



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; www.gprd.in; guvnlrnd@gmail.com



Wedge Connector

Title of the Research: Wedge Connector

Present System:

- In Power Distribution system, generally the joints are made using manually wire binding method. This method incorporates binding of two conductors together with aluminum wire binding. Unskilled labor and negligence tends to improper joint formation.
- Various joints are substantial components o
- The overhead network can be a major source of losses



Limitations of the present system:

- Loose Connection – Causing chattering and repeated failure;
- Improper Binding – Giving less mechanical strength;
- Faulty method of construction- Leading the repeated Failure at the same Location;
- High Wind Speed – Causing the detachment of the joint;
- Increase Sag Tension – Causing reduction in ground clearance;
- Substandard material for Jointing – Leading to further burning at the same spot.

Detail report of Innovation/solution:

The wedge connector is, practically, a better solution to the issue. Wedge Pressure Technology has formed the basis for a complete family of connectors that outperforms other conventional connector technologies, resulting in 'lowest life cycle cost'. Wedge Connectors (Boltless Connectors) overcome the physical and electrical limitations of traditional compression or bolted connectors; resulting in low technical losses and efficient, consistent current flow. The Wedge Connectors provide the most Cost effective solutions to a wide range of power connections and grounding challenges. Wedge Connector technology is the key to higher efficiency and more reliable power connections that addresses the above demerits of conventional connectors. The inherent abrasiveness of Wedge Pressure Connectors is

designed to maximize the number and dimension of these “electrical contact spots” and, therefore, minimize electrical resistance within the connector. The abrasive nature of Wedge pressure connectors, the scrubbing action created during application, and the residual spring-action of the C-member after installation combine to create optimal contact between the connector and the conductors.



Field study report:

Case 1:

A study was conducted on 11KV Umiya Metal feeder under Vijapur Division of UGVCL. 6 Nos of jumper’s joints were made on the pole No.14. The conductor of the line is DOG Conductor. Actual measurement of resistance of the joints made with wedge connector at pole No. 14 and other wired joint made without wedge connector on the pole No. 16 were taken using a micro ohm meter by site visit on dtd. 23.06.2017. The results are tabulated as under.

Sr. No.	Jumper or tapping location,(66KV Ranasan S/S, Vijapur Divn)	Resistance measured in mΩ (Average of 6 joints)	Remarks
1	11KV Umiya metal feeder Pole No. 16	0.22285mΩ	Ordinary joints provided with Binding wire
2	11KV Umiya metal feeder pole no. 14	0.04425 mΩ	Joint with the wedge connector

Case: 2: A performance of wedge connectors already provided on 11KV GIDC feeder of Mahuva Division of PGVCL was observed. After the installation of more than 6 years, the performance is found very satisfactory. There is no case of jumper burning and heating at joints.

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

Benefits of Wedge Connector over the present system following:

The wedge connector is, practically, a better solution to the issues related to joints. Wedge Connectors (Boltless Connectors) overcome the physical and electrical limitations of traditional compression or bolted connectors; resulting in low technical losses and efficient, consistent current flow. The Wedge Connectors provide the most Cost effective solutions to a wide range of power connections and grounding challenges. Wedge Connector technology is the key to higher efficiency and more reliable power connections. Burning of overhead conductors at joints due to loose joint shall get eliminated. The conductor snapping due to burning at joints shall get eliminated, it will improve safety of overhead line. Besides it will reduce the man hour and manpower to be exploited for the re-jumpering.