

Three Phase Protection for confined space applications

Challenge

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.

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.

Solution

Working with their G&W Electric 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 footprint possible, G&W Electric was able to provide a padmount, three phase, solid dielectric Viper® 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, deadfront padmount transformer was also installed to provide a 120 V source for the recloser control. A new, compact, deadfront substation using state-of-the-art recloser technology provides reliable power to the new loads.



Padmount recloser (left), three phase stepdown transformer (center) and single phase transformer.



Recloser front view with SEL 351-R control



Recloser rear view cable connections