RISK ASSESSMENT OF TWO WHEELER LINE ASSEMBLY IN TVS

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Abstract
The abstract underscores the proactive imperative of conducting thorough risk assessments and job safety analyses in the complex landscape of two-wheeler manufacturing conveyors. It highlights the importance and emphasizes the necessity of grasping the intricacies of potential hazards deeply embedded in the manufacturing processes. The delicate interplay between machinery and human involvement is acknowledged as a defining factor in this industry, prompting the call for a methodical evaluation. This systematic examination extends beyond the mere identification of potential risks. It encompasses a comprehensive understanding of tasks performed, the machinery utilised, and the various environmental factors at play. The deliberate scrutiny of these elements forms the foundation for a detailed exploration of risk mitigation strategies. From preventive measures to emergency protocols, the aim is to create a holistic approach that fosters a secure working environment. The ultimate goal is to cultivate a resilient and secure atmosphere within the dynamic realm of two-wheeler manufacturing conveyors. This expansion articulates the necessity for a nuanced and strategic approach to safety, recognizing that safeguarding the workforce and optimizing production processes are integral components of sustained success in this industry.

1. INTRODUCTION

In the context of two-wheeler manufacturing conveyors, prioritizing a comprehensive risk assessment and job safety analysis is critical for safeguarding both the workforce and the production processes. By adopting a proactive stance, organizations gain a profound understanding of potential hazards inherent in the manufacturing procedures. This insight becomes the cornerstone for the implementation of effective safety measures, addressing risks at their roots. Given the intricate interplay between machinery and human involvement in this industry, a meticulous evaluation becomes imperative. This involves a granular examination of tasks performed, the machinery employed, and the environmental factors at play. Identifying potential points of vulnerability allows for the development of targeted strategies to mitigate risks. The collaborative efforts of technology and human expertise define the dynamic landscape of two-wheeler manufacturing conveyors. Thus, establishing a secure working environment necessitates a strategic blend of preventive measures, emergency protocols, and ongoing training initiatives. This introduction lays the foundation for systematically exploring these risk mitigation strategies, offering a roadmap for enhancing safety and resilience in the everevolving domain of two-wheeler production.

1.1 PROJECT OBJECTIVE:

The objective for risk assessment in a two-wheeler assembly could be to systematically identify, evaluate, and manage potential risks associated with the assembly process, ensuring the safety of workers, preventing production disruptions, and maintaining product quality standards

2. METHODOLOGY

The project scope involves analyzing hazards in two-wheeler assembly. The methodology includes:

The scope of the two-wheeler vehicle assembly risk assessment project involves a comprehensive analysis of potential hazards in the assembly process. The proposed methodology includes:

1. Initial Assessment: Identify key components and tasks in the two-wheeler assembly process that may pose risks.

2. Workplace Observation: Conduct on-site observations to observe work conditions, equipment usage, and employee practices.

3. Ergonomic Analysis: Apply ergonomic principles to evaluate workstations, equipment design, and employee postures during the assembly process.

5. Safety Compliance Check: Ensure adherence to safety standards, regulations, and protocols within the two-wheeler assembly environment.

6. Worker Feedback: Gather input from assembly line workers regarding their experiences, concerns, and suggestions for improving safety.

7. Documentation Review: Examine relevant documents such as safety procedures, incident reports, and assembly guidelines.

LITERATURE REVIEW: Ergonomic risk assessment with DesignCheck to evaluate assembly work in different phases of the vehicle development process
Author: Gabriele Winter, Karlheinz G Schaub

Occupational hazards exist, if the design of the work situation is not in accordance with ergonomic design principles. At assembly lines ergonomics is applied to the design of work equipment and tasks and to work organisation. The ignoring of ergonomic principles in planning and design of assembly work leads to unfavourable working posture, action force and material handling. Disorders of the musculoskeletal system are of a common occurrence throughout Europe. Musculoskeletal disorders are a challenge against the background of disabled workers.

This paper focuses on to prevent occupational hazards by applying ergonomic design principles in two-wheeler assembly. Addressing issues like unfavorable posture and material handling, the focus is on reducing musculoskeletal disorders, enhancing worker capabilities, and utilizing tools like "Design Check" to identify ergonomic deficits in workplace layout.

2, Analysis and improvement of work postures in an automobile industry
Author: P Ashok, G Madhan Mohan, N Aravindh

The objective of this study is to analyze the working posture of workers engaged in vehicle assembly by applying different postural analysis tools and to identify the various risk factors associate with WMSD. The initial work was carried out by interviews and observations to identify the job tasks that contribute significantly to WMSD. It is observed that the employees working at the vehicle assembly section face major health related issues (WMSD).

This paper focus on The study aims to analyze the working posture in vehicle assembly, identify risk factors for Work-Related Musculoskeletal Disorders (WMSD), and address health issues faced by employees. Using tools like Jack software and RULA analysis, it was found that rear wheel and mirror assembly tasks had improper postures (score > 5). To mitigate WMSD, conveyor height was adjusted to 850 mm following NIOSH standards. Recommendations were provided for improving working posture.

3,Assessment of physical fitness and postural discomfort among assembly workers

Author: Pragya Ojha, Deepa Vinay

Work related musculoskeletal disorder (WMSD) is the common health problems for the industrial workers. The objective of this study is to analyze the working posture of workers engaged in vehicle assembly by applying different postural analysis tools and to identify the various risk factors associate with WMSD. The initial work was carried out by interviews and observations to identify the job tasks that contribute significantly to WMSD. It is observed that the employees working at the vehicle assembly section face major health related issues (WMSD). Discomfort experienced by operators during process has been studieD

This paper focuses on This study addresses work-related musculoskeletal disorders (WMSD) in

vehicle assembly workers. Using tools like Jack software and RULA analysis, improper working postures in rear wheel and mirror assembly tasks were identified (score > 5). To mitigate WMSD, conveyor height was adjusted to 850 mm per NIOSH standards. Recommendations for risk reduction and improving

4,Risks assessment at automotive manufacturing company

Author: Hamizatun Binti Mohd Fazi1, Nik Mohd Zuki B Nik Mohamed1 and Azizul Qayyum Bin Basri1

Manufacturing sectors are the major industrial sector which contribute to the development of the country. The automotive manufacturing industry is a global industry which has high competition all over the world and contribute in large amount of revenue to the country. From the review, the management of automotive industries faced a few problems relates to the assembly line and the workers. The workers are exposed to hazard which resulting from unsuitable tasks or inappropriate workplace. The purpose of the study is to identify the occupational risks at automotive manufacturing company and recommend the ergonomic working condition at the workplace

This paper says about The automotive manufacturing industry, crucial for a country's development, faces challenges with assembly line issues and worker safety. This study, utilizing methods like interviews and RULA, identifies high occupational risks. Urgent changes are needed to address these risks and prevent Work-Related Musculoskeletal Disorders (WMSDs), caused by factors like repetitive tasks and awkward postures. Implementing ergonomic measures is crucial to avoid absenteeism, turnover, and production drops.

5,QUALITATIVE RISK ASSESSMENT IN AUTOMOBILE INDUSTRIES

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A risk assessment is involves identifying the hazards present in any working environment or arising out of commercial & work activities, and evaluating the extent of the risks involved, taking into account existing precautions & their effectiveness. Hazards Identification and Risk Management is a structured technique in which a multi-discipline team performs a systematic study of a process to minimize risk level. An unsafe condition action or situation. Risk is the probability of frequency of hazards during a certain period (e.g. 2 explosions per year, 20 fires per year, 5 accidents per month, 200 fatalities per year, 1 disaster per 10 years etc.) Therefore if hazard is identified and removed first, risk is automatically reduced. r

This paper focus on Risk assessment involves identifying and evaluating hazards in the workplace, utilizing a structured technique to minimize risks. In automobile industries, the melting of alloys is a hazardous process. Experts collaborate through group discussions, utilizing documents like MSDS and P&ID. The benefits include accident prevention, legal compliance, reduced claims, lower insurance premiums, and fostering a positive health and safety culture, ultimately enhancing quality standards, efficiency, and productivity.

6,Risk management in automotive manufacturing process based on FMEA and grey relational analysis: A case study

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7,Case Study of Engineering Risk in Automotive Industry

Author popa

The primary objective of this paper is to show where the engineering of risk management is placed and how its implementation has been tried in multinational companies in automotive industry from Romania. A large number of companies don't use a strategy to avoid the engineering risk in their design products. The main reason is not because these companies haven't heard about standards for

risk management such as ISO 31000; the problem is that the business units which were summed up, have just set up a risk list at the beginning of the project, without any follow up.

This paper says about This paper focuses on the implementation of engineering risk management in multinational automotive companies in Romania. Many firms neglect risk management strategies in product design, not due to a lack of awareness of standards like ISO 31000, but because they often create a risk list at the project's outset without proper follow-up.

Control measure:
Hose getting disconnected due to pulling from one stage to another so whiplash arrestor must be implemented.
* Pneumatic gun hits on another person and many injuries are taking places in vehicle assembly control measures such as
* Leather with soft foam placed inside the cover are implemented in the pneumatic gun.
By implementing this the depth of injuries can be reduced.
* Training must be giving for every work men on how to use pneumatic gun how to prevent injuries and should explain about injuries happen before weekly twice in sun rise meeting
* Ensure that distance 2.2m must be maintained between each persons.
* By placing pneumatic gun downwards and providing a stand can prevent from injuries.
* Helmet must be provide in the critical areas where injuries happens regularly and in the place where pneumatic gun hanging near the head
* Two Mechanical balanced can be placed in between the pneumatic gun in the rail so that the gun are not possible to be taken to next stages
* Pneumatic gun can be placed in the hip area so that possibility of hitting on head can be reduced.
* While lifting half vehicle and placing it in the other side of the conveyor by repeatedly doing this the workmen gets body pain by continuously doing this process. Job rotation can be provide he is doing continuously 8 hours a day.by job rotation 8 hours can be reduced to 4 hours. In petrol dispenser area only fire can be extinguished manually by implementing automation by using alarm and sensors fire can be automatically extinguished like in paint shop.
After vehicle comes from the conveyor vehicle are tested while testing smokes are emitted employees feels discomfort while inhaling it. Continuously inhaling it may causes lung disorder in future so a ventilation in the floor must be provided. And in mezzaline area continuously dust are getting accumulated in the floor employee feels discomfort in inhaling it.dust must be regularly cleaned and flooring are altered.
In vehicle testing areas test riders are found to be overspeeding above the speed limit due to overspeeding chances for falling down.speed sensor can be placed if they do overspeeding by identifying it through the speed sensor and warnings can be given if they do again and again means can cancel the test rider license. Riding jackets knee pads full riding safety kit can be provided for the test riders for safety pupose.

1. REFERENCE

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QUALITATIVE RISK ASSESSMENT INAUTOMOBILE INDUSTRIES

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Risks assessment at automotive manufacturing company

4. Author: Gabriele Winter, Karlheinz G Schaub

Ergonomic risk assessment with DesignCheck to evaluate assembly work in different phasesof the vehicle development process

5. Author popa Case Study of Engineering Risk in Automotive Industry