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Activity - Boiler chimney repair/replace work

Objective Boiler chimney top shell repair/replace work
Responsibility Engineer in charge and workmen at job
PPEs to be used Helmet, Safety shoes, safety hand gloves, ear plugs and
Nose mask, safety belt, safety net.

Aspect-Impact

Fumes, CO gas leakage air pollution
Noise generation noise pollution
Steel Scrap Resource Depletion
Water Spillage Land contamination

Hazards Identified


Mechanical Hazard Slip, fall and trap
Physical hazard Temperature
Health hazard CO/Oxygen gas
Human behavior Poor housekeeping, Non use of PPEs, Alcoholism,
Height phobia working at height.

SAFETY PRECAUTION

1. Cotton/Leather hand gloves, nose mask, white/black goggles should be used
Proper checking of Welding machine, gas cutting set, grinding, cut off, flexible grinding machine, etc., all tools being used should be certified in house.
2. While one person is working with helper at height 50 meter keeping with walki-talkie should communicate the ground person every 15 min of interval.
3. The person must have valid height pass .
4. Breathing apparatus, stretcher should be kept with the person outside.
5. Special care should be taken care regarding COFG flue gas and check oxygen level inside the working areas by using multi gas detector/monitor before the person starting his work. Also ensure that the inside temperature is within normal limit to carry on work.
6. Before starting of gas cutting or welding work bottom areas must be free from fire catching media or covered or clean area. Ideally bottom areas to be barricaded.
7. Ground eyes to analyze and checking form 12 of lifting equipment and crane load chart, with respect to calibration details.
8. Additional safety to prevent fall from height while carry the work.

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Suspended Work Platform:


A “Suspended Work Platform” (otherwise known as a personnel lifting unit or man basket) is a personnel platform which is raised, lowered or held in working position by the hoisting line of a crane or hoist, or is attached to a crane boom. (Workers do not have direct control of the suspended platform – the crane operator does!). Crane work with a suspended work platform (man basket) is considered a critical lift.



- Crane supported work platforms must be designed by a professional engineer, must be constructed according to drawings and specifications by qualified welders, or welds must be inspected and certified by an engineer.
- Man baskets must be fixed with sufficient numbers of fixed supports for lanyards and be clearly identified.
- The perimeter of work platforms must have standard guardrails complete with intermediate rail and toe board
- A data plate displaying the following information must be permanently affixed to the platform: (a) names of the engineer or other qualified person certifying the platform, and the fabricator of the platform, (b) identification which correlates the platform to the relevant design drawings, (c) date of manufacture, (d) rated capacity, (e) minimum rated capacity required for the crane or hoist, (f) number of occupants for which the platform was designed, (g) all-up weight (weight of platform and rigging plus rated capacity),

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- e. Prior to each usage, the work platform and its rigging must be inspected by a mechanical in charge and safety officer and deficiencies if any should be corrected. If broken, bent, or heavily corroded structural members, or fractured welds or otherwise defective connections are found, the platform must be taken out of service for repair and must be re-certified. A platform must be re-certified if structural modifications are made, or components are welded to the structural members of the platform
 - f. Before workers use a platform suspended from a crane, a trial lift must be performed unloaded platform, from the location where workers enter the platform to all locations to which workers will be hoisted, must be done prior to placing workers on the platform
 - g. The purpose of the trial lift is to ensure the integrity of the crane, ground stability and any unforeseen hazards/obstacles. This lift will also determine that all work locations can be reached without contacting obstructions, that all controls function properly, and that the all-up weight remains within 50% loading capacity of the crane or hoist rating throughout the range of intended operation
 - h. Crane Operator must not get out of the crane while workers are suspended in a man-basket.
 - i. Trial lifts may need to be repeated if the crane is set up differently from the original position or if there is a change in the original lifting plan. A Trial Lift will consist of the Operator, crew and Supervisory Personnel.
 - j. When a wire rope or chain bridle sling is used to connect a crane supported platform to the hoisting line, each bridle leg must be connected to a master link or shackle in a manner that ensures the load is distributed amongst the bridle legs.
 - k. Do not use synthetic slings!!
 - l. All supporting hooks or shackles must be equipped with a safety latch, or must be a type that can be closed and locked, to prevent dislodgment. All eyes in fiber or wire rope slings must be fabricated with thimbles.
 - m. Workers on a platform suspended from a crane must wear personal fall protection equipment, including a full body harness and shock-absorbing lanyard (no more than 1.5mtr in length), secured to a designated anchorage point. Anchorages for workers on platforms suspended from cranes may be above the load hook or on the platform, A wire rope sling may be connected to the eye on the load block, and lanyards may be snapped onto the lower eye of the sling
 - n. Tools and materials should be kept at a minimum when in the man basket.
 - o. Cranes must not travel while supporting a platform occupied by workers.
2. There should be monthly audit of work at height activities to ensure compliance to the standard.

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3. Work at height jobs should be audited regularly (minimum one activity per month per unit) for adequacy of controls once in a month as per annexure I.

DETAIL PROCEDURE.


1. Pre check crane documents, lifting tools, tackles, full body harness, PPE's.
2. 120 T crane positioned towards road side with radius of 15 meter w.r.t Chimney.
3. Fix suspended work platform (SWP) bucket to crane with appropriate capacity Slings.
4. Two workmen shall enter inside bucket with proper PPEs, full body harness and minimum require tools.
5. Crane boom to be extended slowly towards the job location at height 50 meter to inspect physical condition of top shell and platform in order to assess the work.
6. Post inspection, workmen shall be brought to the ground by slowly lowering the SWP.
7. Based on work assessment required tools tackle shall be carried
8. First will be dismantle monkey ladder part by part each of 1 meter length and will be shift to ground floor with the help of rope by guiding crane main hook. During this period Boiler will be in service.
9. Secondly dismantle platform part by part max weight of 30 kg and cut piece will be shift to ground floor with the help of rope by guiding crane main hook. During this period Boiler will be in service.
10. Based actual site assessment at the time execution "cut parts should be dropped by ensuring nobody is in the vicinity of the fall radius" instead of lowering by rope.
11. Lowering object by rope avoided mainly because of rope get swinging on high wind velocity and get struck up along with object in the installed scaffolding and .
12. Thirdly dismantle the shell part by part tentatively 500mm X 500 mm and cut piece will be shift to ground floor with the help of rope by guiding crane main hook. During this period Boiler will be under shutdown/hot box up with proper operation isolation of COFG, BFG and electrical isolation of ID fan, hot box up, ID fan electrical isolation and condition.
13. Actual chimney height will be reduced from 50 meter to 43 meter.
14. After completion of work shift the scrap in to designated place.

Annexure 1

Work At height Audit

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Date	Time	Unit	Location	
Job				
Sr. No	Check point	Yes /No/NA	Remark	
1	All people involved in the job have valid height pass?			
2	Does the job have valid work permit			
3	Is Take 5/ Pre task HIRA done before the Job			
4	Are specific requirement based on whether condition identified and implemented			
5	Is the work supposed to be extended upto night time, are specific requirements pertaining to it identified and implemented?			
6	Is it assessed and confirmed that work at height cannot be eliminated in this case?			
7	Does this activity has SOP/SMP?			
8	Was the job supervised			
9	Is supervisor aware of emergency and rescue procedures			
10	Is scaffold used in the activity certified by competent authority			
11	Are certified fall arrestors being used wherever applicable?			
12	Are sufficient fixed anchorage points available			
13	Are all life lines certified by competent person			


Overall Remark	Very Good	Good	Poor
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Surendra Prabhugaonkar

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Head Mechanical Maintenance

Head Power

Gaurang Kamat

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Work At Height Champion – VAB.

Head – HSE

Saptesh Sardesai.

Head – Coke & Power

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