

Electrical Engineer experienced developing new products, process control solutions, and providing leadership of engineering projects and teams.

Creating competitive advantages using Stage-Gate and Agile/Scrum methods as appropriate, I can develop products and solutions by designing custom electronics, using COTS industrial controls, and then develop the functionality and connectivity by programming software.

My project, program and group leadership skills are focused on establishing the objectives, planning, execution, and validation – with milestones, reporting and adjusting. Leading by example, I enable team members to demonstrate their talents while mentoring and developing skills throughout the team.

My field experience, customer and sales related interfacing skills allow me to translate customer needs, application realities, and regulatory requirements into engineering documents and ideas which communicate the project roadmap, engineering requirements, work packages and lead to better project estimating, competitive bidding and progress tracking.

These experiences allow me to analyze project risks and select the best approaches for success. I enjoy fast paced environments with lots of unknowns and projects with exposure to different challenges, people and applications. I have often interfaced and worked alongside the sales and marketing departments assisting to find the best strategies to win business and exceed customer expectations.

## **QUALIFICATIONS / EXPERIENCE OVERVIEW**

BSEE / MSEE with many innovative design solutions, process improvements and achievements.

Areas of expertise include HVAC controls including gas heating, DX/CW and energy/humidity management, food processing, high-powered LED lighting, bulk material handling, rotating machinery predictive maintenance monitoring, medical equipment automation, solar energy, weighing applications, test systems, and oil/gas generation controls.

Designs of industrial systems using industry standard equipment such as PLC and HMI controls, sensors, programming, power distribution/switchgear and MCC's, motor starters, VFD's, electro-mechanical and pneumatic/hydraulic devices. Systems developed using standard communications to BMS/BAS, and cloud/edge topologies.

Higher volume OEM product development skills include circuit design, schematic capture and PCB layout. Analog and digital hardware design using microcontrollers, FPGAs, simulations, serial communication, embedded firmware/software in assembler, scripting languages and 'C'. Power supply design, BLDC/servo drivers, data acquisition, sensor interfacing, design for manufacturing and test (DFM/DFT), approvals/certifications, and FMEAs,

Project and people management skills include risk analysis, road mapping, budgeting, troubleshooting, reporting, mentoring, excellent communication and presentation skills. Experience in both Stage-Gate and Agile/Scrum engineering design environments. Designs for the aerospace, medical, food and other regulated fields including many designs requiring certifications (UL / ETL / CSA / TUV / CE) .

## Work History

### Vertiv - Delaware, Ohio

Mar 2021 - Present

#### **Lead Electrical Engineer, Single Phase UPS Global Division**

- Lead global team of 45 electrical engineers developing uninterruptible power supplies for single-phase applications in high volume markets.
- Established design standards, templates, process and documentation controls for electrical designs including schematics, PCB layout, FW development, and design reviews.
- Mentor EE associates through design challenges, work with PMs on progress and schedules.
- Optimize existing designs for cost reductions and proper operation with Lithium batteries.
- Named #3 top innovator company-wide in August 2022

### Ricca Engineering, LLC – Columbus, OH Owner / Lead Engineer

Jan 2020 - Present

- Development of electronic controller for use in an agricultural application.. Design features touch screen, embedded PLC and custom electronics development to control a 100HP generator towed behind large equipment. Built electronics for 40 field trial units including 7 PCBs each.
- Provided technical opinions, reports and testimony for legal firms in patent infringement cases.
- Designed test/calibration equipment for a robotic surgery OEM's manufacturing cells.

### EDG, Inc – Consulting Engineers - Westerville, Ohio

Sept 2018 – Nov 2019

#### **Senior Instrumentation and Controls Engineer**

- Designed electrical controls for bulk material handling involving many types of conveyor technologies, pumps and compressors for land based sites, oil/gas fracking stations and off-shore platforms.
- Electrical load sizing, 3-phase power distribution with motor control centers (MCC), variable frequency drives (VFD), and over-current protection coordination studies, flow diagrams, sequence of operation, one-line diagrams, and PLC / HMI programming specification documents.
- Several large contracts fell through which resulted in a lack-of-work layoff ending this position.

### Henny Penny Corporation – Eaton, Ohio

Oct 2016 – June 2018

#### **Lead Automation Controls Engineer - Contractor**

- Key architect and technical originator on team developing automated equipment involving fryers, freezers, and packaging solutions for fast food chains. Performed all programming of PLCs, HMI, and servo motors.
- Developed hardware and software system architecture, selected all electrical components including sensors, VFDs, PLC, HMI, conveyors, pumps and vision recognition sensors.
- Lead team through brainstorming, specifications, prototyping, experimentation, customer acceptance tests, refinements and presentations to stakeholders.
- Named inventor on three patents related to automated cooking equipment.

**Ricca Engineering, LLC – Columbus, OH Owner / Lead Engineer**

Feb 2016 – Jan 2017

Projects and contract roles during this time:

- Chief Technical Officer for a mid-stage start-up company manufacturing high volume high-power LED lighting for highways, parking lots, stadiums, indoor farming, and airport apron lighting applications.
- Developed system architecture for an automated beverage dispensing product for a start-up company.
- Designed and programmed PLC controls for several motorized interactive museum exhibits.
- Generated a report and provided expert testimony for an automotive patent infringement case.
- Developed automated PLC controls with HMI for a manufacturing test cell.

**Hughey and Phillips – Urbana, Ohio**

Jan 2014 – Feb 2016

**Director of Engineering**

- Managed engineering group developing critical aerospace obstruction lighting devices.
- Developed system platform architecture and product roadmap planning to take products to LEDs.
- Highly involved in electronic circuitry and software design of analog/digital/microprocessor products.
- Named inventor of US patent # 10,106,276, "Obstruction lighting system configured to emit visible and infrared light" and US patent # 9,572,223, "Precision color-controlled light source" .
- Marketing, sales and engineering departments moved to Florida after acquiring another company.
- Continued to assist as technical consultant to company after leaving position.

**Ricca Engineering, LLC – Columbus, OH Owner / Lead Engineer**

June 2013 – Jan 2014

- Assisted local company with high volume microprocessor controlled electric heat controller for semi-conductor and precision process heating applications.

**ADB Airfield Solutions (Now ADB-Safegate) – Gahanna, Ohio**

Feb 2010 – May 2013

**Electrical Engineering Group Leader**

- Managed electrical engineering group designing aerospace airfield lighting products.
- Introduced Stage-Gate design methods, design reviews, FMEAs and other process improvements.
- Highly involved with NPI / NPD R&D, change orders, cost reduction and marketing and sales efforts.
- Coordinated efforts between engineering and other departments: logistics, quality, sales, tech services, marketing, and manufacturing production.
- Key technical contributor on redesign of microprocessor controlled 4KW to 30KW power supplies.
- Trained and worked with service personnel to troubleshoot and overcome field issues and then used these experiences to improve products. Made many trips to field for new product introductions, troubleshooting and discussions with industry influencers regarding new products.
- Interfaced and presented highly technical matters to outside customers and the FAA.
- Appointed member on the FAA's "Electrical Infrastructure Requirements for Tomorrow" technical test

**Ricca Engineering, LLC – Columbus, OH Owner / Lead Engineer**

Nov 2008 – Mar 2010

Projects and contract roles during this time:

- Lead electrical engineer for a start-up company developing a solar concentrating photovoltaic and thermal energy system. Produced a functioning system of proprietary sun tracking hardware/software controls including custom PCBs, and software. Selection and qualification of solar inverters as well as power distribution and heat exchanger components. Technical oversight of field installations in Ohio including at several utility testing sites. Company sold to Chinese firm.
- Development of a portable measurement and data collection system for a US Air Force program to optically measure water content in hydraulic fluids using IR Pyroelectric detectors. Developed custom microprocessor electronics, PCB layouts, and software.
- Development of a high-volume consumer motion detector LED light with solar power recharging.
- Reverse engineered a competitor's product and provided a detailed report for a client which allowed them to justify a larger redesign project to stay competitive.
- Designed, wired, and programmed PLC controls for several motorized interactive museum exhibits.
- Performed expert analysis for several legal firms and cases involving medical, automotive and consumer product liabilities and patent infringement cases.

**Battelle Memorial Institute – Columbus, OH**

March 2006 – Nov 2008

**Principal Electrical Engineer – Medical Development Solutions Group**

- Lead Electrical Engineer on a project developing a clinical diagnostic product to optically identify bacterial strains at high speed. Developed system architecture, servo motor controls, sensors, custom PCBs, isolation strategies, custom UPS controls and wiring harness designs.
- Performed high-voltage research and development for an electrostatic sprayer that can apply pesticides or sanitizers from greater distances yet the particles self-attach to all sides of the target.
- Improved reliability of an OEM's motorized hospital bed product line featuring an electromechanical mattress inflation control system with a six stepper motor valve body.

**Invensys Controls (Now Schneider Electric) – Plain City, OH**

June 2004 – March 2006

**Senior Electrical Engineer – HVAC Equipment Controls / Lead EE Automotive Climate Controls**

- Lead Electrical Engineering for high-volume gas fired heating control products used in furnace, fireplace, appliances, water heaters, building automation systems and residential climate controls.
- Performed FMEA's, circuit and software design reviews of hundreds of control products for latest safety compliance including other product divisions at this Engineering center – namely Refrigeration Controls, Smoke Detectors, HVAC Zoning Controls, Automotive Controls and Thermostats.
- Lead Electrical Engineer for the automotive climate control group and interfaced with OEMs to develop cabin zoning controls involving motorized blending doors, and multi-port water valves.
- Developed a new automotive product family to replace an older condenser freeze protection control.

**Ricca Engineering, LLC – Columbus, OH Owner / Lead Engineer**

July 2002 – June 2004

Projects and contract roles during this time:

- Served as Director of Engineering for a start-up medical electronics diagnostics company. Named inventor on a patent - “Zero Corrected Optical Blood Glucose Analyte Detector” (US #7039448).
- Researched issues and redesigned the PCB layout for several large LED price signs for a high-volume gas station sign chain OEM to solve heat distribution issues that were warping boards.
- Designed a golf putting input sensor prototype using high-speed optical sensing for video gaming.
- Consultant to a start-up company developing a urine collection bag with very accurate level sensing printed on the side with conductive ink. Led to patent application.
- Performed expert technical testing and report generation for two legal firms.

**Dynalab Test Systems - Reynoldsburg, OH**

June 1997 - July 2002

**Senior Electronic Engineer**

- Developed microprocessor and FPGA based high-speed cable and harness testing analyzers used by automotive, aerospace, medical and appliance manufacturers.
- Development of custom PCBs, cost reductions and innovative expansion methods to grow the product line.

**Danninger Medical Technology - Dublin, OH**

Nov 1995 - June 1997

**Senior Electronic Engineer**

- Developed products, designed circuits and wrote embedded software for motorized medical rehabilitation products.
- Redesigned BLDC/servo motor drive circuitry and PCB for manufacturing cost reduction.
- Developed solid-state heating/cooling therapy products used during patient recovery.
- Assisted in transfer of intellectual property to acquiring company.

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