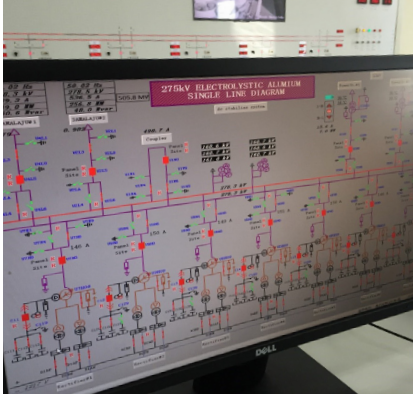

Model Development for Industrial Loads

Powertech Labs is offering modeling services for transmission-connected industrial loads and distribution-connected loads. Developing accurate models for grid-connected loads is a key process for understanding the transient behavior of loads under various system conditions and contingencies, which is also crucial for maintaining power system reliability.

Interconnection of Industrial Loads

When industrial loads such as electric furnaces or aluminum smelters are interconnected to an electric grid, their transient and dynamic behavior can have a significant impact on grid operation, especially for a small or islanded power system. Unintended tripping of such loads can not only cause major interruption of industrial production but may also result in cascading events of the power system and lead to power outages in the interconnected system.

Grid codes or reliability standards typically stipulate technical requirements for grid-interconnected industrial loads and generators. Industrial customers are responsible for developing valid simulation models for their production facilities to be used for power system planning and operation studies. Furthermore, harmonics produced from industrial facilities should not exceed permissible limits set by the grid codes and standards, and well-designed mitigation measures, such as harmonic filters, should be installed to prevent harmonics from causing adverse power quality effects for other network users.

Model Development for Industrial Loads

Powertech performs model development for industrial loads through staged field tests or system events and has completed a number of load-modeling projects for industrial plants that utilize Electric Arc Furnaces or Aluminum Smelters (a.k.a. potlines) in production processes. Load model development typically includes the following steps:

- Examine plant electrical connections and control schemes
- Devise detailed plan for determining load characteristic and control performance
- Execute test plan and record unit/plant responses at selected measurement points
- Derive simulation models based on system configuration and control logic
- Validate model parameters by simulating each test against recorded field measurements
- Document details of field test and model validation results

Powertech can assist grid operators and industrial customers to meet the requirements of grid codes by conducting load interconnection studies, and field tests that develop appropriate simulation models for representing the steady-state and transient response of transmission-connected industrial loads and distribution-connected loads.

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

81020-0119

FOR MORE INFORMATION CONTACT:

Zhihong Feng - 604.590.7747
Principal Engineer,
Power System Studies
zhihong.feng@powertechlabs.com

Saeed Arabi - 604.590.7459
Principal Expert,
Power System Studies
saeed.arabi@powertechlabs.com

Powertech
www.powertechlabs.com