

## Subject: Three Phase Protection for confined space applications.

**Customer Category:** Midwest Investor Owned Utility

**G&W Products:** Padmount, three phase, solid dielectric VIPER recloser with SEL 351-R control.

**Utility Information:** The utility serves approximately 95,000 residential and 13,000 commercial/industrial customers. The distribution system is 70% overhead and 30% underground. Nominal system voltage is 12.47kV transformed from a 34.5kV sub-transmission system.

**Issue:** A new substation was required to provide additional power and increased reliability to a growing tourist area of the utility's service territory. The utility decided to tap off an existing 34.5kV line however, space for constructing a new air insulated substation was just not available. This mandated system designers to consider a different approach.

Working with their G&W representative, the decision was made to go underground using padmount equipment. A standard three phase, dead-front, 2.5MVA transformer was used to step down the voltage from 34.5 to 12kV. To provide three phase protection to the new critical loads fed from the transformer, the utility also required an automatic recloser. To maintain the smallest foot print possible, G&W was able to provide a padmount version of their VIPER solid dielectric, vacuum recloser with SEL 351-R control. The use of solid dielectric technology permitted an ideal compact solution while offering reliable protection and superior user programmable control features. A single phase, dead-front padmount transformer was also installed to provide a 120-volt source for the recloser control.

**Results:** A new, compact, dead-front substation using state-of-the-art recloser technology is now providing reliable power to the new loads. All at just a fraction of the space and cost of a typical air insulated substation.

For more information: Contact your G&W Electric Company representative, or visit us at [gwelec.com](http://gwelec.com).

*Photos (right): Top photo shows the recloser front view with SEL 351-R control. Bottom photo shows the recloser rear view cable connections.*



*Photo shows the padmount recloser (left), three phase step-down transformer (center) and single phase transformer.*

