
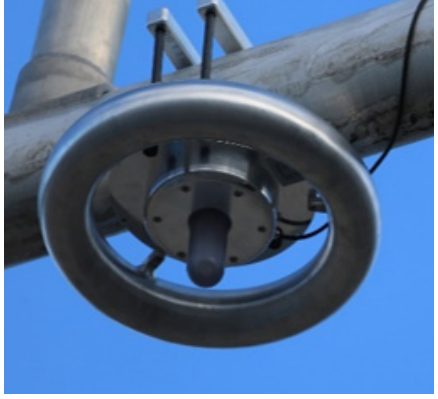
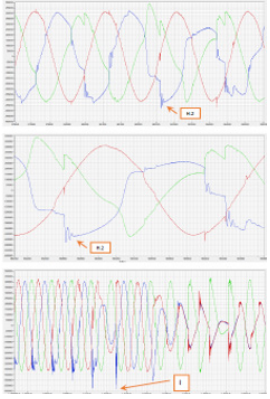


Measurements of High Voltage Transients with Optical Sensors

Powertech Labs conducts field measurements of high voltage transients using optical voltage transducers and electric field sensors

High voltage transients following equipment switching or balanced and unbalanced faults can involve a rich content of high frequencies. Furthermore, often the nature of the transient's frequency response can be affected by introduction of passive measuring devices such as inductive or capacitive sensors. Key attributes of a good measuring system include safety, accuracy, dynamic range and representation bandwidth among others.

Optic sensors provide a significant advantage when used to measure high voltage transients involving a wide band frequency response including DC. An additional benefit of optic sensors is the galvanic isolation that minimize electrocution hazards. Current optical instrument transformers are based on Faraday and Pockels effects originally proposed in the 60s and commercially available since late 90s.

Powertech services include the following:

Field Measurements

Powertech currently has two mobile optical measuring sets composed by a three phase Optical Voltage Transducer (OVTs) and a three phase Electric Field Sensor (EFSs). These sets can be used together or independently allowing us to measure voltages across circuit breakers, disconnects, transformers or up to six different locations on the same phase.

Each sensor is equipped with a 200m optic fiber to acquire the waveforms at a convenient and safe distance from the measuring point.

The OVT system require by-land transportation to the site while the EFS system can be transported by plane. Powertech's mobile optic voltage transient measurement system operation range is from 25kV up to 500kV with a frequency representation bandwidth up to 20kHz.

Equipment Performance Evaluation

Powertech's engineers can evaluate equipment performance against application requirements. This analysis can be enhanced by transient simulation analysis conducted in advance to the field measurements to develop a more effective testing plan by identifying the most critical and practical switching scenarios as well as to predict frequency responses.

Equipment Commissioning Testing

Our optic measuring system can easily be deployed during critical power system equipment commissioning. Examples of these applications are commissioning of circuit breakers, air and gas insulated disconnects, reactor de-energizing, transformer energizing, staged faults among others.

ABOUT POWERTECH LABS:

Powertech Labs Inc. is one of the largest testing and research laboratories in North America, situated in beautiful British Columbia, Canada. Our 11-acre facility offers 15 different testing labs for a one-stop-shop approach to managing electrical utilities, and testing gas components, pressure vessels and systems.

Outside of the utilities industry, Powertech provides routine testing capabilities, product development, research and consulting services to support an array of industrial-type operations, electrical equipment manufacturers and automotive original equipment manufacturers.

www.powertechlabs.com

81046-0146

ISO 9001 QMI-SAI Global

ISO 14001 QMI-SAI Global

ENGINEERS & GEOSCIENTISTS BRITISH COLUMBIA

OQM CERTIFIED

FOR MORE INFORMATION CONTACT:

Dr. Jorge Hollman - 604.831.5148
Senior Manager & Principal Engineer
Substations Engineering Studies
jorge.hollman@powertechlabs.com

Powertech

www.powertechlabs.com