

## Asian Utility Seeks Reassurance on the Efficacy of Polymer Insulators

S&C Featured Solution: S&C Laboratory Services

Location: Chicago, Illinois

## **Customer Challenge**

Tenaga Nasional Berhad is the national utility of Malaysia, with headquarters in Kuala Lumpur. TNB had years of good experience with porcelain insulators and was reluctant to accept polymer insulators into its standards. Recently, however, the cost and technological advantages of polymer insulators led TNB to experiment with trial installations on its system.

Over the past five years, TNB installed a number of MacLean Power Systems' Compositz Suspension Insulators on its 138-kV transmission system on the East Coast of Peninsular Malaysia—an environment heavily laden with salt and industrial contamination.

MacLean Power Systems subsequently commissioned S&C to perform testing on a number of trial insulators removed from the field. The purpose of this testing was to compare the electrical capabilities of these insulators versus those of new insulators.

## **S&C Solution**

Working with representatives from MacLean Power Systems, S&C engineers conducted several tests on the insulators at S&C's Nicholas J. Conrad Laboratory, located at the company's headquarters in Chicago, Illinois.

Dry-impulse, 60-Hz wet-flashover and 60-Hz wetwithstand tests were performed at voltages reaching above 1150 kV impulse and 600 kV, 60 Hz. All tests were performed in accordance with applicable IEC standards and S&C laboratory procedures.

The wet-flashover and wet-withstand tests required the application of an evenly distributed and regulated water spray, which had to be collected in a moderately sized pool constructed in the lab. Conductivity of the water was monitored during the testing and held within levels specified by the standards.

## Results

The applied voltages were corrected per IEC standards for the actual atmospheric pressure and relative humidity at the time of the tests. In all instances, the applied impulse voltage was well in excess of the wetwithstand value specified in the standards. In some cases, the field-trial units were tested at levels beyond that of the control sample.

The trial insulators removed from the field exhibited no degradation in electrical performance.

Since completion of S&C's testing, Tenaga Nasional Berhad has approved the use of MacLean Power Systems' Compositz Suspension Insulators on transmission lines up to 275 kV.

