**BOILER COFG STACK BOTTOM TAPPING**

Objective Boiler COFG stack bottom tapping

Responsibility Engineer In charge, Head maintenance power

PPEs to be used Helmet, Safety shoes, safety hand gloves, ear plugs and

Nose mask, safety belt, safety net, full body harness, heat proof jacket, life breathing apparatus,

Aspect-Impact

Fumes, gas leakage air pollution

Noise generation noise pollution

Scrap generation Resource Depletion

Hazards Identified

Mechanical Hazard Slip, fall, trap, contact, Entanglement, Impact, Cut injury

Physical hazard burn injury, suffocation, Electric shock,

Ergonomic hazard improper grinding posture

Health hazard CO/Oxygen gas, dehydration.

Human behavior Poor housekeeping, Nonuse of PPEs, Alcoholism,

Height phobia working at height.

SAFETY PRECAUTION

1. Ensure all safety lifting tools, tackles, and a power tool has to be certifying internally before using.
2. Full body harness safety belt and heat proof jacket to be use during preparatory activity.
3. Man coolers has to be arrange surrounding of work area
4. 24 volt DC supply should be used for providing illumination inside any confined space
5. 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.

1. While one person is working inside outer person should always be there outside continuously to communicate and monitor from outer end..
2. The person working inside should wear Full Body harness (FBH) and one rope should be tied to FBH and the other end of rope should be tied outside of boiler.
3. Breathing apparatus should be kept with the person outside.
4. 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 entering and starting his work. Also ensure that the inside temperature is within normal limit to carry on work.
5. Proper illumination to be ensured in and around the work area using lux meter.
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. Fumes rising from confined space where there was no manholes, keep or arrange the opening from availed spaces or else provide exhaust fan for removal of fumes.
8. Before working at height put the safety net on bottom of surrounding working areas and if required additional platform modification required then get the clearance from design department as required.
9. Ground eyes to analyze and checking form 12 of lifting equipment and crane load chart, with respect to calibration details.
10. Additional safety to prevent fall from height while carry the work.

PRECHECKS

1. Take the work permit from MCD and GEL control room and lock with proper permit under shutdown check the co and oxygen level at work place.
2. Ensure that individual MCD stack top flap are open in condition and check the numbers of COFG oven in line/charged conditions and maintain the MCD oven draft as required.
3. Ensure Boiler ID fan in running condition during stack flap and duct dismantle.
4. Engineer PP should coordinate with MCD production head to stop charge of oven 48 hours prior to commencement of shutdown (12.10.14 at 00:00hours).
5. Before starting of cutting set and welding machine check the internal test certificate and machine healthiness.
6. Before starting of welding / gas cutting work check the any leakages, clean the working areas, make a proper arrangement or put some sheet for sitting.

PREPARATORY WORK.

1. All work carried out at height and in confined space followed SOP of GEL/WI/MECH/49 and GEL/WI/MECH/08.
2. Arrange the crane position for handling to lift the dismantled ducts and bellow with inside lining of refractory material.
3. Strengthening of MCD stack tapping point as per given drawing and under direction of design consultancy.
4. Dismantling of unwanted platform near stack cutting area and boiler down comers.
5. Preparation of working platform with proper provision of ladders, handrail, toe guard etc.,
6. Locking of boiler down comers by means of MCD staircase extension.
7. Boiler down comer circumference gas cutting up to 75 % in different location in opposite intervals.

SHUTDOWN ACTIVITY PROCEDURE

1. After obtaining clearance from of both PP and MCD start dismantle of refractory laid stack Flap.
2. After dismantling of flap start dismantles of stack staircase and refractory laid duct accordingly till height of 35 meter.
3. Dismantle of boiler refractory laid down comers in to three pieces.
4. Dismantle of COFG duct top damaged cover.
5. Plan and execution for stack tapping core cutting and dismantle of brick/castables.
6. Start lifting arrangement for newly fabricated M.S duct with inside refractory and as given direction by one technical crane operating skilled person. Installation of refractory laid duct at height 10.5 meter and fixes the fabric bellow.
7. Balance refractory brick/castables work in situ basis.
8. Re Install stack flap at height 35 meter and making provision for proper working platforms.
9. Shift all generated scrap brick lined duct to scrap yard as directed by site engineer..
10. After completion of dismantle work start the removal of scaffolding, other support platform which was arranged in the earlier.
11. Remove all the generated scrap material and shift in to the scrap yard as directed by site in charge.
12. Remove the all machines/ tools / waste and shifted to proper designated areas.

Close all the boiler manholes & cancel the work permit.

Prepared by Reviewed Approved

Areas In charge/Safety officer Project In charge Head project