



## HV SUBSTATION CAPABILITIES

*Everything from turnkey EPC, to a la carte products & services.*

### ENGINEERING

- Feasibility Studies
- System Studies & Modeling
- Relay Settings & Programming
- Automation Programming
- Protection & Control Design
- Electrical Design
- Substation Design
- IFB & IFC Design Packages

### PROCUREMENT

- Power & Distribution Transformers
- HV & MV Breakers (*GIS, AIS*)
- Disconnect Switches & Interrupters
- Instrument Transformers
- Arrestors, Insulators, Cables
- Control Houses & Relay Panels
- PDCs & Switchgear Lineups
- Generators (*steam turbines & recip.*)
- Engineered Gensets
- Mobile & Modular Substations

### CONSTRUCTION

- Project Management Services
- Site Preparation
- Civil/Structural Construction
- Electrical Construction
- HV/MV Equipment Installation
- Control House Integration & Wiring
- Testing & Commissioning
- Energization & Interconnect Support



## **LIFE-CYCLE SERVICES**

### **PROTECTIVE RELAYS**

- Relay Upgrades and Replacements
- Verification of Settings to Study
- Testing of Relay Inputs and Outputs
- Functional Testing Relay Elements
- Verification of Relay Logic Functions
- Verification of Control Scheme
- Arc Flash Protection
- Firmware Updates

### **BREAKERS**

- Mechanical Inspection/Maintenance
- Static/Dynamic Contact Resistance
- Insulation Resistance
- Timing Test
- Coil/Motor Current Analysis
- Minimum Pickup Test

### **INSTRUMENT TRANSFORMERS**

- Visual Inspection
- Ratio & Phase Accuracy
- Winding Resistance
- Burden Impedance
- Verification of Nameplate Data & Performance Characteristics

### **TRANSFORMERS**

- Inspection & Cleaning
- Oil Analysis
- Tap Changer Inspection
- Transformer Turns-Ratio
- Insulation Power Factor
- Bushing Power Factor
- Winding Resistance
- Excitation Current Test
- Leakage Reactance
- Sweep Frequency Response Analysis