (IP), ready-to-use product building blocks, IoT, Analytics & Mobility, Cloud, AI, and expertise in related technologies like GIS, Enterprise solutions, Data Warehousing, Business Intelligence, etc. to provide value addition for our OE customers. SFO has grown from EMS to ODM and is now offering ODM plus Solutions. Our ODM plus Solutions serve as a catalyst for the electronics sector to re-define standards. With a global presence with facilities in Kochi, Trivandrum, Bangalore, Mysore, and Pune in India, SFO is known for fostering relationships with all of its stakeholders, including clients, partners, suppliers, and the general public. The NeST Group of Companies, with our headquarters at Cochin (Kakkanad) Kerala, India

II. PROBLEM IDENTIFICATION

- Safety Perception Surveys Assess Human Factors/Culture
- Employees Feel Free to Express Their Opinions
- Surveys More Accurately Quantify Employee Responses
- Survey Comments can Identify Specific Improvement Opportunities Employee Group
- Fear to send feedback in Safety Culture
- Slip and trip workplace falls
- Uncontrolled fires & Confined spaces

III. OBJECTIVE AND METHODOLOGY

Objective of the Project

- The preliminary goal of the project work is to study on the Electronics Manufacturing system to avoid the risk factors in workplace and to eliminate the hazards like Fire, exposure to electrical sparks also to prevent the property damages.
- The study's precise objectives, which were chosen in accordance with the goal, are as follows:
 - To provide the safe working environment to all employees in workplace.
 - To provide the awareness among employees through proper training.
 - To obtain and achieve the Objectives & targets in Environment Management System and OH&S.
 - To improve the safety culture in workplace through employee's engagement.
 - To meet the Legal and statutory requirements and local laws.

Methodology

The following are examples of scenarios that present a risk of fire and explosion.

- Lighting up of gas fired furnaces without following safety precaution leading to the formation of explosive mixture in the furnaces.
- Undertaking gas cutting and welding works on gas line without following safety procedure.

IV. DATA COLLECTION

Usually, many methods followed for the data collection during an assessment. Survey and Questionnaires, Interviews, Site visit and observations, etc.. Questionnaire is prepared and are given to workers of shop floor and feedbacks are noted by evaluating it.

Questionnaire is prepared with a set of 13 questions based the work nature and effects on body parts such as neck, back, shoulder, head, hand and arm.

Depending up on the questionnaire evaluation, two activities are considered for further ergonomic assessment- Spot welding and Equipment mounting.

JSA is then used to breakdown the activities in each critical activities and then the activities are entered in the ergonomic checklist specially designed for the assessment. It comprised the body part positions during the activity that can affect the health.

Postures, position of neck, arm, wrist and shoulders, back position plays an important role in analysing the risk factors and are used in the checklist, Fig 5. angle at which the body is position is noted and entered in Green, yellow or red zone

SAFETY WHILE WORKING AT HEIGHT

Approximately 20–25 percent of accidents in the iron and EMS sector, according to an examination of past incidents, are brought on by people or items falling from a height. Similar accidents frequently result in fatalities or in the inability of victims to work again due to the seriousness of their injuries. Additionally, a large amount of lost property and equipment damage can be attributed to these mishaps. A sizable portion of India's electronics factories are currently undergoing modernization, which involves challenging operations including excavation, demolition, and the assembling of equipment and structural parts, among other things. For those electronics factory workers who operate at high heights, these duties pose a greater risk. As a result, Safety Officers, Line Managers, and Project Engineers must all give this subject their undivided attention. It has been established that guaranteeing worker safety while operating at height is a high priority issue.

SAFETY ANALYSIS SURVEY METHOD

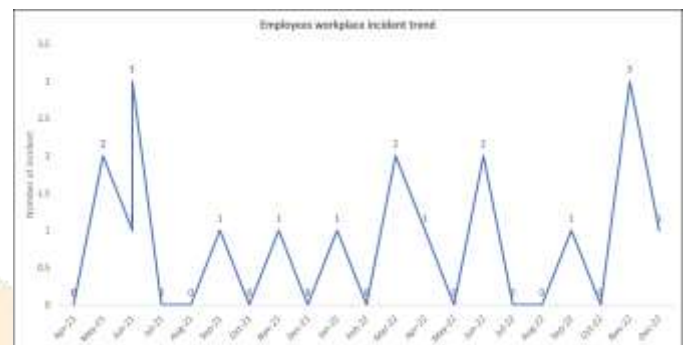
Since safety regulations are frequently not followed, accidents typically result in large financial costs for both personnel and organisations. The goal of this study is to find out how employees in the electronics industry feel about the numerous occupational health and safety regulations that the EMS industry has put in place.

A survey was carried out in which a structured questionnaire was issued to a purposive sample of 200 employees working for a large EMS plant located in Cochin. The survey was done

in order to gather information. Statistical Product and Service Solutions (SPSS) was utilized in order to perform an analysis on the data that were gathered.

It's possible that your company's safety culture isn't as robust as it should be if employees' perspectives on safety in your firm vary widely from one another. The understanding that your management team has of real working conditions as well as employees' views and opinions can be improved through the collection of feedback from employees.

You can obtain information that creates a safer working environment by conducting evaluation surveys to find out how management and employees feel about the safety process. Management can more accurately pinpoint the benefits of the safety programmes and the flaws that need to be rectified in order to improve your safety performance with the help of the information and insight provided by this feedback



V. RESULT & DISCUSSION

After carrying out the assessment, control measures must be planned to reduce/ prevent the ergonomic hazard in the activity.

When the survey has been carried out, the organization must choose how it will make use of the information to enhance the safety procedures and programs that are already in place.

- Employees should be given a general, non-technical explanation of the findings, as well as a summary of any changes that will be implemented as a result of the findings, and they should be given the opportunity to express any concerns or questions about the survey process.
- One of the keys to making effective use of such a perception is to avoid placing an excessive amount of emphasis on the degree of positive perceptions or the gaps between different employee groups. Management should also concentrate on how employees developed their perceptions of concern.
- The process of conducting an employee safety perception survey should be improved if employees are given the opportunity to have their perspectives reflected back to them. In addition, Environmental Health and safety in enterprises play a significant role in India.
- The decrease of Heat radiation to the environment from plants is a crucial criterion that needs to be monitored, and control measures should be performed as carefully as possible. In order to reduce the amount of the energy that was wasted and the amount of heat pollution that was released into the environment.

5. CONCLUSION

Based on the article, it can be concluded that it is indeed important to increase awareness among the employees and employer of the company to emphasize on ergonomic hazards and its effects. When many ergonomic methods are practised, here Ergonomic assessment checklist is designed and used for the assessment with subsequent steps. Also employee involvement is also the key to the working environment. Open communication between management or employer and the workers throughout the ergonomic improvement process allows for a flow of information critical to identify contributing factors and solving problems. Having a team who administrates ergonomics can benefits the company because they can always come out with suggestions that can be easily implemented with minimal cost and mechanical intervention. 5 E's(Education, Encouragement, Engineering, Enforcement and Evaluation) are recommended and must be followed. This study is also essential in recommending suitable engineering control at workplace so as to assist and provide employees a better working surrounding. Through this ergonomics assessment, recommendations were given to ease the employees at work and to avoid any unnecessary potential ergonomics issues. Evaluation can be done again by the same Ergonomic checklist after implementation of control measures and assessing the effectiveness.

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