**Scope** : This SOP is applicable for the maintenance of robot lab equipments.

**Responsibility** : Instrument Technician.

**Accountability** : Instrument -Section Engineer.

**PPE:**

1. Safety helmet,
2. Safety shoe,
3. Mask.
4. Gloves.
5. Safety googles.

**Tools:**

- Multimeter
- Tester
- Insulated Screw Driver sets
- Hand Blower
- Ring spanner sets

**Hazards:**

| Risks associated | Mitigating Measures |
|---|---|
| Electrocution | Use Insulated hand glove and Tools |

**Training needs:**

1. People should have knowledge to work in Robot lab.
2. Emergency procedure

**Procedure:**

1. Use Proper PPE & tools.
2. Take work permit & Line clearance for Robot lab particular equipments (Receiving station, Mill & press 1&2, Bottle magazine, Manual drawer, Cup cleaning, Ring cleaning, Robot, Sending stations).
3. Ensure that Robot in rest position and manual mode. If we are working in Robot movement area.
4. If robot is not in rest position after reaching the home position put in manual mode by using Auto/Manual Key.
5. Close the incoming compressor Air for particular Equipment and till wait for accumulated air vent from equipment valves & cylinders by removing the outlet port.
6. Switch off the Isolator / MCB.
7. Isolate the control supply by switching off the MCB.
8. Ensure non availability of incoming supply at incoming terminal by using multimeter.
9. Ensure the Earthing connection of panels.
10. Clean the Panel with hand blower / Vaccum cleaner.
11. Check the tightness of the connections by using proper insulated tools.
12. Check the tightness of foundation bolts.
13. Clean /Check the solenoid valve silencers.
14. After the panel maintenance ensures the panel Screws and door locks are properly locked.
15. Switch on the Isolators /MCB and control supply MCB.
16. Open the compressor air line and arrest if there is any air leakage.
17. Reset the equipment by pressing the reset equipment.
18. Ensure the healthiness of the equipment.
19. Ensure the robot home position and Auto mode. If we are worked in Robot movement area.
20. Give the clearance for operation

**Emergency / Emergency Shut OFF:**

1. If any unconsciousness is there, give First aid and inform to the Safety department or Call Emergency number 3108/9865152222/9750963761.

**Records/Annexure:**

1. Refer Line clearance certificates.
2. JSA as enclosed below.

**JOB SAFETY ANALYSIS: (JSA)**

| **Job Safety Analysis** | Job: Robot lab | Date: 20.9.2017 | Analysis by: Section Head | Reviewed by: HOD |
|---|---|---|---|---|
| Title of employee doing job: INST - TECHNICIAN | Supervisor: Section Engineer | Department: Instrumentation | Section: Robo lab | Approved by: |
| Req'd/recommended PPE: Safety helmet, Safety shoe, Mask, Goggles & Gloves. | | | | |
| **Sequence of Basic Job Steps** | **Potential Hazards** | **Recommended Safe Job Procedure** | **What Could Go Wrong** | **Corrective Action** |
| 1.TAKE THE LINE CLEARANCE & SWITCH OFF THE ISOLATOR | LIVE SUPPLY 3 PHASE IS EXPOSED AT THE PANEL SIDE | ENSURE THE ISOLATION OF POWER SUPPLY AT THE INCOMING SIDE & CHECK THE INCOMING SUPPLY WITH MULTIMETER. | RESULT IN ELECTROCUTED& FLASHING. | CHECK THE INCOMING SUPPLY WITH MULTIMETER. |

| | | | | |
|---|---|---|---|---|
| 2.ENSURE THE ROBOT IN REST POSITION | ROBOT MAY HIT THE PERSON | ENSURE THE ROBOT REST POSITION AND ROBOT KEY IN MANUAL MODE. | RESULT IN PERSON INJURY | CHECK THE ROBOT POSITION AND MANUAL MODE IN PENDANDT |
| 3.CLOSE THE COMPRESSOR AIR LINE | POSSIBLE FINE DUST AND RUST PARTICLES COME FROM HOSE LINE. | WEAR GOOGLES, HAND GLOVES & NOSE MASK | COUGHING, EYE IRRITATION MAY OCCUR | USE GOOGLES, DUST MASK AND HAND GLOVES |
| 3.CLEANING OF PANEL | POSSIBLE FINE DUST COME OUT | WEAR GOOGLES, HAND GLOVES & NOSE MASK | COUGHING,EYE IRRITATION MAY OCCUR | USE GOOGLES, DUST MASK AND HAND GLOVES |
| 4.CHECK THE CONTROL CABLE TIGHTNESS | CHANCES FOR TERMIANL BLOCK DAMAGE | USE PROPER TOOLS BASED ON THE TYPES OF TERMINAL BLOCKS | TERMINALS GET DAMAGE AND NUISENCE OPERATION DURING PANEL STARTUP | SELECT THE PROPER TOOLS |
| 5.CHECK THE POWER CABLE TIGHTNESS | CHANCES FOR TERMINAL BLOCK DAMAGE | USE PROPER TOOLS BASED ON THE TYPES OF TERMINAL BLOCKS | TERMINALS GET DAMAGE AND NUISENCE OPERATION DURING PANEL STARTUP | SELECT THE PROPER TOOLS |

| | | | | |
|---|---|---|---|---|
| 6.CHECK THE TIGHTNESS OF BOLTS & NUTS | CHANCES FOR BOLTS & NUTS HEAD MAY BE DAMAGE | USE PROPER TOOLS BASED ON THE TYPES OF BOLTS & NUTS | BOLTS & NUTS GET DAMAGE DURING OPEARTION EQUIPMENTS MAY BE CREATING NUISENCE NOISE. | SELECT THE PROPER TOOLS |
| 7.CHECK THE TIGHTNESS OF HOSE CLIPS | CHANCES FOR BOLTS & NUTS HEAD MAY BE DAMAGE | USE PROPER TOOLS BASED ON THE TYPES OF BOLTS & NUTS | BOLTS & NUTS GET DAMAGE DURING OPEARTION EQUIPMENTS MAY BE CREATING NUISENCE NOISE OR AIR LEAKAGE. | SELECT THE PROPER TOOLS |