

Ibrahim Burgess

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SUMMARY

Mechanical design engineer with nine years of experience developing and releasing valvetrain and related engine components for heavy duty diesel and natural gas reciprocating engines. Leads concept development, 3D CAD, engineering analysis, numerical simulation interpretation, FMEA, APQP, validation planning, supplier changes, and production release. Work spans valves, seats, guides, rotators, **rocker arms, rocker shafts**, pushrods, and adjacent hardware supporting power generation, marine, rail, petroleum, industrial, and **large mobile equipment** applications. Partners with manufacturing, purchasing, logistics, **test and development**, and suppliers to balance reliability, durability, validation cost, product cost, schedule, and manufacturability. Provides technical guidance and mentoring across NTI, NPI, CPI, NSI, and CPPD programs, helping teams turn sound mechanical decisions into dependable production components.

EXPERIENCE

Senior Valvetrain Design Engineer

January 2023 - Present

Summit Engine Technologies

Peoria, IL

Leads component design and release for heavy duty diesel and **natural gas engines**, coordinating global engineering, manufacturing, purchasing, logistics, test and development, and supplier work across NPI programs.

- Led valve, seat, guide, rocker, shaft, and pushrod releases for heavy duty engines.
- Created 3D CAD concepts balancing packaging, manufacturability, **durability**, interfaces, and service requirements.
- Connected design **FMEA** risks with bench, rig, and engine test evidence through **validation planning**.
- Evaluated supplier changes using dimensional, material, process, simulation, validation, cost, and program evidence.
- Coordinated **manufacturing, purchasing**, test, logistics, and supplier reviews to protect program milestones.
- Mentored three engineers through valvetrain reviews, release decisions, and technical communication.

Component Design Engineer

June 2020 - December 2022

Great Lakes Powertrain Solutions

Milwaukee, WI

Developed valvetrain components for industrial, marine, and electric power generation engines, moving concepts through analysis, supplier review, validation, and production release.

- Developed valvetrain components for industrial, marine, and **power generation** engine platforms.
- Built 3D models and drawings using tolerance, interface, material, and manufacturing considerations.
- Applied **APQP** and FMEA practices to identify risks and define validation activities.
- Interpreted **numerical simulation** outputs with analysts, focusing tests on high risk interfaces.
- Supported **CPI** investigations through field concerns, measurements, test evidence, and manufacturing data.
- Reviewed supplier tooling, process changes, manufacturability, and component quality issues.

Mechanical Design Engineer

July 2017 - May 2020

Northstar Heavy Equipment Engineering

Duluth, MN

Designed engine and valvetrain adjacent hardware for large mobile equipment, supporting calculations, validation, root cause analysis, engineering changes, and production documentation.

- Designed engine and valvetrain adjacent components for **large mobile equipment** applications.
- Completed calculations and design reviews covering load paths, interfaces, materials, and manufacturability.
- Defined validation requirements and reviewed durability results against component design intent.
- Investigated prototype and production issues with manufacturing and suppliers through root cause analysis.
- Processed engineering changes and maintained release documentation for production components.
- Presented technical findings to senior engineers and incorporated review feedback into improved designs.

Associate Mechanical Engineer

June 2017 - June 2017

Midwest Engine Research Center

Madison, WI

Supported supervised reciprocating engine hardware studies through CAD updates, prototype measurements, design calculations, supplier discussions, and traceable engineering documentation.

- Supported component concept studies for reciprocating engine hardware under senior engineer supervision.
- Created 3D CAD geometry and drawing updates for prototype components.
- Organized test measurements and compared results with design calculations.
- Documented design review actions and maintained traceable engineering files.
- Joined supplier and manufacturing discussions about production constraints affecting component geometry.
- Prepared concise technical summaries for prototype design decisions.

PROJECTS

- Heavy Duty Valvetrain Release Study 📅 2023
Applied mechanical design judgment, FMEA, CAD review, and validation planning to assess production readiness for engine valvetrain hardware.
- Reciprocating Engine Durability Analysis 📅 2021
Connected simulation interpretation, physical testing, supplier evidence, and design review decisions for reliable industrial engine components.

LEADERSHIP & AWARDS

- Recognized by engineering leadership for mentoring three engineers through valvetrain design reviews and release decisions.
- Selected for cross functional technical leadership across manufacturing, purchasing, test, logistics, and supplier reviews.
- Trusted to present component findings and design recommendations during senior engineering reviews.

EDUCATION

Bachelor of Science in Mechanical Engineering 2017
University of Wisconsin Madison GPA: 3.5 Madison, WI
Coursework: Mechanical design, engineering analysis, materials, manufacturing processes

CERTIFICATIONS

- APQP and FMEA Training 📅 2022
- Computer Aided Design and Engineering Training 📅 2019

TECHNICAL SKILLS

- **Valvetrain Components:** Valves, seats, guides
- **Rockers and Pushrods:** Rocker arms, rocker shafts, pushrods
- **CAD and Modeling:** 3D CAD, solid modeling, engineering drawings
- **Engineering Analysis:** CAE, load calculations, mechanical judgment
- **Simulation Review:** Numerical simulation, simulation interpretation, load review
- **Quality Methods:** FMEA, design FMEA, root cause analysis
- **Product Development:** APQP, NPI, NTI
- **Continuous Improvement:** CPI, NSI, engineering changes
- **Validation Engineering:** Validation planning, bench testing, durability testing
- **Release Processes:** Component release, drawing release, production release
- **Manufacturing Interfaces:** Manufacturability, tooling review, process review
- **Supplier Engineering:** Supplier collaboration, supplier change requests, supplier reviews

SKILLS

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|-------------------------|--------|-----------------------|--------------------------|
| • Valvetrain design | • FMEA | • NTI | • Numerical simulation |
| • Reciprocating engines | • APQP | • CPI | • Component release |
| • 3D CAD | • CPPD | • NSI | • Supplier collaboration |
| • CAE | • NPI | • Validation planning | |

PROFESSIONAL AFFILIATIONS

- Professional collaboration with manufacturing, purchasing, logistics, test, development, and supplier engineering teams.
- Ongoing technical exchange with mechanical design, analysis, validation, quality, and production engineering peers.

LANGUAGES

- English (Native)
- Spanish (Intermediate)

ADDITIONAL INFORMATION

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

REFERENCES

AVAILABLE ON REQUEST