**WORK INSTRUCTIONS FOR** **DESULPHURISATION DEDUSTING UNIT**

**Responsibility**: Bag House Staff / PCM engineer /Furnace in charge/ Shift Superintendent

**Identified Hazards**:

1. Contact with hot DS hood causing burns
2. Contact with dust & fumes
3. Fire explosion in the de dusting system due to gases generated during desulphurization
4. Nonuse of PPE
5. Improper house keeping
6. Inadequate local lighting
7. Injuries due to fall
8. Electric shock
9. BF Gas presence
10. Inspection door of the ID fan opening during gas cutting
11. Contact with burnt lime powder
12. Contact with splashing metal
13. Fall from height
14. ID tripping
15. Water pump tripping.

**Significant aspect**

1. Depletion of Natural resources
2. Dust generation resulting in environmental pollution

**Procedure:**

Unauthorized operation or repair of any equipment is a punishable offence

1. Person involved in this activity should wear Safety shoe, Helmet, spectacle, Hand gloves, and dust mask.
2. Ensure that the fixed hood is cleaned of all metal jams before placing of the ladle under the hood for desulphurization.
3. Ensure all draft gauges are working properly. (No gauges available as of now)
4. Before starting D.S., all inspection covers, and relief valves have to be closed.
5. Start ID before starting of D.S. by keeping PLC in auto.
6. Start water cooling pump & adjust the flow –
7. Start ID fan RAL, then start both FD fans
8. Start bag house RAL
9. Dilution damper should be in auto so that it opens when dust temp. is 120oC & closes at 100oC till the DS process is complete.
10. Ensure air pulsing is occurring in baghouse filters which is verified by pulsing signal provided on PLC (timer based)
11. In case there is drop in draft reading by more than 10% or sufficient suction is not visible at the suction hood or the discharge at the chimney then the unit should be shut down after following due shutdown procedure and inform Mechanical to open all inspection chamber for cleaning. Top priority to be given to put back the de dusting system in line.
12. Ensure that the ladle transfer/DS car rails are free from all obstacles and ensure that any metal jam which falls during desulphurization is to be removed before the next ladle DS is done. Ensure also the wire rope of the DS car is free of metal jam.
13. Ensure that the ladle is placed properly on the ladle DS transfer car with the radio remote.
14. Ensure that the level in ladle is ¾ full of hot metal before ladle is placed for DS.
15. Ladle DS transfer car operation should be done from the switch on ground for clear visibility and positioning the lance in the center of the ladle.
16. DS Cap to be lowered in such a position that the ladle gets covered, and no spillage should occur.
17. Place lance’s tip just on the surface of metal & ensure no solid crust on metal surface.
18. Injection valve to be kept in open position.
19. Open the carrier valve.
20. Close the depressurizing valve & open the pressuring valve.
21. Start the RAL.
22. Check the sufficient flow rate of the powder, then slowly start dipping
23. Insert the lance gradually into the ladle for desulphurization.
24. Air pressure to be maintained = 4kg/cm2 during Desulphurization to control metal spillage & Canister tank pressure to be maintained approx. 2.5 kg/cm2. Observe for the suction and discharge from ID fan during process.
25. Raise the lance upward as the powder in the cannister gets over and the air pressure drops to minimum.
26. The ladle is to be taken out immediately after DS is over.
27. Water pump to be stopped after temp. at duct is below 50oC
28. Idle run the ID fan for 5 minutes after every desulphurization operation to evacuate any gases entrapped.
29. Stop ID fan manually (auto mode)
30. Collect dust from cast house & cooling fan RAL in bags for disposal after every D/S run, while doing this activity all protective gear should be worn and ensured.
31. Note the quantity of dust extracted and dispose the same into the lime tank.

**CLEANING OF DEDUSTING UNIT Identified Hazards**:

1. Contact with burnt lime powder
2. Contact with gases
3. Fall of person
4. Contact with metal
5. Fall of a man from the cap

**Significant aspect**

1. Dust generation

**PROCEDURE:**

1. Person involved in this activity should wear Safety shoe, Helmet, spectacle, Hand gloves, and dust mask and safety harness.

2. This activity is done after One D/S campaign or as and when the suction is not effective.

3. At the end of D.S. campaign the entire unit should be opened which will include inspection cover and relief valves and complete cleaning to be undertaken by using appropriate tools. CO presence to be checked.

4. Prior to cleaning activity run the ID fan for minimum 5 minutes before and after opening of the relief valves. Take shutdown of ID fan & open all inspection doors. After clearing shutdown run system for another 10 minutes for purging purpose.

5. Cleaning activity to be done preferably when PCM 4 is stopped.

6. Explosion chamber to be cleaned by opening side flanges, cleaning operation should be done by two people under the supervision of Bag House or D/S in charge.

7. Spilled powder is to be collected in bags and then to be disposed at designated place.

8. In case mechanical department wish to take up any cutting or welding jobs it should be ensured the system is well purged by running the ID sufficient time before and after opening of all relief valve inspection chambers and manhole covers. Area should be well cordoned, and movement should be restricted due to likely hood of explosion. The job should be under a close supervision of concerned mechanical in charge after taking necessary work permit.

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| **Prepared By:**  Head – Production PID I | **Reviewed & Issued By:**  Management Representative | **Approved By:**  Head – Pig Iron Division |
| **Signature:** | **Signature:** | **Signature:** |
| **Date: 10.07.2023** | **Date: 10.07.2023** | **Date: 10.07.2023** |

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| **Amendment Record** | | | |
| **Revision date** | **Manual Section ref. and para** | **Brief details of revision** | **New Revision No.** |
| 15.07.2022 | Procedure for desulphurization dedusting Unit | Point 24 | 07 |
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