

TYLER MAGGERT

Electro-Mechanical Product Engineer | Mechanical Design | Electrical Hardware | RF/EMC | Test & Validation

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ENGINEERING SUMMARY

Electro-mechanical product engineer with a mechanical design foundation and strong electrical/RF depth across product development, circuit design, EMC/FCC troubleshooting, sensors, production support, and field failure analysis. Experienced taking designs from proof of concept through production using SolidWorks, PCB layout edits/review support, bench instrumentation, validation testing, vendor coordination, ECO/BOM control, and hands-on troubleshooting. Particularly strong with compact electro-mechanical products where mechanical packaging, electrical noise, RF behavior, thermal limits, manufacturability, and serviceability all interact.

CORE TECHNICAL SKILLS

Mechanical / Product Design SolidWorks, assemblies, production drawings, GD&T, sheet metal, injection molding, overmolding, brackets, enclosures, plumbing integration, fixtures, DFM/DFA, sustaining engineering	Electrical / Circuit Design MOSFET/relay/triac switching, current sensing, battery/BMS current limiting, regulators, TVS/ESD protection, optocouplers, LED drivers, harness design, Molex/TE connectors
RF / EMC / Compliance FCC Part 15 intentional/unintentional radiator testing, 3 m chamber testing, ferrites, grounding, shielding, harness noise reduction, PCB loop antennas, RFID, LoRaWAN, antenna matching/SWR	Embedded / Controls / Sensors STM32, FreeRTOS, full embedded firmware development, board bring-up, sensor integration, serial communications, DMA-driven LED data streams, RFID systems, diagnostics, and production support
Test / Instrumentation Oscilloscopes, spectrum analyzers, VNAs/NanoVNA, near-field probes, serial timing/rise-time checks, thermal testing, fuse/inrush testing, validation plans, failure analysis	Tools / Documentation SolidWorks PDM, ECO/BOM control, ERP/PDM BOMs, ISO/DHF documentation, PCB layout edits, schematic/board review support, Altium exposure/training, MATLAB, Mathcad, Multisim, CAMWorks, NESTINGWorks

PROFESSIONAL EXPERIENCE

Electro-Mechanical Engineer | Haws Corporation | Sparks, NV

Mar 2020 - Present

- Serve on new product development team and sustaining engineering efforts for hydration and emergency equipment product lines, spanning mechanical design, electrical hardware, embedded systems, documentation, validation, and production support.
- Contributed heavily to the RIVIVE product line from early development through launch, supporting drain/bottle filler design, plumbing integration, shop drawings, owner manuals, installation instructions, electrical hardware, and product documentation.
- Developed expanded RFID/filter tracking firmware and tag-data architecture, adding time-based expiration, volume-based expiration, and stored flow-rate data to improve platform flexibility and future-proof the filter product line.
- Designed and supported mechanical components and assemblies including brackets, electrical enclosures with industry-standard knockouts, chiller soft-start/start-capacitor retrofit hardware, wiring, plumbing integration, and customer-installable retrofit kits.
- Developed and improved sensor systems, including a state-machine time-of-flight sensing approach and supplier-driven lens improvement that increased scratch resistance and reduced optical crosstalk in production units.
- Developed and maintained production embedded firmware for STM32/FreeRTOS-based control boards, including RFID/filter tracking, time-of-flight sensor state machines, serial communications, EEPROM/data tracking, diagnostics, board bring-up, and hardware/software integration.
- Performed component-level troubleshooting and failure analysis on returned units, including RF systems, digital/analog circuitry, solenoids, compressors/refrigeration systems, fans, switches, thermostats, harnesses, serial communications, and ESD/hot-plug damage.
- Led FCC/EMC troubleshooting for RFID and control electronics, including test plans, Intertek filings, SSC Labs/UNR 3 m chamber testing, near-field investigations, ferrite/grounding/harness changes, and redesigns or filtering where required.
- Spearheaded a soft-start/start-capacitor test program to resolve nuisance fuse blows in electric water coolers; characterized compressor startup and inrush behavior across temperature, runtime, chiller flow, restart timing, and load conditions; evaluated improvements through bench testing and customer-site validation, personally installing approximately 30 retrofit kits and confirming the issue was resolved without introducing new problems.
- Maintained production engineering documentation including SolidWorks models/drawings, PDM configurations, GD&T/spec references, ECOs, ERP/PDM BOMs, vendor substitutions, tolerances, ISO records, and design history files.
- Built a LoRaWAN/MQTT prototype connected to an electric water cooler, including local MQTT backend, web dashboard, filter/use tracking, two-way remote control, schedule/time updates, and bottle-count reset functionality.

Product / Mechanical Design Engineer | Aerove Industries |

2017 - Mar 2020

Northern Nevada

- Developed LED road flares and a traffic baton from concept toward production, including full embedded firmware development, mechanical design, board bring-up, proof-of-concept builds, and production-focused design iterations.
- Designed injection-molded and overmolded components, including polycarbonate lens geometry for emergency lighting and redesigned molded parts to improve crush resistance and durability.
- Designed switching and modulation control circuits for a battery-powered paint delivery system, using current sensing and average-current control to prevent battery BMS cutoff when pump load increased in cold conditions.
- Designed and tested LED circuits ranging from simple modulated single-color and multicolor LEDs to addressable data-stream LED panels requiring timing-sensitive/DMA-driven control.
- Performed board bring-up, oscilloscope/spectrum analyzer/VNA testing, serial timing and rise-time checks, component selection, rework, troubleshooting, and vendor coordination for electrical and electro-mechanical systems.

Design Engineer | MSM Sheet Metal and Fabrication | Northern

2017

Nevada

- Designed and prototyped metal, cabinet, and millwork products for production using SolidWorks, approval drawings, production drawings, CNC programming, and CAM/nesting workflows.
- Supported sheet metal shear/brake work, laser-cut pattern development, 3D modeling to 2D flat pattern creation, vendor coordination, and production workflow improvement.

Mechanical Engineer Intern | American Air Racing | Reno, NV

Sep 2016 - May 2017

- Designed and prototyped parts for experimental racing aircraft; machined and fabricated custom parts using lathes, mills, shears, and brakes.
- Created SolidWorks models and drawings used to support FAA approval needs for custom aircraft components.

Event Technology Technician | University of Nevada, Reno |

2013 - 2016

Reno, NV

- Supported audio systems integration, event technology setup, team coordination, and schedule-driven technical execution for campus events.

SELECTED ENGINEERING WORK

FCC/EMC emissions troubleshooting: Developed test plans, identified RF sources, applied ferrites/grounding/harness changes during chamber work, and coordinated redesign/filtering when quick mitigations were not enough.

Electric water cooler field fixes: Visited multiple customer sites to analyze nuisance fuse blows, sensor failures, and installation-related issues; retrofitted solutions and used field findings to characterize root causes.

Soft-start / start-capacitor retrofit kit: Spearheaded a test program to resolve nuisance fuse blows; characterized compressor startup and inrush behavior across operating conditions; evaluated start-capacitor performance through bench testing; coordinated directly with a customer; personally installed approximately 30 retrofit kits; and confirmed the solution resolved the issue without introducing new field problems.

RFID / PCB loop antenna systems: Supported ST CR95HF RFID system design, PCB loop antenna behavior, FCC intentional radiator testing, matching/SWR checks, grounding effects, and enclosure/harness interaction.

Antennas and RF instrumentation: Experienced with quarter-wave verticals, dipoles, Yagis, delta loops, SWR bridges, spectrum analyzers, and NanoVNA-based matching network checks through professional and amateur radio work.

EDUCATION & CREDENTIALS

- University of Nevada, Reno - Bachelor of Science, Mechanical Engineering; Minor in Electrical Engineering (2012 - 2016)
- Engineer in Training (EIT) Certification
- Extra Class Amateur Radio License; practical RF/antenna design and troubleshooting background