



Protection & Control Applications

Powertech Substations Engineering Studies provides support to customers with Protection & Control Planning

Powertech conducts protection studies to offer the most optimal protection scheme options. We develop reliable, secure, sensitive and cost-effective solutions to suit the application requirements of our customers.

A proper protection scheme is required to:

- Detect abnormal power system conditions including but not limited to overcurrent/overload short circuits, over/under voltages, over/under frequency, out-of-synchronization, breaker failure and reverse power.
- Prevent damage on equipment and negative impact to system performance due to prolonged system abnormal conditions.
- Maximize system operability by isolating the faulty portion from the rest of the system,
- Mitigate arc-flash incident energy by application of suitable techniques/methods without compromising the basic coordination between protective devices.
- Communicate efficiently between protective devices

Powertech services

Powertech Substations Engineering Studies offers development of full protection schemes for the following equipment applications:

- Power Transformers Protections: differential, overcurrent/short circuits, over excitation, under/over voltage and restricted ground fault
- Busbars: high/low impedance differential protection

- Generators: voltage-controlled overcurrent, short circuits, thermal overload, over/under frequency, over/under voltage, over excitation, loss of field, generator unbalance, synchronism check, reverse power, differential and restricted ground faults
- Switchgears: overcurrent/short circuits, under/over voltage, synchronism check and ground faults
- Breaker Failure: design backup plan/scheme to clear the fault currents contributions to the faulty section should the immediate respective protective device fails to operate on the pre-defined time delay
- Power Line Protections: custom-designed line differential and distance protections
- Series Capacitor Bank: sizing and selection of the series capacitor bank protection elements, including Metal Oxide Varistors (MOV), Triggered Air Gap (TAG), and Fast By-Pass Switch based on system characteristics.

Other Services

Our team can also perform the following protection related services:

- Protection & control philosophy writeups to outline the required protection schemes for projects that need optimization or determination of pickup and thresholds values
- Preparation of logic diagrams to outline the prospective protection & control scheme applications implemented on the system
- Real Time close-loop relay performance protection testing

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



810.46-0157

FOR MORE INFORMATION CONTACT:

Dr. Jorge Hollman - 604.831.5148

Senior Manager & Principal Engineer
Substations Engineering Studies
jorge.hollman@powertechlabs.com



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www.powertechlabs.com