

KYLE HAWKINGS, P. Eng.

Electrical Engineer

314 5 Ave NE
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587-938-1301

Kyle is an electrical / mechanical engineer with over decade of technical and project management experience throughout the power and energy industry supply chains. Trained as an Integrated Engineer, Kyle is competent in both mechanical and electrical design. This multi-discipline background has made him an effective, responsible technical resource for projects ranging from design of a 500 hp compressor block and equipment package, through to solar photovoltaic system design and construction (commercial rooftop and ground-mounted), 25 kV solar photovoltaic plant design and construction, 35 kV wind farm asset management and 240 kV, transmission-scale NERC power plant compliance. Kyle is a hands-on, field engineer (and apprentice electrician) with experience as a manufacturer, constructor, and owner's representative, ensuring he can see from all points of view on a project. His training and experience in quality management and ISO 9001 auditing ensure that his team produces the right results, with the right process.

Project and Role Experience

Note: At client request, some recent and ongoing client projects may be identified as confidential below, to protect the client's commercial interests.

ONEC Construction Inc. – Solar PV Support

- Supported EPC customer in assessment and pricing of several turnkey solar projects in western Canada.
- Performed studies for:
 - solar system output (PVsyst),
 - buried cable ampacity.
- Supported customer in preparing quotation and design procedures for utility scale solar photovoltaic facilities.

Shell Scotford Osi Chemicals – Scotford Solar (4.6 MW)

- Supporting EPC in detailed design and major equipment selection for the facility.
- Supporting EPC / Owner in clarification respecting interconnection technical requirements and system integration, such as transformer winding selection for GSU transformer to meet system grounding requirements.
- Responsible for all electrical studies, including:
 - load flow / short circuit,
 - ground grid analysis (step / touch potential) in CDEGS,
 - buried cable ampacity,
 - protection philosophy, design, and coordination, and
 - arc flash and shock hazard analysis.
- Supporting Quality Management System development and ITPs for the project.

Capital Power – Strathmore Solar (40.5 MW) RFP Technical Specifications

- Supported Owner in development of detailed technical specifications for construction RFP for single axis tracker facility.
- Supported preparing interconnection design.
- Supported in all electrical aspects related to the RFP.

Innogy Renewables US – Hull Solar (24.5 MW) and Vauxhall Solar (22 MW) Utility Solar Facilities (ongoing)

- Canadian engineer on all technical matters related to design and build of the facility
- Provided technical review and advice for local code compliance, including detailed analysis for the plant

- Supported client in vendor matters related to achieving “CSA” compliance (per Alberta STANDATA 18-CECB-2, Rule 2-024 & LEG-ECR-2)
- Lead / supported medium voltage, low voltage, and 1500V DC equipment specification to meet Canadian requirements
- Lead / supported SCADA design and development to local ISO (Alberta Electric System Operator) and distribution owner (Fortis) specifications
- Lead / supported weather station design to comply with local ISO requirements
- Negotiated transfer trip provisions and coordinating third-party study on inverter anti-islanding
- Performed system calculations in accordance with Code requirements, including:
 - buried cable ampacity calculations using Neher-McGrath / IEEE 835
 - solar photovoltaic string calculations per CSA C22.1 Section 64
 - protection and conductor ampacity sizing per CSA C22.1
- Performed design of pipeline right-of-way crossings and directional boring plans, and supporting clients in establishing crossing agreements
- Provided construction field support as on-site engineer, including expediting or responding to requests-for-information
- Set up electrical quality management system, including:
 - Overseeing work procedure and inspection / test plan definition
 - Preparing filing and document management system
- Provided commissioning management and energized safety program definition, including:
 - Preparing hazardous energy management (energized work and lock-out/tag-out) process
 - Preparing safe energized work plans for energized testing
 - Training electrical workers in hazardous energy management and safe energized work processes
- Supported communications with ISO, distribution utility, and transmission utility as direct technical contact
- Acted as technical representative for clarifications and requests for information with the Authority Having Jurisdiction
- Commissioned of SCADA RTU communications with ISO and distribution utility
- Commissioned of plant network, including STP ethernet ring
- Design and development of in-plant HMI and control system
- Commissioned and interconnected of all site weather instrumentation, including irradiance, wind, precipitation, temperature/humidity, and barometric pressure sensors in compliance with AESO 304.9
- Executed technical evaluation of warranty concerns with central inverter system, and hands-on inverter repair
- Directed and executed switching activities, including use of insulating gloves and hotstick
- Prepared work management and inventory management processes for bulk electrical work
- Prepared inventory system, including stock locations and bills of materials
- Operated tracker with mower attachment
- Operated skid-steer loader for minor earthworks
- Operations and maintenance support, including fault response and control anomaly investigation
- Prepared a grounding step/touch potential study in CDEGS and PowerFactory software following addition of a grounding transformer

Alberta Federation of Rural Electrification Associations – AUC Proceeding 24116, Distribution System Inquiry

- Supported client as the on-record technical expert on matters relating to the proceeding
- Provided support for client in developing technical submittals respecting distribution connected generation and load, and recent developments in standards

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- Provided support for client in developing responses to Information Requests (IRs) and in developing IRs towards other parties
- Attended Technical Meeting with client to act as technical advisor

Capital Power – Operations Support

- Supported client on-demand with documentation, procedures updates, and other technical advice as required

Capital Power – Wind Turbine Ice Throw Mitigation

- Developed scope of work for turbine OEM SCADA to modify SCADA for existing ice sensor
- Coordinated quotation process with wind turbine OEM on behalf of client

Capital Power – Renewables Operations Manual

- Supported client with updates and expansion to existing operations procedures for distribution-connected and transmission-connected renewables assets
- Audited existing procedures for compliance to ISO 55001 (Asset Management Systems)
- Prepared owner procedures for operations and maintenance, including establishing key performance indicators

IEEE P1547.1 / P1547.2 / P1547.9 Working Group (ongoing)

- Participating in working groups developing the standards for utility connection of Distributed Energy Resources (DERs) to distribution grids, including biogas, solar photovoltaic, wind, and electric storage system (ESS) resources
- Providing systems integrator and plant owner experience to predominantly manufacturer and distribution utility working groups
- Helping write the testing guide and application guide for the rules for interconnecting resources used by utilities in connecting resources ranging from household scale solar, through to 25 MW distribution-connected plants

Trans Mountain – Meter Bank 1 Shipper Addition

- Electrical, Instrumentation, and Controls (EI&C) team lead, for major meter bank expansion project
- Responsible for power distribution, tray design, and heat trace
- Client liaison on all matters relating to electrical and instrumentation
- Responsible for resource selection, and EI&C budgeting and scoping

Trans Mountain – Meter Bank 2 Expansion

- Electrical, Instrumentation, and Controls (EI&C) team lead, for major meter bank expansion project
- Responsible for power distribution, tray design, and heat trace
- Client liaison on all matters relating to electrical and instrumentation
- Responsible for resource selection, and EI&C budgeting and scoping

City of Edmonton – Microgenerator Conversion

- Identified opportunity to increase existing non-exporting synchronous generator value by application under the Microgeneration regulation for client
- Supported client with technical requirements and negotiation for interconnection

- Developed scope of work and all necessary project drawings
- Performed protection study to meet new utility requirements
- Selected equipment for application and obtained utility approvals on client's behalf
- Performed all SCADA programming and commissioning
- Designed and commissioned transfer trip between EPCOR and the generators
- Acted as client technical representative to utility
- Supported client in troubleshooting voltage issues at the facility resolved by a tap change

Natural Forces – Pesâkâstêw Solar 10 MW_{AC} Utility Solar Facility

- Supported client on all technical matters related to development, design and build of the facility
- Provided technical submittals for utility interconnection
- Prepared project layouts and single line diagrams for utility submittal
- Prepared CAPEX, and supported client in developing OPEX
- Vendor contact for technical and commercial matters during estimating phase
- Supported client in developing contracting strategy and evaluating opportunities for Indigenous participation
- Supported client in development of bid pricing and proposal to utility for the power project
- Supported client in interaction with the utility (SaskPower)

Kinder Morgan Canada – GEP Lights to Meter Bank 1

- Responsible electrical engineer for installation of a new custody transfer valve, and associated controls and heat trace
- Developed scope of work and drawing package for construction implementation
- Direct contact on matters relating to electrical for client Subject Matter Experts (SMEs)

ATCO Power – Rainbow Lake

- Responsible engineer for heat trace design for water freeze protection

ATCO Power – Valleyview 2 Hazardous Area Classification

- Updated hazardous area classification for an operations & maintenance project
- Performed site visits with client using 360° camera technology

City of Edmonton – Arena Scoping and Energy Audit (4 Arenas)

- Responsible electrical engineer for scoping assessment
- Performed site visits with client
- Evaluated equipment condition and maintenance practices
- Developed scope of work for four systems
- Performed building energy modeling with CanQUEST software

Alexander First Nation – Drone Flyover, Multiple Sites

- Performed aerial photography flyover of Kipohtakaw School solar site as UAV pilot
- Performed aerial photography flyover of contemplated healing center site as UAV pilot
- Performed aerial photography flyover of contemplated camp site as UAV pilot

Enoch Cree Nation – Tomahawk Park UAV Area Mapping

- UAV pilot for multiple flyovers of reclamation area on behalf of the client
- Prepared photogrammetric mapping and flyover video to help client communicate about area with interested stakeholders
- Prepared 3D model from photogrammetric data for client

Alexander First Nation – Kiphtakaw Education 68.1 kW_{AC} Rooftop Solar Photovoltaic System

- Project Manager and Responsible Electrical Engineer
- Responsible for scoping / planning, preliminary and detailed design, contractor management, and vendor management
- Direct client contact for all matters relating to the project
- Responsible for utility interface, including application for Micro Generation Regulation

Enoch Cree Nation – Water Treatment Plant Solar Photovoltaic System

- Project Manager and Responsible Electrical Engineer
- Responsible for scoping / planning, design, vendor management
- Direct client contact for all matters relating to the project
- Responsible for utility interface, including application under Micro Generation Regulation
- Supported client in matters relating to grant funding under AISP program
- Provided operations and maintenance training to client staff

ONEC Construction Inc. – Renewables and Alternative Energy

- Responsible manager for renewables and alternative energy (primarily solar and CHP) projects
- Responsible for client contact, scoping, and bidding
- Responsible for marketing efforts and partner relationships
- Responsible for project execution, training / overseeing design staff, and preparing contracts
- Participated in corporate strategy meetings and business model analysis with senior management
- Analyzed North American power and solar market trends and benchmarks

Suez Waste Services – Biosolids Lagoon Load Flow and Voltage Drop

- Project Manager directly responsible to client
- Responsible Electrical Engineer for load flow analysis in SKM, analysis / reporting, and recommendations
- Performed on-site field investigation

City of Edmonton – Solar Photovoltaic Feasibility Study

- Project Manager responsible for under-budget delivery of multiple installation options
- Electrical engineer responsible for analyzing permitting and regulations
- Responded mid-project to updates in the Microgeneration Regulation, the day the regulation was released

Capital Power – Port Dover and Nanticoke Wind Waste Oil Storage Hazardous Area Classification

- Responsible electrical engineer for hazardous area classification of wind turbine gearbox waste oil storage
- Prepared recommendations consistent with client needs

Capital Power – Wind Farm Asset Engineering Support

- Electrical engineering support for 487MW of Wind Generation and 15MW of Ground-Mount Solar Photovoltaics.
- Prepared scope of operator rounds and preventive maintenance for balance of plant / balance of solar per NETA / CSA / IEEE standards.
- Lead maintenance RFP process and prepared technical scope.
- Provided on-site support for plant outages and engineering change.
- Act as technical resource supporting NERC compliance.
- Lead operations manual preparation and SharePoint deployment for Renewables.
- Responsible for management of change of the plants.
- Performed load flow studies and other analysis in support of compliance submittals to Independent System Operators.
- Performed troubleshooting of balance of plant systems, including 167MVA power transformers.
- Performed analysis on protective relaying and programmed protection relays.
- Analyzed fault oscillography and investigated root cause of power system faults.
- Assisted with plant restoration.
- Prepared switching orders, and facilitated lock-out and protective grounding in multiple 250kV substations.
- Supported operations in development of electrical safety practices.
- Direct interface for on-site management and contractors supporting the balance of plant / balance of solar.

Syncrude – Tailings Pond Diesel Fuel Skid

- Electrical engineer for a small fuel pump skid.

Consumer Co-operative Refineries – Fire-water Building and Glycol Skid

- Design reviewer for electrical distribution design and wiring.

ATCO – Boiler Water Sample Panel

- Design reviewer for electrical distribution design and wiring.

City of Edmonton – Biosolids Upgrade Project

- Electrical lead for Biosolids capacity expansion at Edmonton Waste Management Facility.
- Performed design studies for power systems.
- Specified major equipment, cabling and protection.
- Interfaced with local utility (EPCOR) to upgrade capacity.
- Investigated undocumented changes to existing mechanical and electrical equipment to determine failure causes and remedy.

Enbridge – Pig Pusher 36", New Build

- Electrical engineer and project engineer for update to design and new fabrication.

Nutrien (formerly Agrium) – Urea Synthesis Control System Upgrade

- Provided load flow study to determine if upstream capacity upgrades were required for upgrade.

Global R&D – Diluent Injection Skid

- Performed basic mechanical and electrical engineering for diluent injection skid.

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Alberta Innovates – SIT Analyzer Skid Phase II

- Coordinated mechanical and electrical engineering resources.
- Reviewed HVAC and electrical equipment specifications for adequacy.

Enbridge – Pig Pusher Upgrade

- Coordinated structural and electrical engineering resources.
- Provided oversight of electrical design.
- Selected hazardous location equipment to suit area classification.

Newalta Corporation – Coagulant Skid Project

- Project manager for fast track project.
- Managed rapidly expanding scope from client.
- Maintained communication and coordinated construction resources.
- Managed electrical installation team.
- Designed custom adjustable motor support stand.

ONEC Engineering – Confidential R&D Project

- Project manager and lead electrical engineer.
- Executed market analysis to determine feasibility/threats to project.
- Planned/leading budgetary analysis phase.

ONEC Engineering – Office

- Assisted with quality assurance / continual improvement.
- Assisted with quality management metric development.
- Assisted with Professional Practice Management Plan updates.

Hatch – Office

- Quality Coordinator.
- Performed internal auditing.
- Responsible for non-conformity management, including reporting.
- Assisted with maintenance of the organization's non-conformity management system in preparation for ISO 9001 certification.

BC Hydro – Northwest Transmission Line & Interior-to-Lower Mainland Transmission Line

- Quality Coordinator working on two large transmission lines.
- Performed quality management audit of design-build contractors on behalf of the owner and review of quality management plans and inspection and test plans.
- Reviewed quality records, including mill certs, checklists and other quality records.

Thompson Creek Metals Company – Endako Expansion Project

- Site Quality Coordinator (and interim Site Quality Manager) working on a \$650m molybdenum concentrator expansion.
- Management of non-conformance
- Responding to Requests for Information on behalf of the Lead Construction Engineer
- Commissioning of conveyors, motors and piping circuits

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- Managed turnover from construction to commissioning and for review of quality documentation for the close-out of procurement packages
- Performed commissioning activities, such as motor run-in and instrument verifications

Canpotex – Portland Bulk Terminals Expansion

- Quality Manager responsible for planning execution phase quality management systems for the project.
- Coordinated quality control planning for long lead items, including a new ship loader and a portal reclaimer.

Canpotex – Prince Rupert Terminal

- Quality Manager during a feasibility study for a new port.
- Preparing Quality Management execution plans.
- Performed internal auditing to ensure quality management practices were adequate for engineering activities.

Eldorado Gold Corp. – Kisladag Phase IV

- Quality Manager for study phase work - the project was a gold mine expansion in Turkey.
- Development of management metrics and reporting these on behalf of the project manager.

Newmont Mining Corporation – Phoenix Mill Expansion

- Quality Coordinator.
- Coordinated development of project execution plans and project procedures manuals on behalf of the project manager.

Clean Energy Compression (formerly IMW Industries Ltd.) – Compressor Design Engineering

- Design engineer, for a gas compression equipment manufacturer in Chilliwack, BC.
- Development of new compressor cylinders to meet customer requirements, sizing of multi-stage reciprocating compressor packages.
- Development of engineered-to-order gas dispensing systems for vehicle fueling.
- Development of a new 500 hp compressor block, drive train and structural frame.
- Preparation for ASME S stamp certification, sizing and updating ASME Section VIII, Div. 1 pressure vessels, CAD management, supplier selection.
- Provided an interface to engineering for shop lean manufacturing initiatives.

MagPower Systems Inc. – Magnesium-Air Fuel Cell

- Development Engineering Assistant.
- Responsible for development of a company revision control system and design of a prototype chassis for a consumer-grade magnesium-air fuel cell.
- Prepared CAD models for rapid prototyping and assembly of the prototype fuel cell product.

Memberships

- APEGA – Association of Professional Engineers and Geoscientists of Alberta
- APEGBC – Association of Professional Engineers and Geoscientists of British Columbia
- APEGS – Association of Professional Engineers and Geoscientists of Saskatchewan
- PEO – Professional Engineers Ontario

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- CIGRÉ – International Council on Large Electric Systems
- IEEE – Institute of Electrical and Electronics Engineers
 - IEEE PES – IEEE Power and Energy Society
 - IEEE IAS – IEEE Industrial Applications Society
- Solar Energy Society of Alberta
- Alberta Apprenticeship and Industry Training – Apprentice Electrician

Training

- Indigenous Canada – Coursera / University of Alberta
- UAV Ground School - Harv's Air Online Ground School
- 5-Day Hands-on Solar PV Design and Installation Course – Gridworks Solar Energy Training Centre
- Photovoltaic System Design and Modelling – Solar Energy Society of Alberta
- Battery Based Photovoltaic System Design and Modeling – Solar Energy Society of Alberta
- Industrial Power System Sizing per CEC – British Columbia Institute of Technology
- Power System Design, Protection and Studies – Electricity Forum
- Power System Commissioning – Electricity Forum
- Variable Frequency Drive Specification – Electricity Forum
- Predicting Reliability in Mechanical Design - APEGBC
- ISO 9001:2008 Lead Auditor – Ashbrooke Quality
- Basics of Supply Chain Management – APICS
- Construction Safety Training System (CSTS) – Alberta Construction Safety Association
- Oil Sands Safety Association (OSSA) Regional Orientation
- H2S Alive – Energy Safety Canada (formerly Enform) (Expired)
- Arc Flash and High Voltage Safety, Qualified Electrical Worker – Canada Training Group (Expired)
- Fall Protection – Fall Protection Group (Expired)

Note: Expired courses are shown as record of familiarity with subject matter. Where currently expired training is required for a proposed assignment, we will ensure it is updated prior to undertaking any work requiring it.

Education

- BAsC Integrated Engineering (Electrical and Mechanical) – University of British Columbia