

## Gujarat Power Research & Development Cell

(A Govt. of Gujarat Initiative)

Gujarat Urja Vikas Nigam Ltd

CIN: U40109GJ2004SGC045195,

IIT Gandhinagar Research Park, IIT Gandhinagar,

Palaj-382355, Gandhinagar, Gujarat, India

[www.guvnl.com](http://www.guvnl.com); [www.gprd.in](http://www.gprd.in); [guvnlrnd@gmail.com](mailto:guvnlrnd@gmail.com)



# Remotely Communicable and Operable Air Break Switch with Earth Blade Facility.

**Title of the Research:** Remotely Communicable and Operable Air Break Switch with Earth Blade Facility.

### Present System:

- Switches play a main role in the power distribution network during restoring power supply, maintenance activity etc.
- Existing Air Break switches purchased by the DISCOMs have no facility for remotely operation and communication.
- For the safety of our line staff earthing facility in equipment plays a key role but existing switches do not have that kind of facility available.



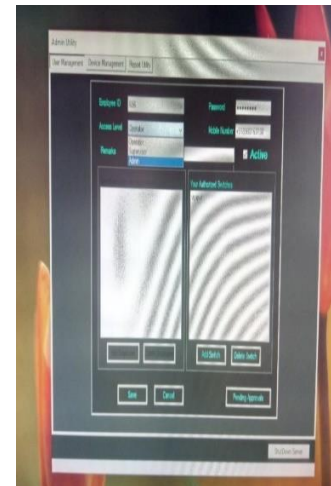
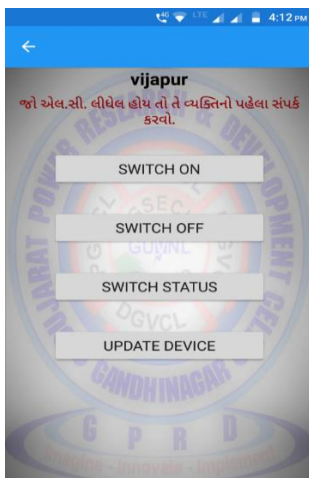
**Limitations of the present system:** The consumer demands for a quality power supply without interruption and minimum restoration time, in case of an interruption. This can be had only with a proper selection of the Network components and restoration mechanism adopted by the power supply utility. The 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. This leads to financial loss to the utility, in addition to the dissatisfaction amongst the customers.

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

**Detail report of Innovation/solution:** The medium voltage combination of remotely operable and communicable AB 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 features to send a signal to the system and the system operates the switch remotely and isolates the portion of the line. Also, there is a provision for the onsite manual switch operation and earthing facility, without additional peripheral appliances like earthing rod. This kind of switches available in market but cost of equipment is so high. ABEC switch design is divided in to three parts, which are basically (1) Remotely operable and communicable AB Switch with Earth Blade (2) DCU (3) and Support Structure

#### Field study report:

- Switch installed on dated 26.03.18 at Location no 49. Maheswar AG Feeder, Vijapur S/s, Vijapur Sdn, Vijapur Division and take trial and run successful.;
- Desktop application and Server install at GPRD cell on 28.03.2018 and take trial and Switch run successfully;
- After that sub division engineer, Sdn Line staff and GPRD cell person operate on regular interval and switch works properly till date;
- After some minor modification and suggestion comes in Switches and desktop application are incorporate and develop final specification, drawing and GTP accordingly.



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

Benefits of ABEB over the present system following:

- Minimization of the fault restoration time;
- Improve the power supply reliability;
- Increase in ease and safety of the operation;
- Increase the customers' satisfaction;
- Easily identify the fault area location;
- A cost Effective Solution;
- Identify the areas requiring maintenance, precisely;
- The electrical accidents to utility staff shall get eliminated almost;
- Increase in the confidence of the utility working staff;
- Address the back power issues of distributed generation.