



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

Issue No:02	Rev. No: 00	Effective Date: 01.11.2019	SOP/ELE/028
Issued By:		Approved By: HOD ELECTRICAL	
FILTRATION OF TRANSFORMER OIL			

Scope : Filtration/Topping up/Replacement of Transformer Oil
Responsibility : Electrical section Technician / Section Engineer
Accountability : Electrical Section Engineer / Head

PPE:

1. Safety Hand Gloves (Suitable Electrical Insulated glove)
2. Safety Helmet,
3. Safety Shoe,
4. Safety Hand Gloves.

TOOLS:

1. Spanners,
2. Hand Blower,
3. Waste Cloth,
4. Screw Driver,
5. Discharge Rod,
6. HT/ LT Megger's,
7. Oil BDV test Kit.

Hazard Analysis:

Risk associated

Flash Over of Panel
Effect of Shock
Effect of Eye Irritation
Dust inhalation

Mitigation Measures

Use of Safety Harness
Suitable Electrical Insulated glove
Use of goggles
Nose mask

Procedure:

1. Take the LOTO for the Transformer with CCR Clearance.
2. Clean the Transformer Main Tank, Radiators, Terminal Box, Marshalling Box and other accessories.
3. Check the Oil Level in the Conservator Tank.
4. Check for any Oil Leakage at Terminal Bushings, Main Tank, Radiators, Bucholz Relay, Conservator Tank and other all areas.
5. If any Oil Leakage found arrest the Leakage.



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6. Check the BDV of the oil through Test kit.
7. If BDV is less than 45 KV, Connect the filtration machine's inlet and outlet to filtering valves on the transformer.
8. Bypass the Bucholz relay before starting the filtration.
9. Ensure no oil spillage on the ground while filtration.
10. Ensure the oil filters are clean and filter cartridge is replaced with new one.
11. Set the temperature of 70 DEG C and start the filtration.
12. Ensure minimum five circulations are completed with the controlled temperature of 65 – 70 DEG C.
13. Test the BDV of the transformer oil at the end of the fifth cycle.
14. Continue the filtration till the BDV is reached > 65 KV at 2.5 mm electrode gap.
15. Top up the oil till the 50 % of the conservator level.
16. Disconnect the filtration machine.
17. Release air from the Bucholz replay and other air vents.
18. Take the Bucholz relay in line.
19. Take out the sludge from the filter unit and send to stores for disposal.
20. Lift the LOTO and Charge the Transformer.

Emergency / Emergency Shut OFF:

1. If electrical shock injury or body injury is there, give First aid and inform to the Safety department or Call Emergency number 3108/9865152222/9750963761.

Records/Annexure:

1. Refer LOTO permit certificates.
2. JSA as enclosed below.



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Job Safety Analysis	Job: Trafo Oil Replacement	Date:	Analysis by:	Reviewed by:
Title of employee doing job: Technician	Supervisor: Sec.Engr	Department: Electrical	Section: Plant	Approved by:
Reqd./recommended PPE: Safety Shoe, Goggle, helmet, Hand gloves, Nose mask				
Sequence of Basic Job Steps	Potential Hazards	Recommended Safe Job Procedure	What Could Go Wrong	Corrective Action
Cleaning of transformer	Eye irritation of dust.	Wear goggles	Damaged goggles/non standard goggles/ Not wearing goggle	Periodic replacement / Proper training / Follow SOP
	Respiration problem of dust	Wear Nose mask	Damaged nose mask/Not wearing Nose mask	Periodic replacement/ Proper training/ Follow SOP
	Body injury	Wear safety helmet, safety shoes , hand gloves	Tools and material may fall on human body	Without PPE don't perform the job/ Proper training / Follow SOP
	Electric shock	Use the hand blower with proper plug top	Not using plug top for hand blower	Training for tools handling/ Periodic replacement
Check the oil level / Leakage	Oil leakage	Don't leak the oil into the Ground	Slippery may occur Ground contamination	Provide drum / tray for collection
Connect the filtering machine and opening of transformer oil sampling valve	Body injury	Wear safety helmet, safety shoes , hand gloves	Tools and material may fall on human body	Without PPE don't perform the job
	Oil leakage	Don't leak the oil into the Ground	Slippery may occur Ground contamination	Provide drum / tray for collection
	Electric shock	Connect the transformer oil filtering machine to a suitable socket outlet with proper plug top / Feeder	Not using plug top for socket connections	Training for tools handling/ Periodic replacement
Start transformer oil circulation	Oil leakage	Don't leak the oil into the Ground	Slippery may occur Ground contamination	Provide drum / tray for collection
Collecting oil sample in specified bottles	Oil spillage	Keep the oil containers closed and keep oil samples in tray	Improper handling may lead to oil spillage	Handle oil samples with care. Training for tools handling/ Periodic



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				replacement/ Aspect Impact awareness
Cleaning of spilled oil by using cotton	Eye irritation of dust.	Wear goggles	Damaged goggles/non standard goggles/ Not wearing goggle	Periodic replacement / Proper training / Follow SOP
	Respiration problem of dust	Wear Nose mask	Damaged nose mask/Not wearing Nose mask	Periodic replacement/ Proper training/ Follow SOP
Replacement of Oil	Occupational health problem due to skin contact with Grease/Oil	Use non-penetrated hand gloves	Damaged hand glove/ fail to use	Condition Based Replacement of PPE's.
Measurement of BDV	Oil spillage	Keep the oil containers closed and keep oil samples in tray	Improper handling may lead to oil spillage	Handle oil samples with care. Training for tools handling/ Periodic replacement/ Aspect Impact awareness
	Electric shock	Use proper plug top for oil BDV kit. Close the oil test container lid before applying voltage	Non use of plug top / Non checking of lid for interlock	Training on oil BDV testing method / Periodic checkup of plug top
Disconnect the machine and normalize transformer	Body injury	Wear safety helmet, safety shoes , hand gloves	Tools and material may fall on human body	Without PPE don't perform the job
	Oil leakage	Don't leak the oil into the Ground	Slippery may occur Ground contamination	Provide drum / tray for collection