

Renewable Energy Projects

Power System & Substation Design Build Services

EPTCON Ltd.
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Power System & Substation Design-Build Services

EPTCON offers complete Engineering, Procurement, and Construction (EPC) Services for Renewable Energy Projects - from the collector source to the utility connection - just as we have for all Electrical Power and Transmission Construction projects we've successfully built over the years. These projects would include the Feed-in Tariff (FIT) projects announced by the Ontario Power Authority (OPA).

Engineering & Design Services

Typical Engineering & Design services offerings for a Solar or Wind project would include but not be limited to:

Electrical Engineering Services

- Design of the protection relaying schemes for the utility line and bus interconnections (i.e. 230 kV), including detailed drawings required for assembly of the relay panels
- Production of major electrical equipment specifications.
- Production of all related electrical drawings including single line diagrams, AC & DC schematics, trip logic diagrams, equipment layouts, cable and termination schedules and lighting layouts
- Programming and setting of the protection relays
- Design of the substation ground grid including taking the ground resistivity measurements at site
- RTU communications integration with IESO/HONI.
- Design of the PV module and racking system layout, site roadways, and all related shading calculations for solar projects
- Design of the AC collector system and the DC cabling system including PV module cabling
- Detailed design of the field mounted combiner boxes.
- Design of the cable trenches for the MV cabling and DC cabling
- Design of the protection relaying schemes for the substation, including detailed design of the relay panels and control building
- Design of the station inter-tripping schemes with the remote Hydro One (HONI) stations
- RTU communications integration with the inverter station master SCADA system
- Construction and commissioning assistance



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Civil Engineering Services (as they relate to the electrical systems)

- Station Layouts and section views
- Site drainage, back fill and fencing
- Transformer containment reservoirs and blast walls
- Concrete foundations for transformers, towers, breakers, modular buildings, switches, other equipment and fencing
- Substation structural steel for towers, cable tray and other equipment

Complete Turn-Key System Installation Services

- Switchyard foundation preparation
- Switchyard cable trench construction
- Site drainage, back fill and fencing systems
- Transformer containment reservoirs and Blast walls
- Dead end tower foundations
- Substation structural steel, HSS, or lattice type including dead end entrance towers
- Power transformer offloading & transport/assembly & oil filling
- Circuit breakers and circuit switchers of all types and sizes including assembly, calibration, oil and SF6 gas filling
- Medium voltage switchgear installation of all types and sizes
- Load break and air break disconnect switches of all voltage ratings including setup and calibration
- Switchyard bus-work including rigid and strain bus, tubular aluminum welding and ISO-Phase Bus
- Complete station and equipment grounding systems including neutralizing transformers and teleline isolation
- Modular Protection & Control Buildings
- Capacitor banks and harmonic filters
- Relay protection, control and substation automation systems including cabling and wiring
- SCADA, PLC and DCS systems

Testing & Commissioning

- Outage and connection planning
- Testing of breakers, disconnect switches, CT's, PT's, CVT's, power transformers, DC control systems and other equipment
- Relay settings Programming and relay characteristic and function testing
- Protection & Control logic functional testing and commissioning
- Current and voltage phase angle readings (between all)
- SCADA and RTU communication system integration, programming and function testing
- HONI "COVER" testing and final sign offs
- IESO system interface testing and final sign offs

For your Solar project, EPTCON also offers:

- Made-in-Ontario, Custom-built, project specific 'Inverter Powerhouses' (snow load rated modular buildings) in 1mW and 2mW sizes with Inverters and MV Transformers, protection and control equipment
- Made in-Ontario, Custom built 'combiner boxes' for termination/connection of Solar panel row DC circuits