Case Study

Fault Protection for Three Phase Motors

Challenge

The oil extraction process requires large, three phase motors to operate the pumping wells. To protect these motors and other equipment, the customer used three phase reclosers programmed for four shots to lockout. The conventional three phase trip / three phase lockout feature of the recloser however resulted in all of the motors being affected, even for single phase faults which was their most common nuisance trip. Traditional time delays of cycles between shots would result in burning out the motors which could not shut down and restart that quickly. To accommodate this, the customer had to program the recloser with long time delays between the 'shots' of at least seconds and sometimes minutes. If a fault did occur, the long time delays and the three phase trip / three phase lockout operation affected all of the motors resulting in substantial downtime and revenue loss.

Polemounted, 15kV Viper-ST recloser.

Solution

The operation versatility of G&W Electric's Viper®-ST recloser provided an ideal solution. The Viper-ST permits single phase trip / three phase lockout operation. Programmed in this manner, the customer was able to use standard cycle speed time delays between shots for single phase faults. This capability permits the nonfault affected motors to stay in service by 'coasting through' the fast single phase reclose to maintain service to the pumps resulting in minimized downtime and increased revenue.

An additional feature which attracted the customer to G&W Electric's solution was the compatibility of the Viper-ST with the SEL 651-R control. The control was preferred by the customer because it offered MIRRORED BITS™ * Technology which worked well with the customer's SCADA system. This package provides the optimum balance between system features, flexibility and cost.

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