



**Stephen J. Wenner**  
**Tezla LLC**

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With over 35 years of experience, I specialize in wireless, analog, power, embedded, and high-speed design. I have a deep understanding of RF systems, including WiFi, Cellular, LoRaWAN, and BLE technologies. My proven track record spans successful product development across military, automotive, industrial, and commercial sectors. As the owner of [Tezla LLC](#), I have led innovative engineering solutions for diverse clients. To learn more about my company, watch my [YouTube video](#).

### **Core Competencies**

Wireless design, Analog / Digital design, Power design, PCB layout, Embedded Firmware, Excellent troubleshooting skills

### **Work History:**

**Tezla LLC, Warriors Mark, PA**

**Owner / Engineer**

**Mar 2018 – Current**

Projects designed and developed:

- **Microphone Streaming System:** AWS-IVS publisher from Raspberry Pi 5 and HiFiBerry ADC.
- **BLE NEMA24 Stepper Motor Controller:** Rack and pinion system with BLE integration.
- **RTLS Monitoring System:** WiFi and BLE-based medical personnel tracking tag.
- **Vision Scanner for Amblyopia Detection:** Built with RPi3, Xilinx Artix-7 FPGA, DDR3 RAM.
- **AC-DC Compressor Driver:** 800W driver for humidifiers.
- **LoRaWAN Water Valve Control Sensor:** Developed using STM32WLE5 for IoT applications.
- **BLE Solar Heater Controller:** Wireless control for solar panel pool heaters using STM32WB55.
- **Water Contamination Detection System:** Silicon photomultiplier sensors for fecal monitoring in undeveloped regions, integrating:
  - LTE-Cat1 Cellular (Blues NOTE-NBNA-500) and STM32L476
  - Wi-Fi (Particle ARGON-H)
- **Fiber Optic Cable Dispenser:** 100A motor drive with LCD, GPS, and SD card for using MSP430.
- **Carbon Credit Monitoring:** Soil CO<sub>2</sub> sensor with capacitive moisture sensing powered by MSP430.
- **Smart Door Actuator:** BLE-enabled actuator using STM32WB55.
- **Furnace Fan Monitoring System:** 120VAC monitoring using MSP430.
- **Comfort Blanket with Haptics:** BLE-connected blanket with integrated haptic feedback (STM32WB55).
- **Pet Claw Clipper:** IR-sensing clippers on a flex PCB with USB-C Power Delivery, using MSP430.
- **Equine Estrus Lighting:** Artificial blue light system for early estrus in horses using MSP430.
- **Wireless Pump Servo Controller:** Proprietary network design with LPRS LoRa and MSP430.
- **High-Power Wireless LED Controller:** Custom LoRa network with MSP430.
- **High-Gain Signal Amplifier:** Amplifier for low-level signal monitoring (2 $\mu$ A range).
- **Voice Audio Pre-Amp/Amp:** Discrete component-based amplifier designed and simulated with LTSpice.
- **Blackhawk Flight Controls:** Electronic pneumatic trim tab system using MSP430 for the U.S. Army.
- **Industrial Robot Acceleration Monitoring:** Proprietary wireless hub with NRF24L01+.
- **Industrial Vibration Monitor:** Wireless acceleration sensor using MSP430 and NRF24L01+.
- **Li-Ion Battery Charger:** Intelligent battery charger for Li-ion batteries using MSP430.

**Pennsylvania State University, ARL, State College, PA**  
**Engineering Designer**

**Apr 2018 – Dec 2018**

Responsible for Altium PCB Layouts / Design for classified government programs.

**KCF Technologies, State College, PA**

**Minority Owner/Manager of Electrical / Firmware Engineering**

**Apr 2009 – Jan 2018**

Responsible for all electrical engineering design work including

- Pioneered a proprietary wireless star network using Nordic nRF24L01 and ISM 2.4GHz.
- Built \$15M sales as lead electrical engineer on all product development.

**Pennsylvania State University, State College, PA**

**Sr. Research Associate**

**May 2008 – Apr 2009**

- Real time video sampling, simulation and development using bilinear algorithms in Matlab and FPGA.
- Development of microcontroller code for PIC16F applications.

**RTD Embedded Technologies, State College, PA**

**Sr. Analog Electrical Engineer**

**Apr 2004 – Mar 2008**

Designed FPGA code for: PCI Bridge, ISA, SPI, I2C, analog data manipulation, scanning and filtering.

Developed SmartCal Data Module line using TMS2812 DSP to autonomously calibrate and adjust error.

Developed and responsible for all analog front-end products.

**Paradise Datacom, Boalsburg, PA**

**Sr. Electrical Engineer**

**Aug 2003 – Mar 2004**

Responsible for VSAT Terminal System level design; included Block Up Converters, Modems, LNBS, Power Sources, Redundant Controllers, Modems as well as product field integration.

**Self Employed**

**Jun 2003 – Sept 2003**

Developed electrical test procedure for the cruise missile Acceptance / Qualification test plan.

**Preschutti & Associates, State College, PA**

**Sr. Member of the Technical Staff**

**Aug 2001 – Jun 2003**

- Independently managed and developed solutions for FPGA serial communication interfaces.
- Hardware development for: PCS Angle of Arrival System; infrared to AM modulation schemes; mixed signal transducer modules for the cruise missile.
- Created Acceptance / Qualification test plans for trident and cruise missile programs for: destructive radio units, PCM encoders; destruct initiation units.

**Videon-Central, State College, PA**

**Sr. Electrical Engineer**

**Feb 2000 – Jun 2001**

- Created inflight MPEG encoder / decoder products including all hardware and FPGA development.

**Krautkramer Branson, Lewistown, PA**

**Sr. Electrical Engineer**

**Mar 1998 – Feb 2000**

- In charge of development on all first-generation ultrasonic phased array products.

**Wintron Inc., Bellefonte, PA**

**Lead Research Engineer**

**Jun 1995 – Mar 1998**

- Organized new development of high voltage power supply and deflection yoke designs for high resolution monochrome heads up displays

## **Publications / Patents**

U.S. Patent #8793081 **Internal structural monitoring system**

U.S. Patent #9106160 **Monolithic energy harvesting system, apparatus and method**

U.S. Patent #9271170 **Channel adaptation in sensor networks**

U.S. Patent #9322692 **Flow sensor including a tube extending from a housing and static ...**

U.S. Patent #9419331 **Flexible antenna with weatherproof protection system and method of weather**

COTS: The Journal of Military Electronics and Computing **Drifts and Calibration: Fine Tuning Data Acquisition**

MSEE Thesis: **High Frequency Propagation Model Prediction, Analysis and Validation as Correlated to an Auroral Circuit**

## **Education**

**MSEE** Aug 94 – Jul 95 Pennsylvania State University

**BSEE** Aug 86 – Dec 90 Pennsylvania State University

**ASET** Aug 84 – May 86 Williamsport Area Community College

## **Technical Skills**

Altium Software, Embedded C, Wireless Networks, Ubuntu Linux, PostgreSQL, MQTT, LTSpice, Microcontrollers (PIC, ARM, MSP), STM32CubeIDE, Code Composer Studio, Visual Basic