Calvin DeKoter

Mechanical Engineering, Class of 2022
University of Waterloo

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Summary of Qualifications

Mechanical Design and Fabrication

- Extensive experience gained in precision mechanical design and fabrication at WFE and Schukra of North America
- Adept at solid modelling and surfacing in SolidWorks and Creo to design and analyse structural components
- Skilled with the metal lathe, milling machine, metalworking tools and methods, rapid prototyping, and MIG welding
- Proficient with composites manufacturing methods and design strategies for Kevlar and carbon fibre components

Simulation and Analysis

- Strong data analysis and visualization skills built by using Matlab and Excel to drive design decisions
- CFD and thermal design capabilities strengthened by using Star-CCM+ for cell fuse design and simulation

Engineering Experience

Waterloo Formula Electric
Battery Mechanical Lead — Dec. 2019 – Present

- Designed custom copper cell fuses to protect Li-Ion battery cells under short circuit and overload conditions
- Validated and improved cell fuse designs with combined thermal and electrical simulation in Star CCM+
- Reduced heat generation at cell connections by characterizing the contact resistance and standardizing assembly
- Designed and fabricated custom punch and die tooling to produce 300 cell fuses quickly and accurately
- Updated the mechanical design of battery pack for a more stringent rule set by implementing cell support foam
- Adapted a laptime simulator to optimize the 2021 battery design for the highest dynamic event score at competition

Richard Childress Racing — **NASCAR Cup Team**
Junior Aerodynamics Engineering — Jan. 2020 – Mar. 2020

- Accurately evaluated NASCAR aerodynamic devices in full–scale wind tunnels with an uncertainty of only 0.5%
- Fabricated and installed new parts, prototype designs, and test equipment to improve the performance of the vehicle
- Analyzed 3D scan data with GOMInspect software to produce templates and inform aerodynamic design decisions

Ontario Drive and Gear — **Gear Division**
Quality Engineering Assistant — May 2019 – Aug. 2019

- Precisely measured machined parts using calibrated tools in an ISO 9001 environment while applying GD&T principles
- Eliminated data entry errors and hours of work each week by automating data collection from measuring machines.
- Reduced measurement time by 50% by programming a CNC contour tracer to measure and evaluate turned features

Waterloo Formula Electric
Composites Team Lead — Jan. 2019 – Dec. 2019

- Designed, tested, and fabricated a fire retardant Kevlar and Nomex firewall for the vehicle by vacuum bagging
- Identified process deficiencies in the old method and documented an improved process to produce quality parts
- Carefully tested various layup configurations to maximize strength and stiffness without compromising weight
- Precisely designed and fabricated a fireproof cover with only 3 millimetres of clearance from the vehicle frame

Schukra of North America — **Leggett and Platt Inc.**
New Product Development Co–op — Sept. 2018 – Dec. 2018

- Identified design solutions to noise and durability issues in electromechanical actuators while maintaining part cost.
- Organized and analyzed noise data to objectively grade actuator sound quality with Artemis Suite and Microsoft Excel
- Reduced the time spent by 80% to process and visualize oscilloscope measurement data with an Excel template