SANTIAGO ISAZA

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https://santiagoisaza95.wixsite.com/portafolio - Git Hub:

SUMMARY

I am Mechanical Engineer specializing in motor testing, powertrain validation, high-voltage systems and frontier AI tools to maximize performance and productivity. Proficient in MATLAB, Python, Claude Code, and data analysis, I optimize EV efficiency and reliability. With deep motor/inverter knowledge, I innovate testing strategies, and advance sustainable mobility through continuous improvement.

WORK EXPERIENCE

Mercedes AMG High Performance Powertrains•
Brixworth, England, United Kingdom F1 Sub System Validation Engineer
Jan 2025 - Present

• Developed and maintained a robust suite of post-processing scripts in a version controlled repository to evaluate the 2026 powertrain (cell pack, inverter, and integrated systems), utilizing AI coding workflows (Using Claude Code) to accelerate development speed and code quality.

• Executed Structure Pass-Offs and dyno/rig tests for 2026 powertrain prototypes, defining precise pass-fail limits to verify health, active discharge response, and performance in the shortest possible time.

• Applied frontier model assisted programming to build complex functions that rank subsystems by heat rejection and calculate critical metrics (capacity, internal/busbar resistance) for the 2026 powertrain.

• Engineered automated routines to calculate and verify inverter current/voltage sensor gains and offsets without human intervention, ensuring linearity and accuracy for the 2026 powertrain while managing all source code in a structured repository.

•Led the development and maintenance of Test Requests for the 2026 powertrain, collaborating with hardware, software, and test teams to define the optimal testing strategy for the Cell Pack, Inverter, and ESME.

Mercedes AMG High Performance Powertrains•
Brixworth, England, United Kingdom Systems Engineer
Sep 2024 - Dec 2024

- Processed data to generate appropriate inputs for Simulink simulations.
- Created MATLAB functions and plots to clearly present results, draw conclusions, and facilitate discussions with managers.
- Ran simulations and analysed data to understand the effect of a heater under different states of charge, battery temperatures, and driving cycles; proposed various alternatives to improve efficiency.
- Correlate track data with simulation data to identify potential performance improvements in race strategy.

WORK EXPERIENCE

Mercedes AMG High Performance Powertrains•
Brixworth, England, United Kingdom Performance Development Engineer **Sept 2023 - Sept 2024**

- Calculated limits using MATLAB and Excel, implementing them during the BIPO process through formulas in AVL Concerto.
- Analyzed data through plots and scripts using AVL Concerto, CANape, and MATLAB to identify root causes of various faults during the validation process. Additionally, created documentation to explain and accurately address these faults in meetings.
- Conducted rig and dyno testing of subsystems and full F1 powertrains to support the characterization and development of powertrain components, systems, and operating modes, including e-motors, inverters, and HV batteries.
- Analyzed power unit systems and control strategies to understand their behavior and interactions
- Conducted dyno and vehicle testing to complete product validation through a detailed understanding of product functionality, drivability, and life cycle requirements.
- Developed in-house analysis tools and utilized existing analysis software such as INCA, CANape, etc.
- Developed design verification and product validation procedures.
- Supported vehicle testing and assisted external customers with test activities and fault investigations.
- Conducted detailed analysis of test data and reported findings and recommendations
- Developed robust pass-off procedures, test cycles, and analyses.

Bold Valuable Tech • Barcelona, Spain Wiring Harness Engineer **Dec 2022 - Jun 2023**

- Designed and delivered bespoke packaging solutions for electronic designs, including wiring harnesses and other electro-mechanical parts.
- Designed bespoke wiring harnesses for BMS or BCU.
- Created a methodology for designing wiring harness prototypes using 3DX (CATIA V6) for aerospace applications.

WORK EXPERIENCE

Solar Team KRATOS (DISSERTATION)•Medellin, Antioquia , Colombia Charging System Engineer **Jan 2022- Jun 2022**

- Designed and developed the control and electronics of the charging system.
- Designed a PCB to control the charging process, compatible with EVSE under SAE J1772 protocol.
- Integrated Orion BMS, ELCON TC charger, Arduino, and MCP2515 through a PCB.
- Designed PCBs using EAGLE.
- Coded a Finite State Machine in Arduino to send signals between the Orion BMS and ELCON TC charger.
- Conducted structural analysis of rectifier brackets using FEM and FEM external approximations with SolidWorks and Altair SimSolid.
- Conducted a mesh convergence study to validate stress results.
- Performed modal analysis of rectifier brackets using Siemens NX and Altair SimSolid.
- Successfully tested the system under real conditions at the iLumen European Solar Challenge 2022 during a 24-hour race.

EDUCATION

Mechanical Engineering•Medellin, Antioquia , Colombia EAFIT University **Jan 2017 - Jun 2022**

Motorsport and E-Racing Master Degree•Barcelona , Spain QEV Technologies-University of VIC **Sept 2022 - Sept 2023**

ADDITIONAL INFORMATION

- **Languages:** English and Spanish
- **Portfolio:**

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