

# MATTHEW BANZHOF

## PROFILE SUMMARY

Experienced Electrical Engineering Technician with 6+ years of hands-on experience in PCB prototyping, vacuum/cryogenic systems, and automated test design.

Key contributor to Research and Development programs at *Advanced Cooling Technologies*; including Navy and DOE contracts, delivering innovations in vapor quality sensor, radiation shielding, and semi-conductor coating methods. Most notable contribution: vapor quality sensor development for PCB design.

U.S. Patent Application No. 18/798,123 – "Vapor Quality and Vapor Volume Fraction Sensor" Filed August 8, 2024 – Inventor: [Matthew Banzhof]

## CONTACT DETAILS

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## SKILLS

- Rapid PCB prototyping
- PCB schematic design
- Developing BOM
- High Proficiency in Soldering (o402, QFN, DFN, QFP)
- Setup automated tests using PLCs
- Setup automated safety devices for power outages, over-temperature, and over-pressurization
- High vacuum system design and maintenance
- Cryogenics handling, operations, and safety (Liquid nitrogen)

## EXPERIENCE

**ENGINEERING TECHNICIAN** at ACT (*Advanced Cooling Technologies*).  
**2023.10–2025.07**

**TEST TECHNICIAN** at EMSG (*Electronic Manufacturing Services Group*).  
**2019.07–2023.10**

## PROGRAMS WITH MAJOR CONTRIBUTIONS AT ACT

- ◊ *Data Center Cooling*

### **Reverse Engineered PCB controllers**

- ◊ *Naval Air Refrigerant Vapor Quality Sensor Navy Ph. II Contract N6833522C0445.*

### **Designed and prototyped PCBs for Navy Phase II vapor quality sensor program**

- ◊ *DOE Low-Cost High-Volume Durable Coating Method for Bipolar Plates Ph. I Contract DE-SC0023833*

### **Designed, built and tested a prototype plasma power supply, for DOE Low-Cost High-Volume Durable Coating Method**

- ◊ *DOE Polymer Based Conformal Space Radiation Shield with Thermal Management DE-SC0022897*

### **Engineered and automated a vacuum chamber test system to evaluate radiation-shielding polymers, directly supporting CubeSat electronics protection.**

- ◊ *DOE Ph. 1 Mirror Surfaces for Polarizing Neutron Optics Award DE-SC0025820*

### **Executed neutron optics experiments by configuring and maintaining high-vacuum chambers, ensuring accurate DOE Phase I mirror surface testing.**

## CONTRIBUTIONS AT EMSG

- ◊ PCB troubleshooting and testing

- ◊ Implemented manufacturing process improvement via thru hole machine, SMT machine, Automated Optical Inspection machine. Ie. Flux spray pattern, placement errors

- ◊ Developed written procedures to standardize and streamline the manufacturing process, ensuring consistency and accuracy.

- ◊ Communicate effectively with colleagues and engineers, providing detailed feedback and suggestions to reduce costs, improve efficiency, and enhance quality

## EDUCATION

ELECTRICAL ENGINEERING TECHNOLOGY - ASSOCIATE IN SCIENCE (AS)  
from Harrisburg Area Community College.

ELECTRICAL ENGINEERING TECHNOLOGY - BACHELOR IN SCIENCE (BS)  
Pennsylvania State University.  
**2023–2027**