

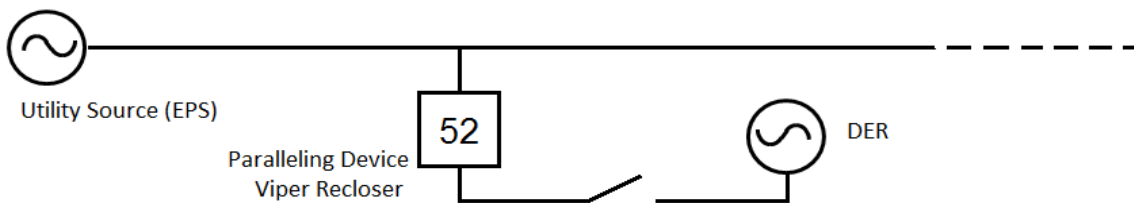
# Paralleling devices between DER and EPS:

*Using Viper Reclosers or Trident Switches for interconnection between Distributed Generation and Utility System*

## Introduction

A paralleling device interties a Distributed Energy Resource (DER) with the utility's Electric Power System (EPS) as defined per the IEEE 1547 standard. The paralleling device is open when isolating the DER from the grid and closed when integrating the DER into the grid.

When the DER is isolated from the EPS, the paralleling device must be able to withstand an 180° out-of-phase condition across the open gap for an indefinite duration. The IEEE 1547 standard requires a 110% over-voltage withstand from each source. This corresponds to a 220% line-to-ground voltage across open contacts of the paralleling device. In a 38kV system, this 220% line-to-ground voltage equates to 48kV. *(See below)*



## Viper Validation

G&W Electric, in partnership with a major utility, performed and successfully passed a 24 hour out-of-phase 48kV withstand voltage on a 38kV Viper-ST in the open position at a recognized US laboratory. The Vipers are the first reclosers of its kind to pass and publish validation for such paralleling applications.

G&W switchgear can be used in paralleling applications only in steady states where the device must remain open while the two sources are not synchronized. Per standard, reclosers and fault interrupters are not designed to make and break out-of-phase fault conditions. The IEEE 1547 also calls for a second isolation point to provide a lockable visible break. This second open point is recommended during generator starting sequences.

## Summary

Over the years G&W switchgear has become a top choice for many utilities' intertie applications. Paralleling schemes can also be implemented using our Trident switches for underground applications as they share the same solid dielectric technology. For padmount and vault applications, the Trident with SafeVu provides the visible break required by the IEEE 1547 standard. G&W Viper reclosers and Trident switches keep adding value to customers as they are now validated to complement DER strategies in paralleling applications.