	VEDANTA LIMITED – VALUE ADDED BUSINESS	Document No:	VL/IMS/PID1/INST/WI/18
	INTEGRATED MANAGEMENT SYSTEM	Revision Date:	05/01/2022
	Work Instructions for Changing of Stove Dome, Combustion Chamber, Hot Blast Thermocouple	Revision No:	03
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## **CHANGING OF STOVE DOME, COMBUSTION CHAMBER AND HOT BLAST THERMOCOUPLE.**

**Objective:** To change the stove dome, combustion chamber and Hot Blast thermocouples.

**Scope:** Applicable for all stove dome, combustion chamber & Hot Blast thermocouples

**Standard used:**

- 1) Multi-Function Calibrator: FLUKE 725

**Performance Criteria** : Accuracy of thermocouples

**Aspect for the Activity** : Waste generation

**Reference:** RISK/INST/23 & RISK /INST/17

**Identification of Hazards:**

**Physical:** Pressure, Temperature, Fire, Honeybee bite, Noise, Heat and Gas Exposure, height, Explosion due to steam trap, Contact with Hot Surface

**Mechanical:** Trip & Fall

**Chemical:** CO Gas poisoning, Dust, Graphite

**Ergonomics:** Insufficient work practices

**Hazard due to Human Behavior/Human error:** Not adhering to WI/ PPE, Alcoholism , Use on non-certified tools/equipment.

**Responsibility** : Sr. Engineer Instrumentation/Associate / Inst Technician


**Procedure:**

All engineers/technicians should follow this procedure whilst isolating and removing instrument for calibration, re-installation and commissioning. Care must be taken while removing and refixing to avoid contact with hot areas, gas & steam leakages

### **A. Dome T/C replacement**

**Caution : Before inserting the new TC, ensure that its head cover is open.**

- 1) Inform in to control room, take permission from process and take Work permit.
- 2) Open the Chimney valve of that particular stove with the help of Electrical and take the shutdown of the chimney valve (So that nobody can close the chimney valve), during entire process of t/c changing chimney valve must be kept open.
- 3) Minimum 2 persons should go with 2 Nos of CO monitors while checking/replacing dome T/C. Use hand gloves during the activity of T/C replacement.
- 4) Disconnect the terminals of faulty T/C, remove the bolts of the T/C flange and lift the T/C at a height (not more than 200 mm) and allow it to cool, after some seconds lift it further up and allow it to cool .Do this till the red hotness of the thermo well disappears.
- 5) Rest the TC on bricks with the support of rods. Hold the T/C with the help of these rods & insert the T/C inside by lowering the rods by removing the bricks.


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- 6) While inserting the new T/C do not expose yourself directly to the opening. If any smoke/steam/abnormal sound is observed from T/C head, remove the T/C and put a dummy flange. Get other TC and follow procedure from 5 to 7.
- 7) Insert the TC by lowering 100mm every 15 minutes
- 8) Once the T/C is inserted fully. Tighten the flange, connect the cable following standard colour code, check the reading in control room & verify the same with mV.
- 9) Put the cover on T/C head seal it with anabond. Ensure that T/C cable is not touching the dome surface.
- 10) Place Bricks (maximum one, on top of another) & metal rod properly in such a way that it doesn't fall from top.
- 11) Clear chimney valve & stove s/d with electrical & production respectively.

## **B. Combustion chamber T/C replacement**

**Caution: Before inserting the new TC, ensure that its head cover is open.**

- 1) Inform in to control room, take permission from process and take Work permit
- 2) Open the Chimney valve of that particular stove with the help of Electrical and take the shutdown of the chimney valve (So that nobody can close the chimney valve), during entire process of t/c changing chimney valve must be kept open.
- 3) Minimum 2 persons should go with 2 Nos of CO monitors while checking/replacing Combustion chamber T/C. Use hand gloves during the activity of T/C replacement.
- 4) Disconnect the terminals of faulty T/C, remove the bolts of the T/C flange and lift the T/C at a height (not more than 200 mm) and allow it to cool, after some seconds pull it further up and allow it to cool .Do this till the red hotness of the thermo well disappears
- 5) Remove the TC completely
- 6) While inserting the new T/C do not expose yourself directly to the opening. If any smoke/steam/abnormal sound is observed from T/C head, remove the T/C and put a dummy flange. Get other TC and follow procedure step 7.
- 7) Insert the TC by lowering 100mm every 15 minutes
- 8) Once the T/C is inserted fully. Tighten the flange, connect the cable following standard colour code, check the reading in control room & verify the same with mV.
- 9) Put the cover on T/C head seal it with anabond. Ensure that T/C cable is not touching the stove surface.
- 10) Clear chimney valve & stove s/d with electrical & production respectively

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### **C. Hot Blast T/C replacement**

**Caution : Before inserting the new TC, ensure that its head cover is open.**

- 1) Before starting the job ensure that furnace is under shutdown. Use PPE dust mask, CO monitor, hand gloves and walkie talkie for communication purpose.
- 2) Inform in to control room, take permission from process and take Work permit.
- 3) Minimum 2 persons should go with 2 Nos of CO monitors while checking/replacing HB T/C. Use hand gloves during the activity of T/C replacement.
- 4) Disconnect the terminals of faulty T/C, remove the bolts of the T/C flange and lift the T/C at a height (not more than 200 mm) and allow it to cool, after some seconds lift it further up and allow it to cool .Do this till the red hotness of the thermo well disappears.
- 5) Rest the TC on bricks with the support of rods. Hold the T/C with the help of these rods & insert the T/C inside by lowering the rods by removing the bricks.
- 6) While inserting the new T/C do not expose yourself directly to the opening. If any smoke/steam/abnormal sound is observed from T/C head, remove the T/C and put a dummy flange. Get other TC and follow procedure from 5 to 7.
- 7) Insert the TC by lowering 100mm every 15 minutes
- 8) Once the T/C is inserted fully. Tighten the flange, connect the cable following standard colour code, check the reading in control room & verify the same with mV.
- 9) Put the cover on T/C head seal it with anabond. Ensure that T/C cable is not touching the dome surface.
- 10) Place Bricks (maximum one, on top of another) & metal rod properly in such a way that it doesn't fall from top.
- 11) Clear s/d with production respectively.

<b>Prepared By:</b> Associate Manager – Electrical & Instrumentation PID1	<b>Reviewed &amp; Issued By:</b> Management Representative	<b>Approved By:</b> Head – Electrical & Instrumentation PID1
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<b>Date: 05/01/2022</b>	<b>Date: 05/01/2022</b>	<b>Date : 05/01/2022</b>