INSYNCH ENGINEERING LTD.

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Boris Dabic, P.Eng., P.E.

Electrical Engineer, 17+ years

MEMBERSHIP AND CERTIFICATIONS

- Engineers and Geoscientist of British Columbia
- Washington State Department of Licensing
- SES Tech CDEGS Level I Exam

AREAS OF EXPERTISE:

- Industrial and Utility Electrical Design
- Grounding and AC Interference Studies

EXPERIENCE SUMMARY

Mr. Dabic has extensive experience in designing electrical systems for industrial and utility clients. He has been involved in all project lifecycles; from an early feasibility/definition phase, throughout the design, commissioning, and an ongoing operational support.

He has a proven track record of delivering entire industrial projects, including: detail drawing packages, PLC and HMI programing, installation supervision, commissioning, and start-ups.

He has delivered Power System Engineering Studies including: Load Flow, Short Circuit, Arc Flash, Relay Coordination, and Power Quality Studies.

His experience with grounding includes field measurements of soil resistivity, grid resistance, and step and touch voltages, as well as performing AC interference and grounding studies using CDEGS software.

With his extensive site and construction management experience, Mr. Dabic brings value to any project by understanding and overcoming constructability restraints during the design phase.

TECHNICAL EXPERTISE

- Medium- and high-voltage switchgear: AIS and GIS switchgear, breakers, and disconnect switches, voltage and current transformers, power transformers, rectifiers, direct-current disconnect switches, capacitor banks, and tuning reactors
- Low-voltage switchgear: Disconnect switches, capacitor banks, MCCs, and distribution centres
- LV and MV VFDs: AllenBradley Powerflex, EATON SVX, Mitsubishi, Schneider
- Grounding Studies and Measurements: use of DET2/2 and 2/3, Omicron CPC100 for soil resistivity, grid resistance measurements (FOP and Oblique), grid continuity measurements, and step and touch voltages; SES Tech CDEGS Software
- PLC and HMI Programming: Allen-Bradley PLC5 and RSLogix 5000; Wonderware, Allen-Bradley RSView and Factory Talk
- Testing and Commissioning

EDUCATION

CDEGS Level I Certification, SESTech, Montreal, QC 2016

Bachelor of Technology, Electronics Engineering Technology, BCIT, Burnaby, BC..... 2013

Degree in Electrical Engineering. Advanced School of Electrical Engineering, Belgrade, RS 2001

PROJECT PORTFOLIO

Mercer Celgar | Substation Expansion 2023
Electrical Engineer – Completed ground system study and substation grounding drawings for the substation expansion project using ETAP grounding module. Completed the final report outlining multiple safety scenarios for step and touch voltages.

Metro Vancouver | Digesters I/O replacement project ..... 2021 to Present
Electrical lead – Developed the Design Basis Memorandum for the Infi90 IO replacement with Select I/O and S800 I/O based marshalling panels. Reviewed I/O list, re-assigned the I/O to new MPX, reviewed, and helped with development of the template drawings.

Mercer Celgar | Woodroom Modernization 2022
Electrical Engineer – Responsible for design, project coordination and shutdown support for replacement of the two transformer protection relays, a critical MCC refeed, temporary power connections during the shutdown, testing and commissioning support during the two-week shutdown turn-over.

Metro Vancouver | Bio-Filter Heat Trace System 2022
Engineer of Record – Complete electrical design and scope of work for heat trace system installed on outdoor Bio-Filter PVC piping. Conducted site visits, and defined the project requirements and the technical solution.

Metro Vancouver | CDAC SOA - Small EIC Projects ..... 2018 to Present
Project Manager and Technical lead – Responsible for leading the standing offer program with Metro Vancouver ICS group, completed numerous small ICS projects during this period. Mainly small instrumentation and controls project that tie into Metro Vancouver ABB DCS system (Legacy Infi90 and 800xA)

Lhoist – Various Plants| Arc-Flash Study 2022
Electrical Engineer –Reviewed single line diagrams for the entire plant, performed the short circuit, protection coordination and Arc-Flash study using SKM software. Wrote a report and recommendations for the Arc-Flash mitigation, and levels.

Mercer Celgar | MCC Replacement Projects..... 2021
Electrical Engineer – Responsible for design, MCC specification, and scope of work for the contractor development for two boiler area MCC replacement projects.

Metro Vancouver | LIWWTP and AIWWTP Fibre Replacement ..... 2018 to 2021
Project Manager and Technical lead – Responsible for the design of the fibre upgrade at the two Metro Vancouver waste water treatment plants. Developed the physical and logical fibre topology with coordination with Metro Vancouver team. Tender documents preparation, construction, testing and post construction support.

Metro Vancouver | LIWWTP Operations 2021
Electrical Engineer – Electrical design for SBS dosing standby system and influent gate HPU unit replacement at Lulu Island Waste Water Treatment Plant. Coordinated HPU cutover with the plant operations and provided commissioning support.

Mercer Celgar | Technical Support ..... 2019 - 2020
Electrical Engineer – Assisted the maintenance with ongoing projects such as main incoming transformer leak repairs, ground fault relays replacement, capacitor bank relay troubleshooting, and recovery boiler rapid drain valves DCS Controls.

BCIT | Cybersecurity Lab Design..... 2020
Technical Lead – Designed three panels utilizing Allen Bradley Remote I/O modules, Controllogix. The three panels are used for students to control fisher simulation plant, and have ability to program and update control at each students desk.

Graymont Pleasant Gap| Arc-Flash Study 2020
Electrical Engineer – conducted the site visit, reviewed single line diagrams for the entire plant, performed the short circuit, protection coordination and Arc-Flash study using SKM software.

Pomerleau | AIWWTP Outfall Project ..... 2019 - 2020
Electrical Engineer –Developed the single line diagram for the construction power and tunnel boring machine, including the utilization of generators and utility power supply to ensure uninterrupted construction. The total plant consumption including TBM is 3MVA, with equipment operating on voltage levels from15kV to 400Vac 50Hz.

Graymont Cricket Mountain| Arc-Flash Study 2019
Electrical Engineer – conducted the site visit, updated single line diagrams for the entire plant, performed the short circuit, protection coordination and Arc-Flash study using SKM software.

RioTinto | UPS and Battery Replacement..... 2018 to 2019
Project Manager and Technical lead for replacement of the 20 kVA UPS transformer, conducted field survey, specified equipment, and prepared scope of work and tender package. Prepared IFC drawings, and witnessed FAT of the UPS and associated equipment.

Keyera Enviro Fuels | Grounding Study..... 2018
Technical lead – Grounding study for the Keyera enviro facility, performed field test including soil resistivity, grid resistance, and step and touch measurements. Modeled the ground grid using CDEGS software.

BC Hydro | Unit 5 and 6 TIV Controls Replacement..... 2018
Project Manager and Technical lead for replacement of the TIV controls for the unit 5 and 6 at BCHydro Bridge River 2 facility, prepared the design criteria, Field Inspection Testing Procedure, and construction drawing package.

FortisBC | Ground Grid Studies ..... 2017 to 2018
Project Manager and Technical lead for ground grid studies, with field inspections and measurements, and grid simulation using CDEGS software. Performed soil resistivity, Fall of Potential, and step and touch measurements.

SRE Hydro Canada | Clemina and Serpentine Project..... 2017 to 2018
*Electrical Lead –R*esponsible for the design of the two 10MW small hydro sites, interconnected over a private transmission line, and connected to 138kV BCHydro transmission line. The electrical, protection, and control scope included design of intake, powerhouse and substation with associated equipment.

BCHydro (NIA) | TKD Repowering 2017
Electrical Engineer(EOR) – Prepared detailed commissioning procedures for addition of a new mobile 2.4 kV, 1.3KW mobile diesel generation to the existing remote generating station. Provided construction support, and signed off field test results for BCHydro's CNEs.

Metro Vancouver | Iona Solids Handling Upgrade, BC.....2016-2017
Electrical Engineer — Review of shop drawing submittals and RFIs for major electrical equipment. Witnessed Factory Acceptance Test for power transformer, MCCs, and Control Panels. Site supervision and coordination with the contractors. Shutdown and tie-in planning. Commissioning and start-up assistance.

Metro Vancouver | NorthWest Langley WWTP Expansion, BC.....2015 -2016
Electrical Engineer — Witnessed Factory Acceptance Test for 600 V Power Distribution Center. Site supervision and coordination with contractors. Commissioned the electrical system including arc-flash rated 25 kV switchgear, stand-by generation with DCS auto transfer logic (at 600 V), instrumentation and control system.

Metro Vancouver | Annacis Island WWTP VFD Replacement Project, BC 2015
Electrical Engineer — Prepared the first draft of the specifications for purchase of Variable Frequency Drives for influent pumping station and trickling filter pumps. Performed power quality monitoring of the existing drives, measuring harmonics, motor waveforms, and power.

Metro Vancouver | Annacis Island WWTP Blower Replacement Project, BC..... 2015
Electrical Engineer — Witnessed Factory Acceptance Test for high speed turbo blowers. Commissioned 5kV switchgear.

FortisBC | AC Interference and Mitigation Study, LMSU Project, BC 2015
Project Leader — Responsible for the electrical study using ROW and CDEGS software. Prepared the technical report. Performed an AC interference study on existing and new pipelines located in the right-of-way (transmission line) to determine current density, induced voltage during normal operations and the coating stress voltage during fault conditions. The mandate also included analyzing mitigation measures to reduce corrosion created by the current density and induced voltage.

BC Hydro | Sky Wire Step and Touch Voltage Study, BC 2014
Project Engineer — Conducted a study using EMTP software to calculate induced voltage at the OPGW wire of a transmission line during the steady state conditions.

Graymont Western US Inc. | Incoming Switchgear and MCC Replacement, Tacoma, USA 2013-2014
*P*roject Manager and Technical Lead — Managed and provided technical assistance for the replacement of a main utility owned transformer (2 MVA), LV voltage switchgear, and motor control centers hosted in new e-houses. Additional duties included specification and ordering of major electrical equipment. Used SKM Power Tools® to evaluate the short circuit levels, produced an Arc-Flash report and protection settings for low voltage feeder breakers. Prepared the shutdown plan, commissioned, and started-up the new service during a ten day shutdown period.

Graymont Western US Inc. | Power Factor Correction Study, Delta, USA 2014
Project Manager and Technical Lead — Provided a technical oversight for an industrial plant power system correction study. The plant used DSTATCOM, synchronous condenser and filter bank for power factor correction. The recommendation resulted in improvement of an overall power factor in the plant from 0.87 to 0.97 without installing any additional VARs.

Graymont Western US Inc. | Main Incoming Feeder Protection Relay Replacement, Delta, USA 2013
Technical Lead and Project Manager — Prepared detailed installation drawings and defined protection settings (50/51/46) for replacement of two main incoming electromechanical relays with GE350 relays. Provided installation supervision.

Graymont Western US Inc. | 1500 HP DC Motor Replacement, Delta, USA 2013
Technical Lead and Project Manager — Prepared detailed installation drawings and commissioned the installation of a 1500 HP 4160 VAC motor as a replacement of the existing DC motor. Replaced the existing 15 kV switchgear line-up. This was completed in one week shutdown period.

Graymont Western US Inc. | BMS Upgrade, West Wendover, USA..... 2013
Technical Lead and Project Manager — Managed and provided design guidance for the burner management system upgrade.

Graymont Western US Inc. – Plant controls and BMS Upgrade, Townsend, USA 2012
Technical Lead and Project Manager — Managed and provided technical assistance for plant controls and Burner Management System Upgrade.

Barrick Gold | Vertical Lime Kiln Controls, Pueblo Viejo, Dominican Republic.....2009-2012
Designer/Commissioning lead — Designed and coordinated Rockwell ControlLogix PLC controls for three new dual shaft vertical kilns. Responsibilities included developing a process control description, writing the PLC code, configuring the DeviceNet and ControlNet networks, testing the system against an IDEAS™ process model, FAT testing, and customer acceptance testing.

Graymont Western US Inc. | Installation of a New 1200-ton/day Rotary Lime Kiln,
Delta, USA 2007-2011
Project Manager, Technical and Commissioning Lead — Prepared detailed electrical and instrumentation installation drawing packages for a new 1200-ton/day rotary preheater lime kiln. The scope included the electrical distribution from 15 kV (12.47 kV) to 0.48 kV, four electrical rooms hosting motor control centers and VFDs for ~100 motors, one MV (4160 V) 2000 HP motor controlled by VFD, Rockwell RSLogix 5000 control system and instrumentation.

Graymont Western US Inc. | Quarry Electrical System Upgrade, Delta, USA..... 2011
Project Manager and Design Lead — Prepared detailed electrical and instrumentation installation drawing packages for the existing crusher, MCC replacement, and control upgrade. The scope included replacement of the distribution transformer (12.47 to 0.48 kV), installation of a new electrical e-house type building, hosting MCCs, control panel and VFDs.

Zellstoff Celgar | Addition of a 52 MW Steam Turbine Generator, Castlegar, BC..... 2010
Commissioning Lead — Commissioned 15 kV switchgear and a synchronous panel. Modified the existing controls and interlock wiring of the breaker cells. Designed and coordinated the installation of BC Hydro metering to two generators and at the main substation. Most of the integrations with the existing system were made on the live system.

Graymont Western US Inc. | Baghouse Upgrade, Delta, USA 2008-2009
Lead Designer/Commissioning Lead — Prepared detailed electrical and instrumentation installation drawing packages for a new baghouse. Replaced an existing wet scrubber on a rotary preheater lime kiln. Responsibilities included: specification and ordering of major electrical and control system equipment and instrumentation, Allen-Bradley PLC5 and RSView32 HMI programming, system commissioning and start-up.

Graymont Western US Inc. | Substation Upgrade, Delta, USA..... 2008
Commissioning Support — Involved in the organization and coordination of a plant shutdown and start-up required to commission new MV electrical equipment including a 12.5 MVA transformer, 15 kV switchgear, and 2400 MVAR harmonic filter bank. Other responsibilities included: updating of the existing PLC5 processor, as well as commissioning of the system.

Confidential Client | Rotary Lime Kiln Controls Upgrade, USA 2009
Controls Designer — Designed, installed, and commissioned Rockwell ControlLogix PLC controls for the existing rotary lime kiln. Responsibilities included: writing the new PLC program, DeviceNet configuration, coordination of the plant shutdown, commissioning, and start-up. Provided ongoing support after the installation.

Hostway Canada | Vancouver, BC 2005-2007
Junior Systems Engineer — Installation and maintenance of servers under various operating systems, using LINUX and MSWindows. Tier 2 and tier 3 technical support. Managed and deployed computer networks. Configured and administered network devices**.**

Electric Power Industry of Serbia | Belgrade, Serbia 2001-2005
Systems Engineer — Managed and administered local and remote network workstations and multiple servers in a combined LINUX / Microsoft environment. Installed and managed a variety of network equipment. Configured networks between regional electric power utilities**.**

Electric Power Engineering | Belgrade, Serbia 2000-2001
Service Technician — Provided technical support. Serviced computers and local networks**.**