AIR HEATER START-UP & SHUTDOWN

PURPOSE:

- To describe a safe operating procedure for starting up and shutting down the Air Heater.

SCOPE:

- Providing guidance in the training, qualification and execution of this task by responsible personnel.

RESPONSIBILITY:

Control Room Operator: Carries out the startup of the air heater, conducts the process audit on the equipment

Shift Team Leader / Shift E&I: Supports start up and backs up for control room operator

POTENTIAL RISKS:

- Hot surface,
- Bruise,
- Diesel spills,
- Gas leak,

REQUIRED PPE:

- Cotton Glove.
- Safety Shoe.

PROCEDURE:

NATURAL GAS START-UP PROCEDURE:

1. Confirm the exhaust fan is in running mode.
2. Switch on Saacke Power Panel. Press reset button on Saacke Power Panel.
3. From the MCC room, using the selector switches on Saacke power panel, switch dilution fan, combustion fan and rotary cup atomizer to auto mode.
4. Open the main gas supply valve to the Air heater gas train.

5. Confirm that gas pressure is within the centerline on the manometer (4.2 bars – 4.5 bars).
6. Pull the safety lever under the Pressure Reducing Valve (PRV) on the gas train.
7. Open and close the bleed off valve to confirm gas presence after the PRV.
8. Confirm that gas pressure after PRV is within the centerline on the manometer (320 mbars – 350 mbars).
9. Open the gas inlet valve to the Air heater burner.
10. PULL OUT the burner vane to gas operation position. Wear cotton hand gloves.
11. Open the manual valve on natural gas primary ignition line
12. Open the ignition LPG cylinder valve and its supply line valve (if LPG cylinder is being used as source of ignition gas).
13. Open and close the ignition gas bleed off valve at the top of the burner.
14. Confirm that the ignition gas pressure is within the centerline on the manometer (50 mbars – 80 mbars).
15. From the Local control panel at the Air heater area, press continuously 'MESSAGE ACKNOWLEDGE' tab until all alarms are cleared.
16. Press 'OPERATION' tab and select "LOCAL" on the page.
17. Press 'BURNER START' on the page.
18. Press "REMOTE" on the page.
19. Press 'BURNER' tab.
20. Confirm that main flame phase is attained, and flame is stable on the page.
21. Close local panel HMI door.
22. Close the ignition LPG cylinder valve and its supply line valve.

NATURAL GAS SHUTDOWN PROCEDURE:

1. Set the burner to minimum fire by entering a tower inlet temperature set point of 180 ^{0}C on the SCADA.
2. Divert burner to 'Stack position'.
3. Press 'OPERATION' tab and select "LOCAL" on the page.
4. Press 'BURNER STOP' on the page.
5. Keep exhaust fan running for a minimum of 30 minutes before shutting down the panels.
6. Shut off the gas inlet valve to the Air heater burner.
7. Shut off the main gas supply valve to the Air heater gas train.
8. Power down the panels from the MCC room and confirm on the field that the Air heater is completely shut down.

OIL (DIESEL) START- UP PROCEDURE:

1. Confirm that the Diesel pump at Old Power Area diesel dyke is running [otherwise press the start (green) button on the OPA diesel control panel]
2. Confirm that exhaust fan is in running mode.

3. Switch on Saacke control Panel. Press reset button on Saacke Power Panel.
4. From the MCC room, using the selector switches on Saacke power panel, switch dilution fan, combustion fan and rotary cup atomizer to auto mode.
5. Select either pump 1 or 2 using diesel pump selector switch.
6. Open the main oil supply valve to the Air heater oil train.
7. Open the oil supply valve to the Air heater rotary atomizer.
8. PUSH IN the burner vane to oil operation position. Wear cotton hand gloves.
9. Open the ignition LPG cylinder valve and its supply line valve.
10. Open and close the ignition gas bleed off valve at the top of the burner.
11. Confirm that the ignition gas pressure is within the centerline on the manometer (50 mbars – 80 mbars).
12. From the Local control panel at the Air heater area, press continuously 'MESSAGE ACKNOWLEDGE' tab until all alarms are cleared.
13. Press 'OPERATION' tab and select "LOCAL" on the page.
14. Press 'BURNER START' on the page.
15. Press "REMOTE" on the page.
16. Press 'BURNER' tab.
17. Confirm that the oil pump pressure is within centerline on the pressure gauge (1 bar – 2 bars).
18. Confirm that main flame phase is attained, and flame is stable on the page.
19. Close local panel HMI door.
20. Close the ignition LPG cylinder valve and its supply line valve.

OIL (DIESEL) SHUTDOWN PROCEDURE:

1. Set the burner to minimum fire by entering a tower inlet temperature set point of 180 ^{0}C on the SCADA.
2. Divert burner to 'Stack position'.
3. Press 'OPERATION' tab and select "LOCAL" on the page.
4. Press 'BURNER STOP' on the page.
5. Keep the exhaust fan running for a minimum of 30 minutes before shutting down the panels.
6. Shut off the oil inlet valve to the Air heater rotary atomizer.
7. Shut off the main oil supply valve to the Air heater oil train.
8. Power down the panels from the MCC room and confirm on the field that the Air heater is completely shut down.

EMERGENCY SHUT DOWN PROCEDURE:

1. Push any of the Emergency Stop button on;
    i. Saacke Air heater panel in the MCC room.
    ii. Air heater local panel at Air heater area.
    iii. The wall of the generator area.
    iv. The beam at the Dilution/Combustion fan platform.

2. Confirm the burner is shut down instantly and completely.
3. Manually close the oil supply valves for oil operation and gas supply valves for gas operation.
4. Continue to run the exhaust fan.
5. Allow the exhaust temperature to fall below 90°C.
6. Stop the exhaust fan on the SCADA.
7. Inform the next level manager and the thermal safety owner for the department.

Note: To restart the air heater after every power off or power failure or emergency shutdown, the reset button on Control Panel must be pressed.

REASON FOR UPDATE

VERSION 0: New SOP

End Of Procedure

SOP Related Attachments

Attachment 1: Training & Qualification

Attachment 2: Model Answers

Attachment 3: Air Heater Process Audit

Attachment 4: Step-up card