



LABOR SAFETY DOCUMENTS

FOR THE PRODUCTION OF TWO-WHEELED MOTORBIKES



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PART I: CURRENT SITUATION OF SAFETY IN THE TWO-WHEEL MOTORBIKE MANUFACTURING INDUSTRY

I. General Situation

The Ministry of Labor, Invalids, and Social Affairs has informed industries and localities about labor accidents in the first six months of 2023 and provided some key solutions to proactively prevent accidents in the last six months of 2023. According to reports from all 63 provinces and cities directly under the central government, in the first six months of 2023, there were 3,201 labor accidents nationwide (a decrease of 707 cases, corresponding to 18.09% compared to the first six months of 2022), causing 3,262 injuries (a decrease of 739 people, corresponding to 18.47% compared to the first six months of 2022), including both the areas with labor relations and the areas where workers do not work under labor contracts. Specifically:

- Fatal labor accidents: 345 cases, down 21 cases, corresponding to 5.74% compared to the first six months of 2022 (including 273 cases in areas with labor relations, down 19 cases, corresponding to 6.5% compared to the first six months of 2022, and 72 cases in areas where workers do not work under labor contracts, down 2 cases, corresponding to 2.70% compared to the first six months of 2022).
- Number of deaths due to labor accidents: 353 people, down 27 people, corresponding to 7.11% compared to the first six months of 2022 (including 281 people in areas with labor relations, down 18 people, corresponding to 6.02% compared to the first six months of 2022, and 72 people in areas where workers do not work under labor contracts, down 9 people, corresponding to 11.11% compared to the first six months of 2022).
- Number of serious injuries: 784 people, down 23 people, corresponding to 2.85% compared to the first six months of 2022 (including 715 people in areas with labor relations, up 26 people, corresponding to 3.77% compared to the first six months of 2022, and 69 people in areas where workers do not work under labor contracts, down 49 people, corresponding to 41.53% compared to the first six months of 2022).

II. Some Labor Accidents in the Two-Wheel Motorbike Manufacturing Industry

Labor accidents are a prominent challenge, not only affecting the health and safety of workers but also negatively impacting production performance and quality. We will delve into some notable accidents in this industry to understand the causes and consequences, as well as the measures that can be taken to reduce risks and protect workers.

1. Accidents at the Assembly Line One common accident scenario is at the assembly line. These accidents often occur due to the lack of proper safety systems, improper use of mobile equipment, or unsafe working environments. We will review some specific cases to analyze the exact causes and learn from them.



2. Accidents Related to the Painting Process The painting process is an important step in motorbike manufacturing but also a place with many accident risks. Chemical materials, unsafe painting machinery, and waste management can lead to serious consequences. We will explore accidents in this process and examine proposed measures to optimize safety.



3. **Accidents with Production Support Robots** The increasing automation in the manufacturing industry poses new challenges for labor safety related to human-robot interactions. We will review some cases of accidents involving production support robots and look at how to integrate safety in this working process.



By analyzing these detailed cases, we hope to propose effective solutions to improve labor safety in the two-wheel motorbike manufacturing industry.

PART II: LABOR SAFETY AND HYGIENE IN THE TWO-WHEEL MOTORBIKE MANUFACTURING INDUSTRY

I. Labor Safety and Hygiene for Two-Wheel Motorbike Designers

1. **Job Characteristics of Two-Wheel Motorbike Designers** In the field of two-wheel motorbike design, designers play a crucial role in shaping the unique features of each model. This job requires creativity, in-depth knowledge of mechanics and engineering, and teamwork skills to ensure that the motorbike meets safety and performance standards.



Designers must focus on optimizing the weight of the motorbike to ensure maximum energy efficiency. Additionally, flexibility and ease of control are important factors to consider. Compatibility with modern technology, including infotainment and safety systems, also plays a significant role in the design process.

Moreover, designers must ensure that aesthetic and stylistic elements are harmoniously integrated, creating an attractive product with a strong market brand. The combination of functionality and beautiful design is key to attracting customers' attention and positioning the motorbike in a diverse and competitive market.

2. Types of Accidents in the Design Process During the design process, facing risks and accidents is inevitable. Common issues include the lack of synchronization between parts causing instability during movement. Accidents can arise from a lack of structural integrity, leading to reduced safety of the motorbike.

Additionally, inefficiencies in the braking system pose a potential hazard, potentially leading to accidents due to the inability to control speed. Designing an effective and reliable braking system is crucial for ensuring the safety of both the rider and the passenger.

Another aspect is issues related to consumer acceptance. Accidents may occur when failing to meet market needs and expectations, resulting in decreased sales and brand reputation.

3. Causes of Accidents in the Design Process There are various causes of accidents during the design process. A common issue is a lack of deep understanding of engines and mechanics, leading to instability in design. If the weight is not optimized and distributed correctly, the motorbike can become difficult to control and prone to accidents.

Incompatibility between systems, such as the braking and steering systems, is another significant cause. When these components do not work together effectively, uncontrollable situations can arise, leading to accident risks.

Another cause is the lack of attention to the rider's experience. If the motorbike is not designed to meet the needs and preferences of the rider, control issues due to discomfort or difficulty in handling may occur.

4. Measures to Prevent Accidents in the Design Process To minimize accident risks in the design process, it is crucial to enhance compatibility between systems. This includes ensuring that the braking, steering, and engine systems operate harmoniously to provide a safe and comfortable riding experience.

Another preventive measure is to conduct thorough testing and simulations during the design process. This allows for evaluating the motorbike's performance under various conditions and identifying potential issues before the product launches to the market.

Focusing on rider and passenger safety is also important. Integrating safety features such as ABS braking systems, anti-lock systems, and shock-resistant structures can significantly reduce accident risks.

5. Labor Safety Regulations in the Design Process During the design process, adhering to labor safety regulations is crucial to protecting the health and lives of those involved. Design teams must ensure that the working environment meets all safety standards, from infrastructure to equipment.

Training employees on labor risks and safety measures is an essential part of regulations. This ensures that everyone working in the process is aware of and understands the dangerous factors in the design process and how to prevent them.

Additionally, using personal protective equipment is necessary to minimize injury risks. Specific regulations on wearing helmets, thermal clothing, and ear protection are basic but important measures.

6. Emergency Accident Handling in the Design Process During the design process, attention should be given to emergency accident handling. Integrating safety features such as ABS braking systems and collision sensors can help alert the rider and activate safety systems immediately when an accident risk is detected.

Steering and suspension systems can be designed to reduce impact in collisions, helping to keep the rider and passenger safe in emergencies. Additionally, the ability to automatically activate protective functions, such as automatic engine locking, to prevent injury is an important part of the design process.

II. labor safety and hygiene for frame manufacturing employees

1. **Job Characteristics of Frame Manufacturing Employees** Manufacturing motorbike frames requires professionalism and extensive knowledge in mechanics and manufacturing engineering. This process begins with detailed technical design, evaluating torque, and other factors affecting riding performance. Frame engineers must optimize the frame's weight and stiffness to ensure stability and safety during operation.



Frame manufacturing often uses welding, shaping, and precise cutting techniques to create strong joints. Precision in manufacturing is key, especially when handling high-stress areas such as engine mounts and suspension systems. A rigorous quality inspection process is typically applied to ensure that every detail of the frame meets safety and performance standards.

2. **Types of Accidents in Frame Manufacturing** In the frame manufacturing process, there are many risks that can lead to accidents. One major challenge is related to welding processes. Improper welding can cause cracks or uneven structures, resulting in loss of strength and safety.

Manufacturing errors can also create weak points in the frame. Inaccurate cutting or inconsistent uniformity can affect the mechanical properties of the frame, increasing the risk of collapse during operation.

Additionally, improper installation of components, such as the suspension system or drivetrain, can lead to accidents. This is particularly important to ensure the vehicle's safety and stability during operation.

3. **Causes of Accidents in Frame Manufacturing** Accidents in frame manufacturing can stem from several main causes. One significant cause is the lack of quality control in the

production process. Inadequate or improper inspections can result in defects in the frame, compromising the motorbike's strength and safety.

Another cause is insufficient knowledge of the mechanical properties of materials and their impact on the frame's structure. Choosing inappropriate materials or using them incorrectly can introduce risk factors during use.

A critical aspect is human error, from not ensuring labor safety during the manufacturing process to not following proper technical instructions and procedures. Neglecting details during installation and inspection can create dangerous situations when the motorbike is in operation.

4. **Measures to Prevent Accidents in Frame Manufacturing** To prevent accidents in the frame manufacturing process, establishing a quality control system is vital. This includes regular and detailed inspections from welding to machining different parts. Strict quality control helps to detect and correct any defects in the frame promptly.

Additionally, training skills for employees involved in the manufacturing process is an important measure. A solid understanding of the mechanical properties of materials, welding processes, and other factors can minimize risks caused by human error.

At a higher level, applying advanced technologies, such as automated machinery in the manufacturing process, can reduce the risk of human error. Automation not only increases efficiency but also minimizes errors and risks during production.

5. **Labor Safety Regulations in Frame Manufacturing** Labor safety regulations in the frame manufacturing process play a crucial role in protecting the health and lives of employees. Factories regularly inspect and review working procedures to ensure full compliance with safety standards.

Firstly, providing personal protective equipment is an essential step. Employees involved in frame manufacturing should be fully equipped with protective gear, including helmets, safety glasses, gloves, and heat-resistant clothing when working near high-temperature equipment.

Regulations on machine usage are also established to reduce the risk of accidents. Clear instructions and training are important to ensure employees know how to use machinery safely and effectively.

Working procedures must also adhere to standards for safe distances and fire prevention. Additionally, periodic inspection and maintenance of machinery are strictly regulated to ensure stability and safety during manufacturing.

6. **Emergency Accident Handling in Frame Manufacturing** Handling emergency situations in the frame manufacturing process requires agility and preparedness. In case of an accident, immediate cessation of work and protection of employees' health is the top priority.

Employees are trained to recognize and handle risks as soon as they arise. A solid understanding of the factory's safety system also helps them make immediate decisions to prevent risk spread and minimize damage.

Moreover, stimulating team spirit in emergency handling is important. Cooperation among team members enhances the ability to respond and resolve issues quickly, especially when rapid movement is required to ensure safety.

In all emergency situations, immediate notification to management and stimulating the evaluation and learning process from the incident is crucial to prevent similar situations in the future.

III. labor safety and hygiene for employees assembling engines into motorbike frames

1. Job Characteristics of Assembling Engines into Motorbike Frames Assembling engines into motorbike frames is a complex process that requires precision and high technical skills. Key steps in this work include positioning and securing the frame, assembling the drivetrain system, and connecting the basic components of the engine.

First, technicians need to accurately position the frame to ensure stability and safety for the vehicle. This process requires a solid understanding of the dimensions and shapes of both the frame and the engine to avoid imbalance.



Next, assembling the drivetrain system requires maximum precision. Technicians must correctly connect parts such as gears, chains, and the drivetrain to ensure optimal performance and high durability.

Most importantly, connecting the basic components of the engine requires precision and extensive mechanical knowledge. This not only includes correctly installing parts like the piston and cylinder but also involves adjusting technical parameters to achieve optimal performance.

2. Types of Accidents in Assembling Engines into Motorbike Frames During the assembly of engines into motorbike frames, there are risks and accidents that need attention to ensure the safety of both workers and products. Common issues include not ensuring the correct position of the frame, leading to instability and risk of falling.

Accidents can arise when installing the drivetrain system without controlling the force exerted and the impact of components. This can result in misalignment or even damage to critical parts.

Additionally, assembling the basic components of the engine poses challenges, especially when ensuring precision in their connection. Issues like misalignment and incorrect dimensions can lead to poor performance and the risk of malfunction.

3. Causes of Accidents in Assembling Engines into Motorbike Frames There are various causes of accidents during the assembly of engines into motorbike frames. A major cause is the lack of technician training, leading to limited understanding of the assembly process and techniques. This shortcoming can result in incorrect positioning and inaccurate connection of components.

Another cause is the lack of quality control during production. Without rigorous inspection processes, small errors like misalignment and incorrect dimensions can be detected late and lead to accidents. Limited understanding of mechanics and materials also plays a crucial role in creating safe products.

Lack of understanding of material properties can also cause accidents. Using materials that do not meet quality or mechanical requirements can lead to reduced strength and safety of the final product.

4. Measures to Prevent Accidents in Assembling Engines into Motorbike Frames To ensure safety during the assembly of engines into motorbike frames, applying preventive measures and safety training is extremely important. First, establishing a rigorous safety training program focusing on specific risks in the assembly process is necessary.

This includes training technicians on safety procedures, proper use of tools, and personal protective equipment. Training should also focus on identifying and mitigating risks related to frame positioning, drivetrain installation, and basic engine component connection.

Additionally, establishing quality control processes to ensure that each assembly step adheres to safety standards is crucial. This includes accurately inspecting the frame position, drivetrain stability, and correct connection of basic components.

5. Labor Safety Regulations in Assembling Engines into Motorbike Frames Labor safety regulations in the assembly of engines into motorbike frames play a crucial role in protecting the health and lives of employees. First, everyone involved in this work must be trained in labor safety, including the proper use of personal protective equipment such as helmets, gloves, and safety glasses.

Regulations also set specific guidelines for ensuring the stability of the working environment, especially when moving and positioning the frame. This includes arranging the workspace to avoid collisions and ensuring adequate lighting and ventilation.

Additionally, regulations must mention quality control during the assembly process to ensure that every step adheres to safety standards. This involves using accurate tools and equipment and conducting regular inspections to detect and mitigate risks.

6. Emergency Accident Handling in Assembling Engines into Motorbike Frames In the event of an emergency during the assembly of engines into motorbike frames, the response procedure plays a crucial role in protecting health and safety. When an accident occurs, ensuring personal safety is the top priority. Technicians should immediately stop work and move to a safe area.

Next, promptly reporting the incident is important to stimulate immediate action. Contacting the safety team or management for support from experienced individuals is crucial. While waiting, technicians should apply their safety training knowledge to assess the situation and make safe decisions.

If necessary, use emergency medical equipment and first aid tools. First aid training can help minimize injury and increase recovery chances. Most importantly, this procedure needs to be regularly mentioned and practiced to create an effective and safe emergency response in every situation.

IV. labor safety and hygiene for quality inspection employees of finished motorbikes

1. Job Characteristics of Quality Inspection Employees In the production process of two-wheel motorbikes, quality inspection plays a crucial role in ensuring that each product meets the highest standards before reaching consumers. This quality inspection work includes many important aspects to ensure the safety, performance, and durability of the motorbike.

One important aspect of the quality inspection process is frame inspection. Professional technicians regularly inspect the frame structure to ensure its sturdiness and correct dimensions.

Additionally, they inspect other technical details such as the braking system, suspension system, and engine to ensure they work properly.



Quality inspection also involves the aesthetic aspect of the motorbike. The paint and finishing details must meet high quality standards, not only providing an attractive appearance but also protecting the motorbike's surface from weather and environmental impacts.

Another important aspect is inspecting the electrical and control systems. Components like lights, sensors, and dashboards must work correctly to ensure the rider's safety when using the motorbike.

2. Types of Accidents in Quality Inspection of Finished Motorbikes During the quality inspection of motorbikes, despite the process being designed to ensure safety and high quality, some accident risks are inevitable. Common types of accidents can occur during this process.

Human accidents are one of the types that can occur when employees participate in the inspection process. This can result from a lack of personal safety performance or insufficient attention to the working environment.

Material accidents can arise when quality inspection steps are not carried out correctly. For example, if the braking system is not thoroughly inspected, the motorbike may move uncontrollably, leading to collisions or falling off the production line.

Equipment inspection-related accidents can also happen, such as technical faults in measuring devices or electronic inspection equipment. These incidents can mislead about the motorbike's quality and safety if not detected and addressed promptly.

3. Causes of Accidents in Quality Inspection of Finished Motorbikes There are various causes that can lead to accidents during the quality inspection of motorbikes, posing significant challenges to the production process and workplace safety.

One main cause is insufficient knowledge or inadequate training from the employees conducting the inspection. If they do not fully understand the procedures and safety regulations, it can lead to incorrect execution and increased accident risks.

Malfunctioning inspection equipment and machinery are also potential causes. If measuring devices or control equipment experience technical faults, they can provide inaccurate data or lead to misunderstandings during the motorbike quality evaluation process.

Lack of regular maintenance and technical inspections of equipment is another important factor. If machinery is not properly maintained, it can malfunction or break down during use, increasing the risk of accidents.

Production pressure and limited time are also significant factors. If manufacturers impose tight deadlines or high pressure to complete the inspection process, employees may rush and be less careful, leading to errors and accidents.

4. Measures to Prevent Accidents in Quality Inspection of Finished Motorbikes To reduce the risk of accidents during the quality inspection of motorbikes, establishing preventive measures is crucial to ensure safety and high performance.

A key measure is ensuring employees are fully trained in labor safety and inspection procedures. Understanding potential risks and safety measures helps them perform their tasks thoughtfully and accurately.

Regular maintenance and technical inspections of equipment are another important measure. Ensuring that machinery and inspection equipment work correctly reduces the risk of malfunctions and enhances the accuracy of the inspection process.

Managing production time and pressure effectively to avoid rushing and carelessness from employees is also important. Creating a positive working environment and reducing pressure can positively impact the quality inspection results.

Using personal protective equipment and other safety measures is essential. Ensuring that employees have enough protective equipment to safeguard their safety in the workplace is a critical measure to prevent unwanted accidents.

5. Labor Safety Regulations in Quality Inspection of Finished Motorbikes To ensure a safe and high-quality working environment during the quality inspection of motorbikes, applying labor safety regulations is extremely important.

Employees conducting the inspection must be equipped with full knowledge of safety rules, including the use of personal protective equipment and adhering to specific safety measures for each inspection stage. This helps reduce the risk of labor accidents.

Specific regulations on the use and maintenance of inspection equipment are crucial to ensure they always function correctly. Additionally, identifying safe working areas and limiting access to untrained personnel are important parts of the regulations.

During the inspection process, adhering to working time and rest periods is also regulated to avoid fatigue and reduce the likelihood of errors. Implementing measures to reduce work pressure is also a key part of maintaining alertness and accuracy in the work.

6. Emergency Accident Handling in Quality Inspection of Finished Motorbikes In the quality inspection process of motorbikes, the ability to handle emergency accidents is crucial to ensure safety and prevent negative outcomes. When an accident occurs, employees conducting the inspection must be familiar with the handling steps.

First, ensuring personal safety is the top priority. Employees must immediately activate personal protection systems and move out of the danger zone to avoid injury.

Next, promptly reporting the accident to colleagues and management is important to prepare and support the emergency handling process. Accurate and quick information helps everyone prepare and support effectively.

Calling for emergency medical assistance is another crucial step. Providing immediate first aid can minimize the accident's consequences and protect the victim's health.

Additionally, preserving the accident scene is important to retain evidence and support the subsequent investigation. This information helps identify the accident's cause and propose preventive measures in the future.

V. labor safety and hygiene for employees packaging and transporting motorbikes to dealers

1. Job Characteristics of Packaging and Transporting Motorbikes to Dealers The packaging process is carried out carefully to ensure that the motorbike is not damaged or scratched during transportation. Packaging experts focus on using shockproof and waterproof materials to protect the motorbike from external environmental impacts.



Transporting motorbikes requires precision in planning and organizing the most efficient route. Professional transport units often use specialized vehicles that can accommodate multiple motorbikes and ensure absolute safety.

Combining a strict packaging process and an efficient transport system, this work ensures that the motorbike arrives at the dealer in perfect condition, creating trust and satisfaction from customers.

2. Types of Accidents in Packaging and Transporting Motorbikes to Dealers Collisions can occur during loading and unloading and transportation when transport units do not follow the correct procedures or use unsafe vehicles. These collisions can cause damage and scratches, affecting the motorbike's appearance and value.

Falling from heights is another risk, especially during lifting and lowering the motorbike onto transport vehicles. Failure to use safe lifting equipment or incorrect procedures can lead to this situation, affecting the motorbike's integrity.

Environmental impacts, such as severe weather, can also increase accident risks. Protective measures like waterproof and shockproof wrapping need to be applied strictly to ensure the motorbike is not damaged.

3. Causes of Accidents in Packaging and Transporting Motorbikes to Dealers Accidents in the packaging and transportation process can stem from various factors. One crucial cause is the lack of understanding and adherence to procedures.

Insufficient knowledge of correct packaging methods and the use of safe transport vehicles can lead to dangerous mistakes. Employees not adequately trained on how to protect the motorbike from external impacts can increase accident risks.

Inefficiencies in management and organization are also significant factors. Poor transport planning, improper order placement, and loose management of personnel can lead to incidents during transportation.

Environmental factors also play a crucial role. Harsh weather conditions, especially in marine environments, can create challenging conditions and increase the risk of motorbike damage.

4. Measures to Prevent Accidents in Packaging and Transporting Motorbikes to Dealers To minimize accident risks in packaging and transporting motorbikes to dealers, preventive measures play a crucial role. Firstly, training employees on safe packaging techniques and proper use of transport vehicles is an important step.

Applying strict procedures in loading, unloading, and transporting motorbikes is another important measure. This includes using safe lifting equipment, ensuring the motorbike is securely fixed and does not move during transportation.

Protecting the motorbike from environmental factors is another preventive measure. Using waterproof and shockproof packaging materials will help keep the motorbike safe under all weather conditions.

5. Labor Safety Regulations in Packaging and Transporting Motorbikes to Dealers Employees involved in packaging and transporting need to be trained in safety techniques and the use of personal protective equipment. This helps minimize the risk of injuries and labor accidents.

Regulations also focus on using professional transport vehicles with full safety features. This includes regular inspection and maintenance to ensure they are always in optimal working condition.

Moreover, preventive measures such as safe loading and unloading procedures and humidity control are regulated in detail to ensure the transport process is safe and efficient.

6. Emergency Accident Handling in Packaging and Transporting Motorbikes to Dealers In the motorbike packaging and transport industry, preparing for emergency accidents is crucial. Specific measures and action plans are developed to address unforeseen situations.

Employees are trained in safety measures and emergency accident handling techniques. This includes using rescue equipment and contacting emergency teams when necessary. Specific emergency scenarios are simulated and practiced to ensure employees respond quickly and accurately.

The action plan also focuses on product protection. Using shockproof and waterproof packaging materials helps minimize damage to the motorbike in case of an accident.

