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Hot Work Permit at PT Arsitek Arupadatu Karawang

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Abstract

Hot work is a type of work with a high hazard because it has the potential to cause a fire and even an explosion. These events not only cause damage to assets but can also obliterate them. This research aims to find out the program, procedure, and implementation of hot work permit at PT Arsitek Arupadatu. The research method used is descriptive, which tries to describe the conditions currently occurring at PT Arsitek Arupadatu regarding hot work permits. This research was carried out on July 9 - August 9 2021 in the phase 3 development project (Expansion Factory) of PT Akashi Wahana Indonesia Karawang. Collecting data in this study using field observation methods, interviews and study of literature. Data were analyzed with qualitative methods. The data that has been collected is processed by comparing it with the Government Regulation number. 50 of 2012 (concerning the implementation of the Occupational Safety and Health Management System) and the 2019 edition of NFPA 51 B Standard (concerning Standards for fire prevention during welding, cutting and other hot work). The results of this study show that the program implemented at PT Arsitek Arupadatu regarding hot work permits is administrative checking. PT Arsitek Arupadatu has not documented procedures related to hot work. The hot work permit procedure is carried out based on routines that occur in the field, communication is only carried out using the oral method. The hot work permit at PT Arsitek Arupadatu has implemented PP No. 50 of 2012 concerning the application of Occupational Safety and Health Management System attachment II part 6.

Keywords: Accident, Control, Inspection, Supervision, Work.

1. Introduction

The use of machines, work tools, materials and production processes in the industrial sector has become a source of danger that can cause work accident (Lestari et al., 2018). Therefore, in the industrial world, there are several types of work permits in the workplace, known as permits to work. The permits to work include hot work permits, cold work permits, confined space entry permits, excavation work permits, electrical work permits, radiographic work permits, and work permits. above the height (Himaningrum, 2011). The scope of this journal will discuss permits to work in the construction service industry.

Hot work work is work involving or using source heat coming from from fire open that produces a flame or gives rise to splash flower fire on materials. Hot work on the project construction including welding, cutting, brazing, soldering and grinding. Potencial hazard on the hot work among the worker activites is scorch from minor, medium to major injury. Besides potentially raises wound burn on workers, hot work can potentially raise loss form fire even to the point of causing explosion. The International Labor Organization (ILO) reports that at least 60,000 fatal accidents have occurred in the industrial sector construction every day (International Labour Organization, 2013). Based on data from the Organizing Body Guarantee Social Security (BPJS), accident work in construction increased from 114,000 in 2019 to 177,000 accidents in 2020. These figures place work construction into the most dangerous job No only in Indonesia but also in the world.

Accident Work is an unwanted incident or event that is detrimental human, destructive treasure object or process loss. Accident work too defined as something unwanted and unforeseen events causing loss of life and/or property objects (Suma'mur, 1994). Control and

prevention accident Work implemented to reduce potency accident good job to worker nor existing tools and machines company. One possible business done for control accident work is by enforcing SIKa (Work permit) or system permit to work (Marfiana, 2022). System permit to work is condition beginning implementation work in a manner secure first consider existing hazards, and all steps security determined and executed in the proper order. System permit to work is needed to support work activities so that work can controlled before work started.

2. Method

The research method used is descriptive method, which is a method that seeks to describe hot work permits in accordance with the conditions that exist at PT Arsitek Arupadatu. The implementation of this research will be carried out on 09 July - 09 August 2021.

The location of the research implementation and data collection was carried out at PT Arsitek Arupadatu Karawang. PT Arsitek Arupadatu is part of a multi-disciplinary consulting company, whose consulting services are making feasibility studies, project proposals, electrical designs, project supervision, and construction management.

Data Type

The data obtained in this compilation comes from:

a. Primary data

Primary data is data that comes from the original or first source. This data is not available in compiled form or in file form. The author will conduct field observations and interviews by preparing a number of questions related to the program, procedures and implementation of work permits (Narimawati, 2008).

b. Secondary Data

Secondary data is data collected second hand or from other sources available before the research was conducted. The author obtained data from company documents, books and previous reports at the company related to the application of a hot work permit (Silalahi, 2012).

Data Collection Techniques

Data collection techniques performed writer among others:

a. Observation Field

Data collection techniques are by direct observation, as well as field surveys to find out about Administrative Examinations at Hot Work permits at PT Arsitek Arupadatu Project Akashi Wahana Indonesia Expansion Plant 3 Karawang.

b. Interview

Data collection techniques by conducting direct QHSE Manager at PT Arsitek Arupadatu Project Akashi Wahana Indonesia Expansion Plant 3 Karawang.

c. Literature

This method is used to find data by examining data from objects that are descriptive in nature about the origin, reasons, or background regarding existing data in the company. Read books related to hot work permits at the company as well as existing research reports and other sources related to hot work permits or by collecting data and studying documents and records related to hot work permits in the PT Arsitek Arupadatu Akashi Wahana Indonesia Expansion Factory 3 Karawang Project.

Data Processing

Data obtained from observation field, interviews and literature, author can process the data with the method qualitative that is research used to investigate, find, describe, and explain quality or feature influence socially unable described, measured or described through approach quantitative (Saryono, 2010).

Data that has been processed then compared with the Regulations Government No. 50 of 2012 concerning Application System Management Occupational Safety and Health and Standard

NFPA 51 B 2019 edition concerning Standard prevention fire during welding, cutting, and hot work other.

Data Presentation

Presentation of data using a descriptive method, which is used to describe or analyze a research result but not used to draw broader conclusions (Sugiyono, 2010). In addition, it was also carried out by explaining in general and informational in nature from the results of interviews and field observations obtained during research at PT Architect. Project Arupadatu Akashi Expansion Plant 3 Karawang and compared with applicable regulations or standards compiled in a literature review

3. Research Results

In accordance with the research taken, namely Administrative Examination at Hot Work permits. Based in PT Arsitek Arupadatu hot work activities include Welding and Cutting. Work is carried out in construction areas and workshops. Several jobs in the construction sector include welding hydrant pipes, pipe joints, steel structure welding, support hydrants, lifting plans, casting of buildings, working at heights, excavation and pipe tower welding. The work in the workshop area includes brushing, cutting and installing plates, arranging pipes, painting pipes and housekeeping.

A. Program Hot Work permit

At PT Arsitek Arupadatu programs that are implemented and directly related to hot work or Hot Work permit is checking Administration like:

a. Hot Work permit

Hot Work permit Program, in the letter there are activities or procedural and systematic steps. This is done as action prevention to danger potency fire. Some activities are a must done among them are:

1) Precautions to Fire

- a) Provision of fire extinguishers
- b) Fire Blanket
- c) Hydrants

2) PPE checklist

In the checklist, HSE performs checking whether all relevant personnel have complied procedures related to the use of complete and appropriate Personal Protective Equipments (PPE). Some PPE required are:

- a) Face mask
- b) Welding Goggles
- c) Faceshield
- d) Gloves
- e) Aprons
- f) Safety Shoes

3) Inspection The equipment

Before inspection, the HSE already knows from the operator concerned and of course well certified it's from employee nor contractor regarding the equipment checklist that will be used so that the HSE immediately carried out inspection from results of the equipment checklist. Inspection equipment used in work activities hot namely welding and cutting activities. Some of the equipment that must be inspected are:

- a) Acetylene
- b) Transformer
- c) Cutting Wheels

4) Work Area Inspection

Prior to welding or cutting activities, the HSE must ensure that the area is safe, namely:

- a) Within a minimum distance of 11 meters, nothing flammable material
- b) Nothing contraction steam easy burning (maximum parameter <10% LEL)
- c) Air circulation
- d) Sufficient lighting
- e) Work area protected by not not flammable materials

B. Prosedure Making Hot Work permits

At PT Arsitek Arupadatu there is no documentation regarding the making of a hot work permit, but the Hot Work permit was made technically, and from the results of interviews with the QHSE. Here are some points in making a Hot Work permit:

a. Procedure Making Hot Work permits

Results of interviews related to work permits hot there are several points are:

- 1) Supervisor completed SIKa (work permit) form with Worksheets hot work.
- 2) Giver Permission review the Worksheet hot work, work plan, SIKa (work permit), and JSA (Job Safety Analysis).
- 3) Qualified Gas Tester did an initial gas test and Fire Watcher made sure that Fire Extinguisher with conditions worth using already available on hot work site.
- 4) Based on gas test results and readiness mitigation risk giver Permission determine whether the hot work safe to do. When hot work is not safe to do, permission giver request to Supervisor to do mitigation. The gas measurement results are written on the Hot work worksheet.
- 5) When hot work safe to do, permission giver sign the SIKa (work permit) and Hot work worksheet as well as allow to do the hot work activitie. Hot work worksheet has been marked handle posted on location place work going on.
- 6) Gas Tester performs gas measurement at least every 30 minutes or when there is change working conditions or areas are not supervised for 30 minutes or more. If there is change scope job, job stopped and came back to Point 1.
- 7) Fire Watcher must always standby at location hot work and always standby up to a minimum of 30 minutes after job done. Executo occupation, Superintendent Jobs, Fire Watcher, and Gas Tester monitors condition location job. If there is change condition potential job raises incident so work stopped, done intervention, and return to Point 1. If there is none change condition work so work next to finish. After SIKa (work permit) completed work closed, Worksheet hot unified with SIKa (work permit) colors yellow as documentation.

C. Implementation of Hot Work permits

Based on observation field generated in the implementation hot work permit at PT Arsitek Arupadatu namely at work welding and cutting has goes well accordingly company regulations or procedures. In carrying out implementation Hot work permit at PT Arsitek Arupadatu there are several important points:

a. Hot work permit

Kindly procedural, application Hot work permit required by HSE for each heat - related work with technical:

- 1) Welder operator confirms to the HSE or Safetyman that will carrying out welding and cutting activities (related to hot work).
- 2) The HSE did visit to a workshop or venue welding and cutting, to identify or inspect the place:
 - a) Identification, that is look for exists source hazard both from the work area nor the equipment.

- b) Inspection, ie inspect various what tools are still being used suitable for use or still need testing and maintenance.
Identification and inspection results written down according to the checklist form in the Hot work permit.
- 3) If results the identification and inspection obtained are in accordance with existing procedures, then HSE parties approved the activity however during the activity process the HSE remains monitoring some time as form prevention to unsafe act or existence findings of the eliciting area accident so that these activities can done.
- 4) If results identification and inspection obtained is not appropriate, then the HSE recommends the welder operator to perform repair or housekeeping in the area
- 5) Until you get stated safe by HSE either from facet equipment nor condition place, so that welding and cutting activities are approved by the HSE through Hot work permit

4. Discussion

A. Program Hot Work Permits

From the results that have been writer get regarding the program on the Hot Work Permits can is known that in this case at PT Arsitek Arupadatu have a program in place in a manner specifically for Hot Work Permits in a manner routines that are directly related to the field about hot work is a check Administration, usually checking administration is not scheduled but done in a manner suddenly by HSE. For checking This administration includes:

- a. Hot Work permit
 - 1) Precautions to fire
 - 2) Personal Protective Equipments checklist
 - 3) Inspection equipment to be used
 - 4) Work area inspection

Given party not quite enough responsible for carrying out checking Administration is the HSE inspector of the PT Arsitek Arupadatu. This program aims to supervise work, if discovered disobedient workers regulation will give consequence from PT Arsitek Arupadatu to workers, partners or contractors who carry out work with a reprimand, dismissal work until cancellation work, this program has been well implemented at PT Arsitek Arupadatu.

According to Regulation Government No. 50 of 2012 concerning application of Occupational, Health Safety Management System Article 9, the program is Planning is done to compile and determine principle or business with reference to the Safety policy that has been consider things following:

- 1) Review results beginning
- 2) Identification potency hazard, assessment, and control risk
- 3) Regulation legislation and others requirements, and
- 4) Source the power you have

The program must involved by Safety Experts, Safety Advisory Committee, representatives of workers or laborers, and other parties related to the company. Where in planning at least load:

- 1) Goals and objectives
- 2) Priority scale
- 3) Control efforts danger
- 4) Determination source Power
- 5) Period time implementation
- 6) Indicator achievement, and
- 7) System accountability

According to conclusion author, based on regulation government No. 50 of 2012 concerning Implementation of Occupational Safety and Health Management System, every program

made by the company is part plan for prevention to hazard defined by Safety policy through results reviewer first, identification hazard, assessment risk, control risk, regulation legislation and requirements others, as well source power possessed by involving HSE. All existing programs are related to the Application of Safe Work permits (Hot Work permits) at PT Architects Arupadatu Project Akashi Wahana Indonesia Expansion Plant 3 Karawang is results from reviewer initial and identification danger party company as well as involving Safety experts so that the program is in accordance with Safety recommendations. It is sufficient effective in preventing and minimizing the hazard or risk involved from all welding and cutting activities as well as all work related with hot work.

B. Prosedure Making Hot Work permits (Hot Work)

The following is the procedure for obtaining a Hot work permit (Hot Work permit) at PT Arsitek Arupadatu made based on results analysis on each work according to perspective Occupational Safety and Health, procedures Hot work permit stages is supervision work, review JSA and SIKA (work permit) sheets, checking appropriateness gastes and APAR, sign or approve SIKA, measurements Gas Tester routine every 30 minutes, officers fire watcher monitoring job.

Whereas according to the 2019 edition of NFPA 51 B on Standard for Fire Prevention During, Welding, Cutting, And Other Hot Work (Standard for prevention fire during welding, cutting, and others hot work exists procedures on the system that is including (NFPA 51 B, 2019):

a. Management

- 1) Must create and define a safe area to perform Hot work.
- 2) Must specify individuals who provide work permits (Permit Authorizing Individuals).
- 3) All equipment must checked to make sure all in condition safe operation.
- 4) When incapacitated do safe and reliable operation reliable, equipment must repaired by qualified personnel conditions or withdrawn from the work area and marked out of operation (under repair).
- 5) Gotta make sure only approved equipment used such as torches, manifolds, regulators or valves lowering pressure and production acetylene.
- 6) Individuals involved in workhot must do safe operation to equipment and security its use.
- 7) Must notify all contractors about condition specific area of the easy material combustion, process or condition dangerous or potential fire other.

b. Permit Authorizing Individuals

- 1) Just like management, Permit Authorizing Individuals must responsible answer to safe operation for hot activities
- 2) Permit Authorizing Individuals must consider safety of heat operators and supervisors fire with respect to tools protector yourself to danger especially outside Hot work
- 3) Permit Authorizing Individuals must determining the specific area of the material is easy combustible, hazardous processes, or potential danger fire others that appear or can appeared on the spot Work
- 4) Gotta make sure possible protection burnt from ignition in several ways:
 - a) Consider alternative method besides Hot work
 - b) Move work to free location from flammable material
 - c) If the job can't moved, moved material that can burnt to an area with distance safe or material easy burnt protected from danger ignition
 - d) schedule Hot work so that operation Possible can about material that can burning does not start during operation

- 5) If point a) to point d) can done, hot work is not allowed
 - 6) Permit Authorizing Individuals must ensure fire protection and equipment, available in the hot work area
 - 7) When supervisor fire required, Permit Authorizing Individuals must responsible answer to be sure that supervisor fire is on site
 - 8) When supervisor api is not needed, Permit Authorizing Individuals must be make inspection late hour after operation hot done. This is to detect and turn off blazing fire.
- c. Work Operators Hot
Work operators heat or work operator hot:
- 1) Must grip & use equipment safely so it is not harmful and property
 - 2) Must get prior Permit Authorizing Individuals approval start operation hot
 - 3) All equipment must checked to be sure condition safe when operated. If failed do safe and reliable operation reliable, equipment must repaired. The repair is carried out by a qualified person condition before use or withdrawal from place Work
 - 4) Operators must finish operation hot If unsafe conditions. Such unsafe conditions should be informed to management, area supervisor, or Permit Authorizing Individuals to assess repeat situation.
- d. Fire Supervisor
Supervisor Fire or Fire Watcher must:
- 1) Trained to recognize associated hazards in place work and operations hot.
 - 2) Guard condition safe awake during operation Hot work Have the authority to finish operation hot If there is unsafe conditions.
 - 3) Have APAR available and utilized in its use.
 - 4) Familiar with facilities and procedures for anticipating alarms when happen fire Pay attention exists fire on
 - 5) All areas. Supervisor fire trying to send it only If fire Can extinguished in accordance existing fire extinguisher capacity. If supervisor fire evaluate that the fire is not in capacity equipment, supervisor fire must anticipating alarms.
 - 6) Determines to do additional tasks, but those tasks should not interfere with him from responsibility answer supervise fire.
 - 7) Contractor: Before start every Hot work, contractors and clients must plan plan project in a manner complete. The plan includes type Hot work that will carried out and the hazards in the area.
 - 8) Not quite enough answer together: Management, contractor, Permit Authorizing Individuals, supervisor fire, and the operator should recognize not quite enough answer together for safety operation hot.

According to conclusion writer , program contained in PT Arsitek Arupadatu in accordance based on NFPA 51B 2019 edition on Standard For Fire Prevention During, Welding, Cutting, And Other Hot Work (Standard for prevention fire during welding, cutting, and hot work others) that the standard contains management, the procedure is implemented by PT Arsitek Arupadatu form making job safety analysis, providing individual permits form procedure Hot work permit, as well there are work operators heat and control fire form fire watch officer.

C. Implementation Hot Work permit

In carrying out the implementation of a hot work permit at PT Arsitek Arupadatu there are several important points, namely:

- a. Hot work permit
 - 1) Welder operator confirms to the HSE or Safetyman that will perform welding and cutting activities
 - 2) The HSE did Inspection and Identification

- 3) Agreement the HSE (if everything is according to procedure company)
- 4) Housekeeping Workshop (if everything doesn't fit in the procedure company)

According to Regulation Government No. 50 of 2012 concerning Application of Occupational Safety and Health Management System in Appendix II section 6 regarding Security Work Based on Occupational Safety and Health Management System that is related to implementation system work, there are several aspects including:

- 1) Competent officer has hazard identify, assess and control risks that arise from a work process.
- 2) When effort handling risk needed, then the effort is determined through level handling.
- 3) There is procedures or instructions documented work to control identified and created risks on base input from competent personnel as well as power related work and authorized by the authorized person in the company.
- 4) Obedience to regulation legislation, standards as well as guidelines relevant technical considered when developing or implementing modifications or instructions work.
- 5) There is work permit system for risky tasks high.
- 6) Protective gear self provided in accordance need and use in a manner Correct as well as always maintained in condition worth using.
- 7) Protective gear used self confirmed has stated suitable for use in accordance with standards and/or regulations applicable laws.
- 8) Control efforts risk evaluated in a manner periodically if happen nonconformities or changes to work processes.

According to conclusion author , Implementation of Hot work permit at PT Arsitek Arupadatu related to JSA and work permit heat is based regulation according to regulation government No 50 of 2012 concerning Application of Occupational Safety and Health Management System Appendix II part 6, where in the application of a work permit in the company both from the JSA and the Work permit there is preparation work, obligations use of PPE, first aid, APAR, along with Safety signs and determine prohibition hard to unsafe acts and unsafe conditions , recommendations Safety. It is results from action identification hazard and judgment risks that are then dealt with proceed with action control form condition administration, PPE obligations, provision facilities and infrastructure that support Safety as well as monitoring and inspection housekeeping.

5. Conclusion

From the results that have been obtained in research at PT Arsitek Arupadatu about Hot Work Permit can pulled conclusion. Programs implemented on the job hot is checking Administration, Work permit It's hot, and it complies with the rules government Number 50 of 2012 concerning implementation of Occupational Safety and Health Management System, Procedure making a Hot work permit at PT Arsitek Arupadatu in a manner documentation does not exist, however the procedure is carried out in a manner oral based on regular routines done in accordance existing conditions in the field, and is in accordance with NFPA 51B of 2019 concerning prevention fire during work welding, cutting and hot work other, and Implementation hot work permit at PT Arsitek Arupadatu has apply regarding work permits Hot, right regulation government Number 50 of 2012 concerning application of Occupational Safety and Health Management System attachment II part 6 which as the form of control forms in work.

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