

Zachary Wilkerson

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SUMMARY

Lead mechanical engineer with eight years supporting **gas turbine** and rotating machinery hardware from design definition through qualification and manufacturing release. Builds clear **qualification plans** from engineering drawings, BoMs, GD&T, material requirements, QMS controls, and production evidence. Partners with manufacturing, quality, design, materials, sourcing, factories, and suppliers to resolve nonconforming hardware and protect product conformity. Applies NX, Ansys, Python, VBA, lean manufacturing, **root cause analysis**, and **design for producibility** across complex component programs. Leads technical decisions with safety, traceability, cost, schedule, and supplier capability in view. Brings practical communication across global teams, disciplined documentation, and calm prioritization when business needs shift. Ready for work requiring hands on engineering leadership, zero defect thinking, and reliable qualification execution.

EXPERIENCE

Lead Mechanical Engineer

January 2024 - Present

Blue Ridge Power Machinery

Charlotte, NC

Leads qualification engineering for turbine hot gas path and structural hardware across two manufacturing sites and precision suppliers. Owns technical evidence, nonconformance decisions, producibility improvements, and cross functional execution for safe, conforming hardware release.

- Led turbine hardware qualification plans using drawings, BoMs, **GD&T**, materials, and **QMS controls**.
- Reviewed NCNs and supplier deviations with quality, materials, **manufacturing**, and design specialists for sound dispositions.
- Applied NX and Ansys to assess fit, stress sensitive features, and supplier driven design changes.
- Introduced Python checks for qualification data and drawing attributes, improving consistency during engineering reviews.
- Guided lean flow, **built in quality**, **cost reduction**, and safety decisions across distributed manufacturing teams.
- Maintained traceable qualification evidence supporting **manufacturing release** decisions for complex gas turbine components.

Senior Mechanical Design Engineer

June 2021 - December 2023

Carolina Rotating Systems

Greensboro, NC

Owned mechanical design and **manufacturing readiness** for rotating equipment assemblies entering serial production. Coordinated drawings, analyses, supplier input, **nonconformance resolution**, and delivery priorities across distributed engineering and manufacturing stakeholders.

- Owned rotating equipment design readiness from NX release through serial production manufacturing approval.
- Created drawings, tolerance schemes, and **BoMs** with GD&T for machining, inspection, and assembly interfaces.
- Used lean reviews with suppliers and manufacturing engineers to remove unnecessary processing and inspection complexity.
- Performed **Ansys analyses** and documented assumptions, boundary conditions, results, and decisions for technical reviews.
- Resolved shop floor nonconformances with **quality** and **materials** engineers through justified dispositions and corrective actions.
- Reprioritized analyses and drawing releases with distributed stakeholders, protecting schedules for critical hardware.

Mechanical Engineer II

July 2019 - May 2021

Piedmont Turbomachinery Solutions

Winston Salem, NC

Supported design and qualification for machined and fabricated turbine and compressor components serving power and process applications. Converted requirements into controlled models, drawings, inspection evidence, and practical manufacturing improvements while supporting supplier quality closure.

- Supported qualification of machined and fabricated turbine components for power and process applications.
- Converted component requirements into **NX** models, drawings, tolerances, and controlled manufacturing documentation.
- Evaluated **first article inspection** results against drawings, closing technical gaps with **supplier quality** personnel.
- Applied GD&T and **tolerance analysis** to resolve assembly interface issues for manufacturing and inspection teams.
- Built **VBA** and **Python** utilities for engineering calculations and data preparation, focusing reviews on higher risk decisions.
- Contributed to lean workshops aligning design features with available processes, inspection methods, and material flow.

Mechanical Engineer

June 2018 - June 2019

Southeastern Energy Equipment

Columbia, SC

Executed supervised component design updates and manufacturing support for industrial rotating machinery. Prepared controlled product definition, supported Ansys assessments, clarified drawing requirements, and maintained qualification records within an engineering quality system.

- Executed component design updates for industrial **rotating machinery** under senior engineering review.
- Prepared NX models, drawings, and BoMs incorporating approved changes and configuration requirements.
- Supported **Ansys** structural assessments by preparing geometry, documenting inputs, and checking reviewer feedback.
- Clarified **manufacturing** dimensional questions using **GD&T** principles and controlled design records.
- Maintained qualification and change documentation, improving traceability between decisions and released product definitions.

- Built experience with supplier communication, **root cause analysis**, **standard work**, and safety focused support.

PROJECTS

Supplier Qualification Evidence System 📅 2026

Created a reusable review approach for qualification data, drawing attributes, supplier evidence, and release decisions. The work supports traceability, consistent technical review, and faster identification of missing manufacturing information.

Rotating Hardware Producibility Review 📅 2023

Led a focused design review for rotating equipment hardware entering serial production. NX models, GD&T, inspection needs, supplier capability, lean flow, and cost considerations shaped practical release recommendations.

LEADERSHIP & AWARDS

- Mechanical Design Review Mentor, Carolina Engineering Professionals Network, recognized for practical guidance on engineering reviews and early career development.
- Volunteer STEM Mentor, Charlotte Regional Engineering Outreach, recognized for making mechanical engineering concepts accessible to students.
- Lean Six Sigma Green Belt, applied continuous improvement methods to manufacturing and qualification support.

EDUCATION

Bachelor's Degree in Mechanical Engineering

2018

University of North Carolina at Charlotte GPA: 0

Charlotte, NC

Coursework: Mechanical design, thermodynamics, materials science, manufacturing processes, engineering analysis

CERTIFICATIONS

- ASME GD&T Fundamentals Certificate 📅 2022
- Lean Six Sigma Green Belt 📅 2021

TECHNICAL SKILLS

- **Mechanical Design:** NX, Ansys, 3D modeling
- **Qualification Engineering:** Qualification plans, milestones, release evidence
- **Product Definition:** Engineering drawings, BoMs, configuration control
- **Geometric Dimensioning:** GD&T, tolerance analysis, inspection requirements
- **Programming:** Python, VBA, engineering calculations
- **Quality Systems:** QMS, NCNs, supplier deviation requests
- **Manufacturing Methods:** Machining, fabrication, assembly
- **Lean Operations:** Lean manufacturing, standard work, flow reviews
- **Turbomachinery:** Gas turbines, compressors, rotating equipment
- **Engineering Analysis:** Structural assessment, fit evaluation, stress review
- **Supplier Engineering:** Supplier qualification, first article inspection, technical closure
- **Continuous Improvement:** Root cause analysis, cost reduction, productivity initiatives

SKILLS

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|----------------------------|------------------------|----------------------|-----------------------|
| • Mechanical qualification | • GD&T | • Ansys | • QMS |
| • Gas turbines | • Engineering drawings | • Python | • Supplier quality |
| • Rotating machinery | • BoMs | • VBA | • Root cause analysis |
| • Design for producibility | • NX | • Lean manufacturing | |

PROFESSIONAL AFFILIATIONS

- Carolina Engineering Professionals Network, Mechanical Design Review Mentor supporting peer learning and technical judgment.
- Charlotte Regional Engineering Outreach, Volunteer STEM Mentor connecting students with practical engineering experiences.

LANGUAGES

- English (Native)
- Spanish (Beginner)

ADDITIONAL INFORMATION

Work Status : Authorized to work in United States. No sponsorship required.

REFERENCES

AVAILABLE ON REQUEST