Michael **Woods, P.Eng.**

Electronics Engineer · Embedded Programmer

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Skills

Design	PCB Design, ARM Cortex MCU, Motion Control, Functional Safety
Programming	Embedded C/C++, Structured Text (IEC 61131-3), Ladder Logic, JavaScript
Tools/Software	STM32CubeIDE, Platform IO, PCAN-View, Altium Designer, KiCAD, Arch Linux, TI-TINA, GIT/SVN

Experience

Director of Electrical R&D

North Vancouver, BC

Novarc Technologies, Inc. *Jun. 2022 - Mar. 2023*

- Created the proof of concept hardware and firmware required to port our vision system and proprietary AI control to a 3rd party robotic welding apparatus.
  - Developed the CAN 2.0A message handling, motion control functions, SPI accelerometer interface and a finite state machine in C++ using PlatformIO IDE. Embedded software was deployed to an Atmega32U4 based CAN development board to achieve the required motion control functions.
- Established the PCB design capability within the R&D and Engineering groups, including QA/QC and testing procedures.
- Designed a brushed DC motor driver PCB with tachometer circuitry to control a robotic wire feeder.
- Guided the electrical and controls architecture and design requirements of the next generation products.

Director of Electrical Engineering

North Vancouver, BC

Novarc Technologies, Inc. *Mar. 2021 - Jun. 2022*

- Head of the electrical engineering department with a team of two engineers under my direction.
- Planned and executed electrical and controls projects to implement new features on the Spool Welding Robot (SWR).
- Responsible for EU Machinery and EMC Directive compliance. Oversaw safety testing according to IEC 60204-1 and ISO/TS 15066, in addition to EMC testing according to IEC 61000-6-4.
- Obtained ETL marking authority for the production facility.
- Served as tier 2 technical support for customer issues on site.

Electrical Systems Engineer

Burnaby, BC

Ballard Power Systems *Mar. 2020 - Mar. 2021*

- Developed AC&DC design specs, drawings, and calculations, for a 1.5MW stationary fuel cell generator intended for export to European markets.
- Investigated component failures on automotive fuel cell products to determine root cause and develop design solutions.
- Designed and built a test apparatus to validate PCB re-work. Programmed test suite in IEC 61131-3 Structured Text for deployment to STW ESX controllers.
- Led the design of a CAN bus based hydrogen fuel cell voltage measurement device for use in a 1500VDC generation system. Developed schematics, BOM and PCB layout in Altium Designer.

Electrical Engineer / Project Manager

Vancouver, BC

Vard Electro Canada *Jul. 2017 - Mar. 2020*

- Developed and executed the electrical scope (estimated at $1.5M) of a project to retrofit a class of medium icebreakers for the Canadian Coast Guard.
- Managed a team of 7 engineers and designers on the fast- tracked detailed design phase of the project.
- Design and review of engineering documentation.
- Effectively communicated project scope, schedule, and budget with lead engineers.
- Reviewed weekly and monthly reports to track key performance metrics.

Electrical Systems Engineer(Contract)

North Vancouver, BC

Seaspan Vancouver Shipyards

Jun. 2016 - Jul. 2017

- Collaborated with an integrated project team to develop product requirements which met client performance specifications and complied with classification society (DNVGL) regulations.
- Responsible for performing reviews of electrical, electronic and communications systems design products to ensure technical accuracy and adherence to client and company standards.

Electrical Engineer(Contract)

Vancouver, BC

Allnorth Consultants

Jun. 2015 - Jun. 2016

- Performed AC load and short circuit studies as well as modelled LV and MV systems in EasyPower.
- Analyzed power factor of new and existing plant and provided recommendations for improvement.

Electrical Engineer

Vancouver, BC

Amec Foster Wheeler

Jun. 2012 - Jun. 2015

Cape Scott Wind Farm, GDF Suez, Port Hardy, BC

- Telecommunications system engineer tasked with system topography and detailed design including fibre optic communications system, telecommunications hardware, revenue metering and video surveillance system.

Kokish River Interconnection, BC Hydro, BC

- Designed lighting, AC and DC station service systems, cabling, control room layout, control room fire detection and alarm system, control room security & resource smart system for a 138kV switching statiton.

Education

The University of Calgary

Calgary, Alberta

B.Sc. in Electrical Engineering

2006 - 2010

- Senior research project investigating the use of passive multi-band microwave networks in a low power SDR down conversion architecture.
- Conference Paper: *Bugo, T., Klippenstein, B., Saizew, M., Woods, M., Helaoui, M. (2010) Dual-Band Receiver Using Passive Six-Port Down-Conversion Technique Suitable for Multi-Standards and SDR Applications. Conference Proceedings of Asia-Pacific Microwave Conference (TH3G-12). Yokohama, Japan. December 7-10, 2010.*

Professional Memberships

Engineers and Geoscientists BC

British Columbia

Professional Engineer (P.Eng.)

2016 - PRESENT