Electric & Electronic Systems
For Remote Data Delivery and Control

Secondary Network Monitoring Project Saves the Day

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For additional information about this pilot project for Secondary Network Monitoring please contact Mr. Robert V. Smith, PE 845-486-5295 Electric T & D Engineering-Central Hudson.

Customer background information:

1- The Secondary Network is a system of submersible transformers installed in manholes and sidewalk vaults that supply service to customers through an interconnected system of secondary conductors. These transformers are in turn served from separate primary feeders. Each transformer is equipped with a device called a Network Protector, which will open for various conditions such as loss of the primary feeder. The opening of the Network Protector preserves the service to the customers served from the network for situations involving loss of a primary feeder.

2- In 2005 a multi-year pilot demonstration project was undertaken to install remote monitoring equipment on each of the secondary network transformers serving the core area of a small city. The monitoring system was produced by Power Systems Integrity, Inc (PSI) and was called CEMesh®. These monitors would communicate loading and voltage data over the LAN via the power lines to a Gateway. The Gateway communicates over a cellular modem connection to a remote server. The server then stores the system data and the results could be viewed on a secure web site.

3- By late 2006 approximately 17 of the 27 network transformers were being monitored and real time data was available for examination. This real time data provided an opportunity to view the dynamics of the secondary network system for the first time. The project is planned for completion by fall 2007.

4- Having this real time information enabled immediate identification a problem with one of the three feeder regulators located at the distribution substation. The data received indicated that a number of transformers on one feeder either had open Network Protectors or were carrying less load than expected. The utility made a minor adjustment of the feeder regulator that restored the expected loading and operating configuration.

5- In March of this year another anomaly was detected in the CEMesh® data stream. Two 1000 kVA network transformers indicated a significant unbalance in loading. A field inspection and spot load checks confirmed the CEMesh® data. The next day a crew responded to open and check the Network Protector. Upon opening the protector, they found contacts badly burned. Total failure of the protector was imminent so steps were immediately taken to de-energize the transformer and the protector. New parts were installed and the protector is now back in service.

6- The identification of the problem and the quick, efficient response prevented what could have been a serious failure involving significant damage and expense.