

RYAN HUFF

PowerDrivenEngineering.com

Ryan@PowerDrivenEngineering.com

310-560-4229

OBJECTIVES:

- Assist in bringing innovative products to market by partnering with select organizations
- Open new revenue streams by bringing new, innovative technologies to existing markets

SKILLS:

- Detailed design of power and analog electronic circuits
 - Isolated power supplies: primarily flyback and forward
 - Non-isolated: buck, boost, buck-boost, linear regulators, and their derivatives
 - Solar MPPT battery chargers, solar panel analysis, BMS, LiFePO4 and lead acid battery chargers
 - LED drivers, ideal diode and ideal diode bridge controllers
 - HotSwap circuits – multi-kilowatt, parallelable FETs, multi-phase
 - Paralleled and master/slave power supply circuits, N+1 redundancy
 - PCB layout, input/output PI filters, and EMC circuits
 - Power sequencing, watchdog, over/under-voltage, over-current protection, and fault isolation circuits
 - Gate drive, FET synchronous rectifier, PWM, and linear circuits
 - Power-over-Ethernet (PoE) Powered Device and Power Sourcing Equipment
- Detailed magnetics design - specification and winding of raw cores and bobbins
 - Flyback and forward transformers (1W – 300W)
 - Buck, boost, and buck-boost inductors - currents of 1A-100A and voltages of 1V-100V
 - Gate drive transformers, coupled inductors, input and output inductors, common mode chokes
- Board-level and system-level power architecture, power supply topology trade-offs, and capability definition
- Building, modifying, troubleshooting, and engineering/qualification testing of circuits
- Simulation and analysis of electronics, semiconductors, magnetics, and linear circuits in time and freq. domains
- Worst-case and root-sum-squared circuit analyses for product qualification
- Management of small design and applications teams
- Technical writing: publication of customer-facing articles and advertisements, demo manuals, datasheets
- Software: LTSpice, SwCAD, OrCAD, Pads PCB, MSOffice, Apple iWork

CONSULTING:

Analog Devices (Massachusetts)

2018, 2020

- Developed a PoE test plan for the Ethernet Alliance industry group for the new IEEE 802.3bt specification
- Architected an isolated power supply micro-module

LinksWell (California)

2020

- Detailed design review and subsequent recommendations for fixing automotive switching circuit
- Communication via emails and teleconferences from Morocco to the US and China

Coilcraft (Illinois)

2017-2018

- Authored articles discussing new product lines, attributes of different power supplies, and design “how to’s”
- Designed a product line of 20+ transformers
- Presented to magnetics design engineers on how they can take more risk resulting in better transformers

Solar panel manufacturing company #1 – mobile and lightweight solar panels (San Jose)

2018

- Advised on benefits of a “true” global scan vs. local scanning MPPT
- Invented a power electronics circuit that made low-voltage arrays look like high-voltage arrays that are compatible with conventional MPPT controllers
- Advised on distributed solar panel and battery systems for high reliability
- Presented and costed out MPPT controller architecture

Nishati Solar - military solar solution supplier (Virginia)

2017-2018

- Conducted a market analysis and laid out business strategies for entrée into the Overlanding segment
- Walked Chief Business Development Officer around Overland Expo to make key industry contacts
- Performed an engineering analysis on their panel’s bypass diode strategy and solar controllers
- Authored presentation for IEC63163 to propose an alternative testing scheme for consumer solar panels

Photonics company – commercializing university research (Santa Barbara, CA)

2018

- Architected photonics controller: Thermoelectric Cooler (TEC), power, laser drivers, photo diode monitors

Freedom Photonics, LLC – photonics manufacturing company (Santa Barbara, CA) **2008-2010**

- Design, lay out, and test of a programmable voltage and current source array for biasing photonics ICs
- Design, lay out, optimization, and test of a TEC

WORK EXPERIENCE:

Linear Technology / Analog Devices (MT, NH, CA) **2004-2017, 2020-2022**

Senior Applications Engineer - Power Products, Mixed Signal Products, HotSwap

- Focused on designing applications for isolated and non-isolated power supplies and PoE controller ICs
- Creating, vetting, and analyzing novel HotSwap architectures/ICs
- Responsible for all aspects of standard and custom demo boards: define, design, prototype, test, layout
- Guided IC designers during architecting, proving-out, and improving new ICs
- Customer engagement management
 - Customer opportunity management, small-team strategizing, and technical support
 - Supporting FAE and customer questions via tens of thousands of emails and phone calls
 - Design, layout, build, test, and documentation of circuit solutions for customers in support of sales
- Gave technical presentations and demonstrations to customers and hundreds of FAEs at quarterly seminars
- Wrote and architected ad copy, technical diagrams, and waveforms/data for trade magazine advertisements

TRW / Northrop Grumman Space Technology (Redondo Beach, CA) **1997-2004**

Senior Member of Technical Staff - Power Group and Avionics Electronics Group

- Development Lead for High Efficiency Converter product-line of power converters (110A, 5V)
 - Coordinated technical efforts of three design engineers and two techs for five unique power supplies
- Responsible for qualification of products' electrical, environmental, EMC, and mechanical design
- Responsible Design Engineer (RDE) for an electric propulsion Power Processing Unit (1.5A, 300V)
 - Consisted of six programmable voltage/current source power supplies
 - Successfully took project from concept to engineering model to testing with 300W Hall Effect Thruster
- RDE for prototype, high-power parallel converter system for International Space Station (80A, 120V)
 - Promoted to have responsibility for entire system after demonstrating excellent performance
 - Trusted to oversee testing of system at customer's (NASA) Glenn Research Center for six weeks

Thomson Consumer Electronics (Indianapolis, IN) **1995-1996**

Intern - Power Supply and Deflection Group

- Redesigned and tested analog/power supply circuits for high-volume, consumer electronics products
- Developed Spice models for semiconductor devices and magnetics

EDUCATION:

Purdue University - MSEE 1998 and BSEE 1997 (West Lafayette, IN) - 3.7 and 3.85 GPA **1993-1998**

Degrees with emphasis in Circuit Theory and Energy Sources and Systems

- Teaching Assistant for Engineering Projects in Community Service
 - Technical consultant for numerous, interdisciplinary, small groups of undergraduate engineers
 - Managed a hardware lab that was used for prototyping of circuits and systems
- Conducted research on state-space modeling of power electronic dc-dc converters in Matlab/SimuLink
- Awarded Purdue Engineering Power Center Research Assistantship

PATENTS:

- Platform Leveling Apparatus, pending (PCT/US20/31498)
- Detection and Classification Scheme for Power over Ethernet System (10,261,477)
- Power Combining in PoE Systems (9,024,473)
- Detection and Classification Scheme for Power over Ethernet System (9,897,981)
- PoE System Where PSE Detects Actual Voltage at PD (9,488,997)
- PD in PoE System Having Redundant PSE Channel Inputs (9,419,807)
- Providing Power to Powered Device Having Multiple Power Supply Inputs (8,581,438)

INTERESTS:

- Solar and batteries, energy efficiency, automotive electronics, ham radio, overlanding, homesteading

PUBLICATIONS/ARTICLES:

- [PowerDrivenEngineering.com/about](https://www.powerdrivenengineering.com/about)