

# Kristof Balasanian

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## Education

### San Diego State University

Bachelor of Science in Mechanical Engineering

May 2026

## Experience

### Kunin - Chattanooga, TN

Mechanical Design Engineer

Aug 2025 - Present

- Built a parametric CFD ready CAD model and Excel sizing tool for spiral wound ion exchange modules. Automated geometry changes, sensitivity analysis, and first principles mechanical checks reducing iteration time by 95%.
- Developed an acrylic flow cell test fixture for membrane coupon characterization under pressurized flow conditions. Defined O-ring static face seals, fastener clearances, and procured assembly tooling.

### Amidon Heavy Industries - El Segundo, CA

Mechanical Design Engineer Intern

Jan 2025 - Aug 2025

- Owned blank sheet development of a hot swappable 6s6p (21.6V, 40A) battery pack. Delivered assembled hardware and build documentation while achieving a 36% cost reduction vs. commercial alternatives.
- Developed a propeller test stand integrating a load cell, V/I sensors, and an Arduino DAQ to quantify efficiency.
- Designed and built a linear actuator test bed with moment isolated rotary encoders for closed loop PID tuning.
- Designed a modular electronics tray integrating an Ethernet switch, 24/5V distribution, DC/DC, ESC, leak sensor, Pixhawk, Raspberry Pi, GPS, and camera. Reduced operating temperature by 14%.

### Tesla - Fremont, CA

Mechanical Design Engineer Intern, Vehicle Integration

May 2024 - Aug 2024

- Responsible engineer for Robotaxi front end integration. Led architecture decisions, preliminary design, and CAD maturity. Documented decisions and executed prototype, assembly, and service trials.
- Designed and surface modeled a blow molded washer bottle in CATIA 3DX, created a service cost vs. volume trade model. Increased fluid capacity by 11% driving a \$10-25M cost of life reduction and new service processes.
- Resolved front casting durability under tire sweep, pedestrian protection, and modal constraints by sizing up a cross car member to raise stiffness solving corroded state durability and eliminating an e-coat operation.
- Benchmarked multi-band antenna and telematic packaging (GPS, cellular/TCU, Wi-Fi, BLE, radio) across 8 competitor vehicles. Identified lagging TCU thermal performance and triggered follow up controls investigation.
- Integrated jump post and tow eye access. Removed an inline connection, drastically improved service ergonomics validated through trials on the prototype buck, reduced total harness length by 0.7 m, and saved \$7 in BOM cost.

## Projects

### Aztec Electric Racing FSAE EV - San Diego, CA

Senior Engineer

Aug 2022 - May 2025

- Developed a lumped capacitance HV battery thermal/energy model using MATLAB and Excel with a +9.3% accuracy. Informed pack architecture selection and cooling system requirements across drive cycles.
- Led battery system packaging and materials optimization, cut 9.9 kg of mass and reduced volume by 23%.
- Designed and fabricated an HV maintenance plug using SolidWorks, 3D printing, and a 3-axis mill consolidating 2 plugs into one and improving usability with bulky PPE.
- Verified tab survivability for several load cases using hand calculations and static structural FEA in Ansys.

## Skills

Tools: SolidWorks, NX, CATIA 3DX, CATIA V5, Ansys Mechanical, SimScale, Excel, MATLAB, R, Orca Slicer, Git

Rapid Prototyping: 3D Printing (FDM, SLS, SLA), 3-Axis Mill, Lathe, Waterjet, Laser Cutting, Sheet Metal, Composites, Adhesives, Spot Welding, Wiring, Soldering, Testing, Shop Tools