LEARNING FROM ACCIDENTS

Safety Alert from SEA (India)

HQ & Correspondence address: Safety Engineers Association
G1, 95/5 Sundaramurthy Gramani Street, Virugambakkam, Chennai - 600 092
Tel: 044 - 23774060; Mob: 9952005534, E Mail: seaindiachennai@gmail.com;
URL: http://www.safetyengineersassociation.org

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Title: Fatality due to Electrical Shock

What Happened

A welder new to the site was preparing test piece for SAW (Sub-merged Arc Welding) Welder qualification. The welder made a trial weld piece in the morning, and he was planning to do welding on the actual test piece in front of welding inspector. While opening the mother oven door to collect SAW weld flux*(welding flux to be heated in the mother oven before then use in the SAW welding Machine), he received electric shock. RCCB in the power supply did not trip. The nearby worker immediately tried to switch off the SFU (Switch Fuse Unit), but the handle did not turn correctly as marked. The contractor switched off the main supply manually and pulled the plug top out. Prolonged 'hold-on' type of shock passing across the chest caused Fatal.

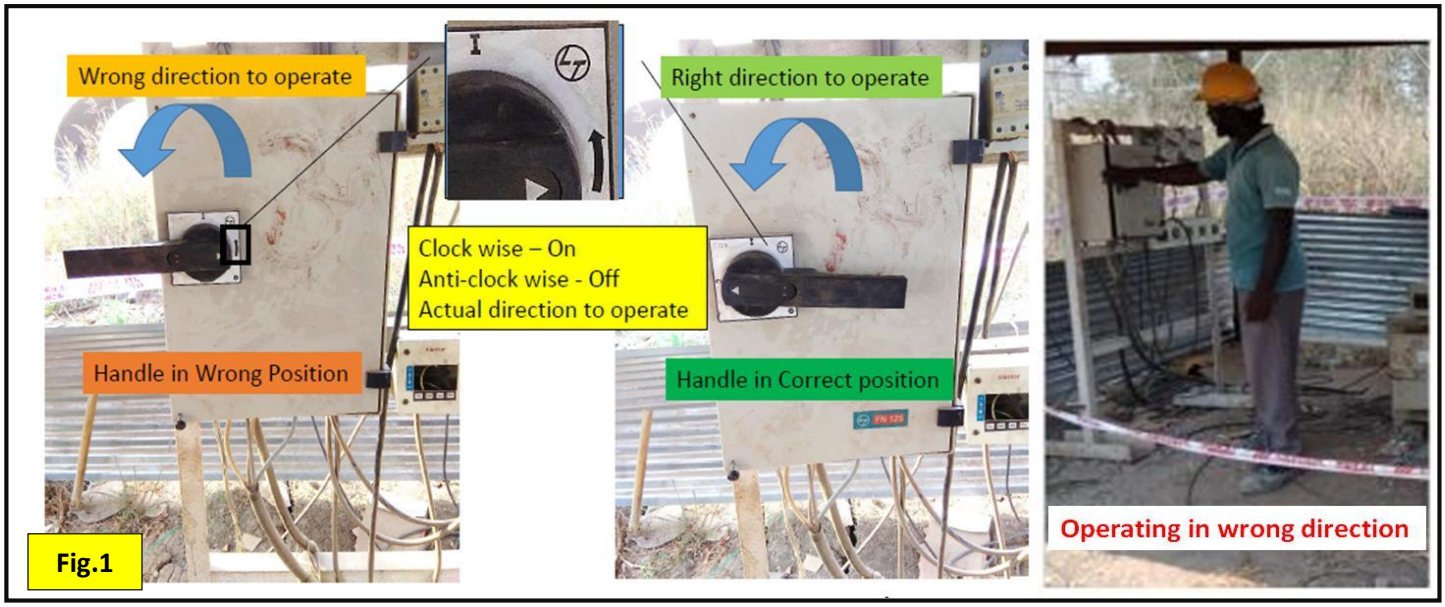

Fig.1

Contributing Factors for the Incident

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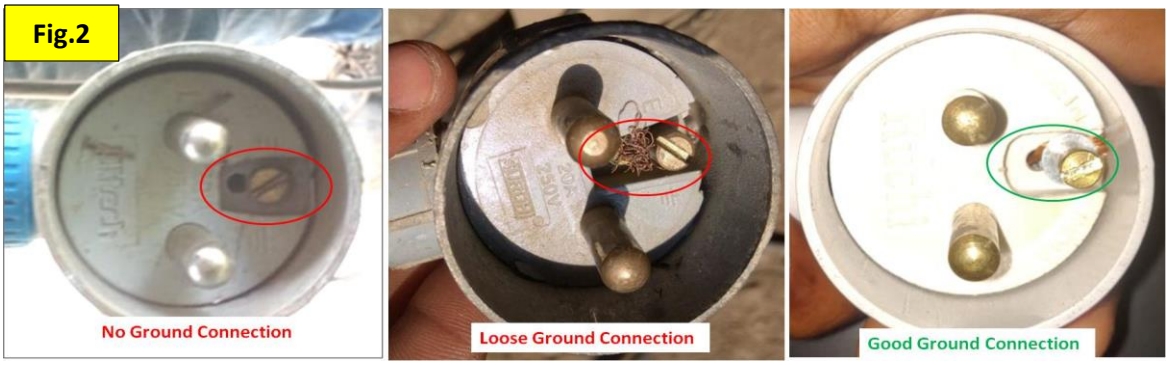
⇒ The RCCB in this DB did not trip when the person got electric shock. Power Supply was on
⇒ It took long time to disconnect supply manually due to handle of the SFU was fixed in wrong direction. (Ref Fig. 1)
⇒ Ground cable in the plug top was not fixed with terminals (loose connection) inside the plug top. (Ref Fig. 2)

Fig.2



Other Factors

⇒ When he came for test, he was wearing slippers and no shoes. He was assisted by a workman to collect the flux from the oven in the Morning, and in the afternoon, he directly opened the oven to collect the heated welding flux to fill in the SAW machine before starting the welding.
⇒ Since he was new to the work, PPEs were not issued to IP.
⇒ During last maintenance the electrician opened the SFU and while refixing he positioned the handle in the opposite direction as marked in the picture
⇒ In the three-pin plug, earth pin was not there, and the earth wire was kept inside the plug in loose.
⇒ Electrical room was not provided with a rubber mat or non-conductor material
⇒ Others trying to cut off the supply by applying the pressure on the switch handle and the shaft got fully damaged was noticed during the investigation
⇒ Wooded handle of the oven damaged and steel rod was there in place of handle. Since he was holding the door of the oven in one hand and try to take the weld flux in the other hand supply passed through hand-to-hand path that has caused seriousness in the injury to Fatal

Lessons Learnt:

⇒ All the electrical installation, SFU's, DB's etc., inspections done by electrician every day and weekly by Site engineer / supervisor along with area safety Supervisor.
⇒ Thorough inspection including handles, doors of SFUs / DBs shall be also verified by competent personnel.
⇒ Access control to ensure all workmen are deployed after mandatory Site HSE induction and provided with adequate PPEs
⇒ Prepare / review JSA for Inspection of Electrical equipment and Power tools. Include "Ground connectivity check in plug top" in electrical inspection check list.
⇒ Display list of approved electricians with contact numbers in electrical booth and review regularly.
⇒ Review mock drills shall be conducted to review the emergency preparedness w.r.t electrical shock rescue.

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The sudden taut in the luffing wire rope held back the jib and the tension caused the jib to buckle.