Kunal Dhiman

kunaldhiman21@gmail.com | k-dhiman1.github.io

Education

University of Alberta – BSc in Electrical Engineering, GPA: 3.88 Expected Mar 2025

Experience

Electrical Engineering Intern, Associated Engineering – Edmonton, AB Jan 2024 – Aug 2024

- Conducted arc-flash, short-circuit, power-flow, and protection and coordination studies for 7 facilities using ETAP; collected electrical model data for 3 stormwater lift stations through site visits and utility companies
- Designed a control schematic for a fire hall upgrade using existing level sensors, pressure sensors, and control valves to ensure efficient water transport from a local reservoir to 2 on-site tanks (storage and transfer)
- Classified hazardous locations around an above-ground gasoline (8,000 L) and diesel (17,000 L) storage tank according to CSA C22.1:21 and produced draft drawings in AutoCAD
- Commissioned backup generator sets for 2 lift stations in St. Albert, certifying installation and ensuring coordination with the main breaker, automatic transfer switch, and control system
- Sized the electrical service entrance for a 12,000 sq ft residence per CSA C22.1:21 using a client-provided load list and site plan; recommended an underground supply from FortisAlberta
- Verified the Fort McMurray water treatment plant equipment database by inspecting 487 instruments and confirming that the existing data was 90–94% accurate

Automation and Controls Intern, Diamond Process Solutions – Edmonton, AB Jan 2023 – Aug 2023

- Programmed a jar capping line with 2 conveyors, 8 motors, and 6 sensors using an NX1 PLC and integrated custom recipes based on jar height and line speed via an HMI; achieved a capping rate of 60 jars per minute
- Automated a clean-in-place bottle washer using a CLICK PLC and established user-adjustable timer settings for wash time, drain time, and door delay using an HMI communicating over Modbus TCP
- Designed a potato skin model from its molds using AutoCAD for 2D traces and SolidWorks for 3D modeling; verified its fit by CNC machining both sides and conducting a physical check
- Machined two sides of a 30×25×0.75 inch aluminum back plate for a shrink sleeve label applicator using a CNC router; achieved tolerances of ±0.01 inches and tested its integration with other sub-assemblies
- Wired power and control circuits for various machines, incorporating heating elements, thermocouples, level sensors, control valves, pumps, AC and DC motors, variable-frequency drives, contactors, fuses, and relays

Projects

W-Band (92 GHz) CMOS Power Amplifier Design for Beamforming Jan 2025 – Apr 2025

- Designed a proof-of-concept 2-stage cascode PA in a 65 nm process with a 1 V supply using Cadence Virtuoso
- Performed load-pull simulations to find optimum load impedances for maximum power transfer; used ideal T-sections to match CS and CG stages within each cascode and an L-section to match the two cascode stages
- Achieved a 2.6 GHz operational bandwidth (91.2–93.8 GHz); at a −10 dBm input, obtained a PAE of 40% and a saturated output power of 12 dBm, with S_{11} = −17 dB, S_{21} = 22 dB, and S_{12} = −35 dB at 92 GHz

1 GHz Microstrip Bandstop Filter Sep 2025

- Designed a 2-stub microstrip bandstop filter using Keysight ADS; measured S_{21} = −22 dB at 1 GHz
- Assembled filter stubs on a provided PCB using copper tape, with lengths and spacings calculated from ADS

Skills

Programming: C, MATLAB, VHDL, Assembly, Ladder Logic

Tools: Keysight ADS, Cadence Virtuoso, LTspice, KiCad, Xilinx Vivado, ETAP, SolidWorks, AutoCAD

Equipment: Oscilloscope, Vector Network Analyzer, Soldering, CNC Router, CNC Mill