1. **PURPOSE:** Instructions for maintenance of Quench pusher blade
2. **SCOPE:** Quench Pusher Blade
3. **RESPONSIBILITY:** Company Engineer, maintenance Fitter and workmen at job
4. **SAFETY PRECAUTIONS:**

* Ensure all Electrical & Mechanical isolation prior to starting work on equipment. Follow documented isolation procedure as per Vedanta approved isolation standards.
* Take Electrical shutdown of respective machines-Hot Coke Car, Quench Panel & work permit, if necessary, before attending any electrically operated units.
* Safety briefing / Toolbox talk to be carried out and to be documented
* Follow *one man one lock* system and use of LOTO box.
* Check availability of valid DCP fire extinguishers, if not available then inform shift in charge.
* Check and ensure safety of man and equipment before starting operations.
* Remove excess grease from equipment to avoid falling on ground.
* All unwanted material from the area to be removed before releasing the equipment electrical isolation.
* Follow proper documented procedure for releasing the electrical isolations as per Vedanta approved isolation standards.
* *Certified lifting Tools & Tackles* to be used for the job.

1. **PPE to be used :**

* Safety Helmet
* Safety shoes
* Safety Goggles
* Hand gloves
* Dust mask
* Cutting Goggles

1. **Activities**

Activity No 1 : Pusher blade chain link replacement

Activity No 2 : Drive/ Non-drive shaft replacement

Activity No 3 : Preventive Maintenance.

1. **Aspect-Impact:**
2. Scrap generation Resource Depletion.
3. Dust Generation Air Pollution.
4. Used Cotton Cloth/Handgloves Land Contamination
5. Used grease/oil Land contamination, Resource depletion
6. **Hazards** **identified**
7. Physical Hazard

* flying of coke dust and fines
* Contact with hot structural parts
* Electrical shock
* High Temperature

1. Mechanical Hazard

* Impact, Entrapment, Entanglement, Cut, Slip , trip and fall

1. Chemical Hazard

* Fire and explosion, fumes.

1. Ergonomical Hazard

* Poor workplace design

1. Human behaviour aspect of operators:

* Alcoholism.
* Casual approach.
* Horse play.
* Non usage of PPE’s
* Improper Housekeeping
* Height Phobia

1. **PROCEDURE:**

**Activity No 1:    Pusher blade chain links changing.**

* Ensure new chains are placed inside HCC.
* Align the hot coke car under the quench tower.
* Position the pusher blade as per requirement.
* Take Electrical shutdown of Quench valve, Pusher blade & HCC.
* Ensure isolation of the system as per the group procedure with Lock out and tag out sytem.
* Links to be changed in 50 nos.
* Lock the chain at appropriate location to restrain its movement during replacement.
* Chain to be gas cut at required locations & remove
* Place the new links & provide pins with locking pin.
* Chain to be supported on Trays which are provided.
* Remove old links from HCC.
* Release shutdown for trials.
* All scrap generated to be shifted to proper locations
* Oil traced cotton waste to be stored in bin provided outside workshop.

**Activity No 2: Drive & Non drive shaft changing.**

**For Drive shaft changing.**

* Shift spare shaft on drive platform duly fitted with bearing, bearing block assy, Sprocket cam sprocket and gear coupling on both ends

         Align the hot coke car under the quench tower.

        Ensure pusher blade at drive end.

         Take Electrical shutdown of Quench valve, Pusher blade & HCC.



         Remove end links from front hinge and free the shaft.

* Decouple the shaft from the drive system.
* Dismantle the shaft from the base by removing the plummer block mounting bolts.
* Use proper lifting arrangement like Hydra, chain block for removing the shaft from the position.
* Replace new shaft Assy and align with the drive system.
* Tighten the foundation bolts of plummer block.
* Engage links to connect pusher blade assy with drive system.
* Clear electrical shutdown and take trial.

**For Non- Drive shaft changing**

* Shift spare shaft on non-drive platform duly fitted with bearing, bearing block assy, Sprocket cam sprocket

         Align the hot coke car under the quench tower.

        Ensure pusher blade at non-drive end.

         Take Electrical shutdown of Quench valve, Pusher blade & HCC.

         Remove end links from front hinge and free the shaft.

* Dismantle the shaft from the base by removing the plummer block mounting bolts.
* Use proper lifting arrangement like chain block for removing the shaft from the position.
* Position new shaft Assy
* Tighten the foundation bolts of plummer block.
* Engage links to connect pusher blade assy with drive system.
* Clear electrical shutdown and take trial.

**Activity No 3: Trays changing.**

* Ensure new trays/brackets are placed inside HCC
* Align the hot coke car under the quench tower.
* .
* Position the pusher blade as per requirement.
* Take Electrical shutdown of Quench valve, Pusher blade & HCC.
* Change damaged trays & brackets.
* Provide locking wedges for new trays.
* Place the chain on tray.
* Remove old trays from HCC.
* Release shutdown for trials.
* All scrap generated to be shifted to proper locations

**Activity No 03 : Preventive Maintenance**

Preventive Maintenance is covered under

1. CLTI. (Cleaning, Lubrication, Tightening, Inspection)
2. Monthly Preventive maintenance.
3. Quarterly Preventive Maintenance.
4. Half Yearly Preventive Maintenance.
5. Yearly Maintenance.

CLTI is basically is routine run check inspection and any identified abnormality is documented and updated in SAP in MR Notification. On opportunity the same is resolved and the abnormality is closed.

` **Procedure for Preventive maintenance**

* Check the preventive maintenance schedule in SAP.
* Take system generated print of generated PM and hand it over to maintenance crew for execution.
* Isolate the machine with proper isolation procedure as per the Vedanta isolation standard.
* Carry out all tasks mentioned in the checklist as per guidelines and update the job completed and actual conditions with the time taken for completion of the job.
* Ensure all the jobs are completed and in case of any abnormality or pending jobs in the list, a separate notification has to be raised in SAP for ensuring the compliance.
* All unwanted material from the area to be removed before releasing the equipment electrical isolation.
* Follow proper documented procedure for releasing the electrical isolations as per Vedanta approved isolation standards.
* Take trial of machine after job & report abnormality noticed if any.

After completion of PM activity, the generated order needs to be closed within 24 hrs of the execution.

1. **REFERENCES:**

OEM Manuals & reference drawings, SP44, SP45

1. **RECORDS:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sr. No.** | **Record No.** | **Record Title** | **Maintained by** | **Soft/Hard form** | **Retention Time** |
| 1. | - | CLTI | Area in Charge | Hard | 1 Yr. |

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| **Date** | **Manual Section Ref. & Para** | **Brief details of Revision** | **New Rev.** |
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| **Prepared By:**  Head Mechanical Maintenance, Battery 1- MCD | **Reviewed & Issued By:**  Management Representative | **Approved By:**  Head Mechanical Maintenance MCD |
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