



## Engineering

- Project management
- Relay coordination studies
- Arc flash evaluation
- Predictive maintenance studies
- Substation equipment condition evaluations
- Lightning protection studies

## Protection & Control

### ■ Protective relay installation, commissioning, testing, and maintenance

#### » Transmission Line Protection

- Microprocessor Relays:  
SEL 411L, SEL 421, SEL 311L, SEL 321, SEL 121F, SEL 121G, RFL 9300
- Electromechanical Relays:  
ABB IRD, ABB KD-4, ABB KD-10, ABB KD-11, ABB CR, GE GCY, GE JBCCG

#### » Transformer Protection

- Microprocessor Relays:  
SEL 387, SEL 587, ABB TPU2000R
- Electromechanical Relays:  
GE BDD, ABB HU
- Electronic/Solid State Relays:  
Basler BE1-87T

#### » Bus Protection

- Microprocessor Relays:  
SEL 487B, SEL 587Z
- Electromechanical Relays:  
ABB KAB, GE PVD
- Electronic/Solid State Relays:  
Basler BE1-87B

#### » Distribution Feeder Protection

- Microprocessor Relays:  
SEL 351, SEL 751, ABB DPU, ABB DPU 2000, ABB DPU2000R
- Electromechanical Relays:  
ABB CO, GE IAC
- Electronic/Solid State Relays:  
Basler BE1-50/51, Basler BE1-51

#### » Generator and Motor Protection

- Microprocessor Relays:  
SEL 300G, SEL 701, Beckwith 3425A
- Electromechanical Relays:  
GE CFD

#### » System Stability Protection

- Electromechanical Relays:  
GE IJS
- Electronic/Solid State Relays:  
Basler BE1-25, Basler BE1-810/U

### ■ Control Equipment installation, commissioning, testing, and maintenance

#### » Transformer Load Tap Changer, Voltage Regulator Controls, and Capacitor Controls

- Beckwith:  
M-2001 Series, M-6200, M-6280, M-6283
- Siemens:  
MJ Series and MJXL
- Cooper:  
CL Series
- S&C:  
Intellicap

#### » Substation remote terminal unit (RTU) installation, commissioning, testing, and maintenance

- Digital input alarm verification
- Control output verification
- Analog metering verification

## Substation Equipment

- Power transformer installation, commissioning, testing, and maintenance
  - » Doble AC insulation test (Power Factor)
  - » Doble sweep frequency response analysis (SFRA)
  - » DC insulation test (Megger)
  - » Transformer Turns Ratio test (TTR)
  - » Load tap changer maintenance and repair
  - » Oil dielectric quality and diffused gas analysis (DGA)
  - » Sudden pressure relay test
  - » Cooling equipment verification
  - » Alarm verification
- Circuit breaker installation, commissioning, testing, and maintenance
  - » Circuit breaker time and travel analysis
  - » DC insulation test (Megger)
  - » DC micro-ohmmeter (Ductor)
  - » SF6 Gas reclamation and testing
  - » Breaker oil analysis (BOA)
  - » Vacuum bottle high potential test
  - » Alarm verification
- Switch and circuit switcher installation, commissioning, testing, and maintenance
- Station battery bank and charger installation, testing, and maintenance
  - » Cell/strap impedance test (cellcorder)
  - » Bank load test
- Bus and Cable AC/DC high potential test
- Infrared inspection

SERVICES