

Gujarat Power Research & Development Cell

(A Govt. of Gujarat Initiative)

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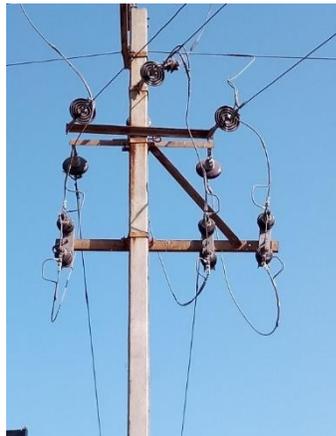


Air Break Switch with Earth Blade Facility with FRP Base Channel(ABEB)

Title of the Research: Air Break Switch with Earth Blade Facility with FRP Base Channel.(ABEB)

Present System:

- Switches plays a main role in the power distribution network during restoring power supply, maintenance activity etc;
- For the safety of our line staff earthing facility in equipment is play key role but existing switches have not that kind of facility available;
- M.S Material is used as a supporting structure of the switch.



Limitations of the present system: During line fault and maintaince activity, the line staff of a utility has to patrol the line to locate the fault in case of a sustained fault. The staff on action randomly operate switches- 'to push the power ahead' fashion- and identify the fault location. It is one kind of a trial and error method. During this process, the time taken to locate and clear the fault is quite high. The demand for the fast restoration of the power supply creates a stress on the staff and the staff ignores the safety rules and employ unhealthy working practices. The earthing on the both the sides of the isolated dead line (dead zone) is the most inevitable process. As mentioned earlier, the staff ignores to take safety precautions and don't care to earth the isolated dead line before working on it; as it requires a clumsy mechanism to earth all the three conductors, separately. This is one of the reasons to the rise in the numbers of accidents. The loss or damage to the life is irreparable, in case of a Fatal/non-fatal accident. Also Some times due to wind, birds etc, the outgoing wires of the switches is touch with the supporting structure and power intrruption happened.

Detail report of Innovation/solution: The medium voltage combination of 600 Amp Air Break switch with earth blade facility has the specific applications and would be more beneficial to the existing equipment, for the various reasons. The system under this design has provision for the onsite manual switch operation and earthing facility, without additional peripheral appliances like earthing rod. When the live line is isolated by operating the ABEB Switch, the dead line will get manually get earthed and will become safe to work. The choice of making earthing and not making earthing shall be available with the switch operator. Under certain circumstances like to bring back power, the switch will not be required to earth, in that case the earthing blade shall be kept open.

ABEB switch design is divided in to two parts, which are basically (1) AB Switch with Earth Blade and (2) FRP base Support Structure



On Condition



Off Condition



Earth Condition

Field study report :

- Switch Installed on dated 28.01.18 at near Sudarshan Chokdi, Borisana under kalol-1 Sub division, Kalol Division and run successful.
- After that sub division field staff operate on regular interval bases and switch works properly till date.

How does new innovation help to overcome Limitations of the present system?

Benefits of ABEB over the present system following:

- The electrical accidents to utility staff shall get eliminated almost;
- Increase in ease and safety of the operation;
- Increase in the confidence of the utility working staff;
- Cost Effective Solution;
- Minimization of the fault restoration time;
- Mechanically rugged design;
- Address the back power issues of distributed generation.