



**DALMIA CEMENT (B) LIMITED – CEMENT PLANT  
ARIYALUR  
INSTRUMENTATION MANUAL**

Issue No. 02	Rev. No: 00	Effective Date: 01.11.2019	SOP/INST/033
Issued By: M.R		Approved By: HOD - INSTRUMENTATION	
SOP for Checking and Maintenance of Instrumentation VFD(415 VOLT) panels			

**Scope:** Checking and Maintenance of Instrumentation (415 Volt) panels.

**Responsibility:** Instrumentation technician.

**Accountability:** Instrumentation - Section Engineer.

**PPE:**

- Safety helmet
- Safety shoe
- Mask
- Goggles
- Hand gloves
- Safety belt

**Tools required:**

- Multimeter
- Tester
- Screw Driver
- Hand Blower
- Ring spanner
- Earth Rods



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**Hazard Analysis:**

Risks associated

Mitigating Measures

Electrocution

Use Insulated hand glove and Tools

**Procedure:**

1. Use PPE's like nose mask, goggles.
2. Take the the work permit duly signed copy for Electrical Department.
3. Switch off the Isolator / MCB.
4. Wait for 3 Minutes to allow the DC bus capacitors discharge.
5. Check the incoming supply voltage at incomer by using multimeter.
6. Isolate the control supply by switching off the MCB.
7. Ensure earthing connections for panels.
8. Clean the panel with hand blower and keep the hand blower one meter away during electronic boards cleaning.
9. Check the tightness of the connections with proper insulated tools.
10. Ensure unwanted gland holes to be closed.
11. After the panel maintenance ensure the panel Screws and door locks are properly locked.



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12. Switch on the Isolators /MCB and control supply MCB.
13. Return the work permit duly signed copy for Electrical Department.
14. Ensure the panel Healthiness and check the Drive status with CCR.
15. Give the clearance for the 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. JSA as enclosed below.

**JOB SAFETY ANALYSIS :( JSA)**

<b>Job Safety Analysis</b>	Job: Checking and Maintenance of Instrumentation panels	Date:20.09.17	Analysis by: Section Engineer	Reviewed by: Section Head
Title of employee doing job: INST - TECHNICIAN	Supervisor: SECTION ENGINEER	Department: INSTRUMENTATION	Section:RAW MILL, PYRO ,CEMENT MILL &PACKING PLANT	Approved by: HOD
Req'd/recommended PPE: SAFETY HELMET, SAFETY SHOES, GOGGLES, DUST MASK, HAND GLOVES				



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<b>Sequence of Basic Job Steps</b>	<b>Potential Hazards</b>	<b>Recommended Safe Job Procedure</b>	<b>What Could Go Wrong</b>	<b>Corrective Action</b>
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 ELECTROCUT ED& FLASHING.	CHECK THE INCOMING SUPPLY WITH MULTIMETER.
2.WAIT FOR 3 MINUTES TO DISCHARGE THE DC BUS VOLTAGE	LIVE DC SUPPLY EXPOSED INSIDE THE VFD PANEL	CHECK THE DC BUS VOLTAGE WITH MULTIMETER	RESULT IN ELECTROCUT ED	OPEN THE PANEL DOOR AFTER 3 MINUTES
3.ISOLATE THE CONTROL POWER SUPPLY AND NPDB SUPPLY BY SWITCHING OFF THE CONTROL MCB	LIVE SUPPLY IS EXPOSED INSIDE THE CONTROL CIRCUIT SIDE OF THE PANEL	CHECK THE CONTROL POWER SUPPLY AND NPDB SUPPLY WITH MULTIMETER	RESULT IN ELECTROCUT ED	DISCONNECT THE OUTGOING CONTROL POWER SUPPLY CABLE.
4. BLOWER THE PANEL TOP SIDE & THEN OPEN THE PANEL DOOR & BLOWER	DUST MAY COME OUT OF THE PANELS	WEAR GOOGLES, HAND GLOVES & NOSE MASK & BEFORE BLOWING OPEN THE	COUGHING, EYE IRRITATION MAY OCCUR	USE GOOGLES, DUST MASK AND HAND GLOVES



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INSIDE THE PANELS.		WINDOWS/DOORS OF LOAD CENTER IF REQUIRED.		
5.BLOWER THE ELECTRONIC COMPONENT WITH ONE METER DISTANCE	ELECTRONIC COMPONENT MAY GET DAMAGE	OPERATE THE BLOWER WITH MIN SPEED	CHANCES FOR COMPONENT FAILURE	OPERATION OF BLOWER WITH DUAL SPEED TO BE CHECKED
6.CHECK THE CONTROL CABLE TIGHTNESS	CHANCES FOR TERMINAL BLOCK DAMAGE	USE PROPER TOOLS BASED ON THE TYPES OF TERMINAL BLOCKS	TERMINALS GET DAMAGE AND NUISANCE OPERATION DURING PANEL STARTUP	SELECT THE PROPER TOOLS
7.CHECK THE POWER CABLE TIGHTNESS	CHANCES FOR BUSBAR TERMINALS AND INSULATOR DAMAGE	USE PROPER TOOLS BASED ON THE TYPES OF BUSBAR TERMINALS	BUSBARS GET DAMAGE AND DRIVE TRIP DURING STARTUP	SELECT THE PROPER TOOLS
8. CHECK THE SHROUDING BETWEEN INCOMING & OUTGOING CABLES	SHORT CIRCUIT OF THE 3 PHASE POWER CABLES WHILE SWITCHING ON.	ENSURE THE SHROUDINGS ARE PROPERLY FIXED	RESULT IN ELECTROCUTED & FLASHING.	CHECK THE SHROUDINGS ARE PROPERLY LOCATED BEFORE CLOSING THE PANEL.



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