

Ivan O'Brien

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SUMMARY

Mechanical Design Engineer with four years of experience supporting aerospace and high reliability **electromechanical products** from concept through production transition. Creates SolidWorks models, assemblies, manufacturing drawings, **bills of material**, and controlled engineering documentation for brackets, enclosures, structural hardware, **sheet metal parts**, machined components, and integrated assemblies. Applies GD&T, tolerance analysis, **mechanics of materials**, material selection, DFM, and DFA during design reviews and manufacturing support. Contributes to structural, thermal, and vibration evaluations, prototype fabrication, laboratory testing, troubleshooting, data collection, and qualification activities. Works closely with manufacturing, quality, test, and supply chain partners to resolve build issues and implement engineering changes. Brings clear technical communication and practical design judgment to product development teams.

EXPERIENCE

Mechanical Design Engineer

June 2023 - Present

Northstar Defense Technologies

Madison, WI

Owns **mechanical design** support for **electromechanical assemblies**, prototype hardware, production documentation, and qualification activities. Partners with manufacturing and quality teams to improve product readiness, resolve build issues, and control engineering changes.

- Created SolidWorks assemblies for electromechanical hardware, improving design clarity during cross functional reviews.
- Released **manufacturing drawings** with GD&T, supporting repeatable fabrication and accurate inspection activities.
- Applied tolerance stack ups and **material selection** during prototype revisions, reducing assembly fit concerns.
- Supported vibration evaluations with hand calculations, helping engineers assess component performance before **qualification testing**.
- Documented laboratory results and **qualification** evidence, giving quality teams clear records for hardware validation.
- Coordinated manufacturing and quality feedback through engineering changes, keeping production issues visible and actionable.

Associate Mechanical Engineer

July 2021 - May 2023

Apex Motion Solutions

Rockford, IL

Supported mechanical product development across CAD modeling, prototype fabrication, laboratory testing, engineering release, and manufacturing transition. Worked with senior engineers on machine design decisions, ECN workflows, design reviews, and production focused improvements.

- Designed brackets and machined components in SolidWorks, improving mechanical interfaces for product applications.
- Developed sheet metal parts and assemblies, supporting **prototype fabrication** and practical manufacturing requirements.
- Prepared bills of material and **engineering drawings**, giving production teams consistent release information.
- Evaluated design options with **mechanics of materials** concepts, guiding selections that improved component reliability.
- Supported **laboratory testing**, troubleshooting, and **data collection** during prototype validation activities.
- Applied DFM and DFA during manufacturing transition, helping teams address assembly and production concerns early.
- Participated in **design reviews** and ECN workflows, documenting decisions for senior engineering staff.

PROJECTS

Electromechanical Qualification Support 📅 2025

Supported prototype assembly, vibration review, laboratory data collection, and qualification documentation for high reliability electromechanical hardware. Findings informed design updates and production readiness discussions.

Manufacturing Drawing Release 📅 2023

Prepared SolidWorks assemblies, GD&T drawings, bills of material, and tolerance reviews for mechanical components moving from design into fabrication.

LEADERSHIP & AWARDS

- Received team recognition for dependable support during prototype validation and qualification documentation activities.
- Recognized by engineering peers for clear drawing practices and practical responses to manufacturing build issues.
- Selected for recurring participation in design reviews involving manufacturing, quality, and senior engineering stakeholders.

EDUCATION

Bachelor's Degree in Mechanical Engineering

2021

University of Wisconsin Madison GPA: 3.5

Madison, WI

Coursework: *Mechanics of materials, machine design, manufacturing processes, finite element analysis*

CERTIFICATIONS

- ASME Y14.5 GD&T Training Certificate 📅 2025
- SolidWorks Mechanical Design Training 📅 2024

TECHNICAL SKILLS

- **3D CAD Software:** SolidWorks, assemblies, parametric modeling
- **Engineering Drawings:** Manufacturing drawings, bills of material, drawing release
- **Geometric Dimensioning:** ASME Y14.5, GD&T, tolerance stack up
- **Mechanical Analysis:** Hand calculations, stress review, mechanics of materials
- **Finite Element Analysis:** ANSYS Mechanical, structural FEA, thermal FEA
- **Mechanical Components:** Brackets, enclosures, structural hardware
- **Manufacturing Design:** DFM, DFA, machined parts
- **Prototype Development:** Prototype fabrication, assembly, design iteration
- **Qualification Testing:** Vibration testing, thermal testing, shock testing
- **Product Documentation:** Engineering documentation, ECN, controlled records
- **Materials Engineering:** Material selection, fatigue review, environmental sealing
- **Product Integration:** Mechanical integration, electromechanical assemblies, troubleshooting

SKILLS

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|---------------------|------------------|------------------------|-----------------------|
| • Mechanical design | • FEA | • Prototype testing | • Structural analysis |
| • SolidWorks | • Machine design | • Engineering drawings | • Thermal analysis |
| • 3D CAD | • DFM | • Material selection | • Vibration testing |
| • GD&T | • DFA | • Tolerance analysis | |

PROFESSIONAL AFFILIATIONS

- American Society of Mechanical Engineers, member focused on mechanical design standards and professional learning.
- University of Wisconsin Madison Engineering Alumni Network, participant supporting connections across mechanical engineering careers.

LANGUAGES

- English (Native)
- Spanish (Intermediate)

ADDITIONAL INFORMATION

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

REFERENCES

AVAILABLE ON REQUEST