



Sanjay Rubio

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SUMMARY

Senior mechanical design engineer with 11 years developing **precision gearboxes**, **drivetrain components**, and electromechanical assemblies for **motion control** and automation applications. Advanced SolidWorks practitioner with hands on expertise in planetary and right angle gearing, gear sizing, torque and load calculations, shaft and bearing selection, GD&T, **tolerance stack up** analysis, material selection, DFM, CNC machining, and gear analysis using KISSsoft and MITCalc. Leads high mix, low volume product development from customer requirements and engineering calculations through prototypes, validation, production release, and continuous improvement. Resolves manufacturing and field issues through root cause analysis, corrective actions, and controlled engineering changes. Partners with machining, assembly, quality, applications, sales, and operations teams while mentoring engineers and balancing reliability, manufacturability, quality, performance, and cost.

EXPERIENCE

Senior Mechanical Design Engineer, Precision Gearboxes

October 2022 - Present

Helix Drive Technologies

Elk Grove Village, IL

Leads planetary and right angle gearbox development for servo driven automation equipment, owning architecture, calculations, CAD, validation, production release, **engineering changes**, and technical guidance across a high mix, low volume environment.

- Translated torque, speed, duty cycle, envelope, and life requirements into validated gearbox architectures.
- Executed **KISSsoft**, MITCalc, shaft, bearing, tolerance, and FEA calculations before prototype release.
- Created **SolidWorks** models and **GD&T** drawings for gears, shafts, carriers, housings, and precision interfaces.
- Directed prototype reviews, assembly evaluations, dynamometer testing, and validation reporting for production readiness.
- Resolved field and manufacturing failures through **root cause analysis**, **corrective actions**, and follow up validation.
- Mentored three engineers on gearbox design, drawing standards, DFM, PDM workflows, and technical reviews.

Mechanical Design Engineer, Drivetrain Assemblies

July 2019 - September 2022

Vector Precision Components

Buffalo Grove, IL

Developed custom drivetrain assemblies and precision mechanical components for robotics, packaging, and factory automation customers, connecting application requirements with calculations, controlled documentation, prototype validation, and **production release**.

- Developed custom drivetrain assemblies for robotics, packaging, and factory **automation** customers.
- Converted application requirements into SolidWorks concepts, calculations, **BOMs**, drawings, and controlled releases.
- Selected gears, bearings, shafts, materials, fits, and tolerances for load, life, cost, and manufacturability.
- Partnered with machinists, assemblers, programmers, and quality engineers on difficult features and inspection schemes.
- Planned **prototype builds**, documented **validation** results, and incorporated findings into engineering changes.
- Explained design tradeoffs to customers, sales staff, and **operations** personnel during application reviews.

Mechanical Engineer, Motion Modules

June 2017 - June 2019

Midwest Automation Products

Naperville, IL

Designed compact transmission modules and automation subassemblies while supporting calculations, CNC prototype fabrication, production troubleshooting, revision control, and coordinated engineering changes across product documentation.

- Designed transmission modules integrating gearing, bearings, shafts, couplings, and machined housings.
- Produced CAD models, tolerance studies, **GD&T** drawings, BOMs, and assembly instructions for production.
- Performed torque, load, bearing life, and shaft calculations for formal engineering reviews.
- Coordinated CNC machined prototypes, dispositioned dimensional issues, and improved assembly performance.
- Investigated test and production problems using measurement data, teardowns, and cause analysis.
- Maintained **PDM** records across drawings, BOMs, purchased components, and **assembly documentation**.

Associate Mechanical Engineer, Power Transmission

June 2015 - May 2017

Prairie Motion Engineering

Rockford, IL

Supported precision power transmission design for industrial motion systems, progressing from component detailing into independent ownership of small assemblies under senior engineering review.

- Supported precision **power transmission** components for industrial motion systems under senior review.
- Created SolidWorks models for shafts, housings, bearing interfaces, adapters, and gear components.
- Applied material properties, fits, tolerances, and **GD&T** for CNC turning, milling, inspection, and assembly.

- Completed torque, shaft, fastener, and bearing checks for design verification packages.
- Supported prototype assembly and bench testing, recording dimensional and performance observations.
- Coordinated drawing corrections and engineering change documentation with **manufacturing** and **quality** teams.

PROJECTS

Servo Gearbox Validation Program 📅 2023

Validated planetary and right angle gearbox architectures through prototype assembly, dynamometer testing, tolerance review, and documented production release decisions.

Automation Drivetrain Platform 📅 2021

Developed configurable drivetrain components for robotics and packaging applications, combining customer requirements, SolidWorks design, calculations, BOM control, and prototype validation.

LEADERSHIP & AWARDS

- Technical mentor for three mechanical engineers, supporting gearbox design reviews, drawing standards, DFM, and PDM workflows.
- Recognized technical escalation resource for Sales and Application Engineering on complex motion control applications.
- Certified SOLIDWORKS Professional, earned 2018.

EDUCATION

Bachelor's Degree in Mechanical Engineering

2015

Northern Illinois University GPA: 3.5

DeKalb, IL

Coursework: Mechanical Design, Machine Design, Materials Science, Manufacturing Processes, Engineering Analysis

CERTIFICATIONS

- Certified SOLIDWORKS Professional 📅 2018
- SOLIDWORKS Professional Certification 📅 2018

TECHNICAL SKILLS

- **CAD Design:** SolidWorks, 3D CAD, assembly modeling
- **Gear Analysis:** KISSsoft, MITCalc, gear sizing
- **Mechanical Analysis:** FEA, torque calculations, load calculations
- **Power Transmission:** Planetary gears, right angle gears, drivetrain components
- **Engineering Standards:** GD&T, tolerance stack up, fits
- **Manufacturing:** CNC machining, DFM, assembly methods
- **Documentation:** Engineering drawings, BOMs, assembly documentation
- **Lifecycle Systems:** PDM, PLM, revision control
- **Testing:** Prototype builds, product testing, validation
- **Quality Methods:** Root cause analysis, corrective actions, failure investigation
- **Change Management:** Engineering changes, production integration, release control
- **Motion Applications:** Servo systems, robotics, automation
- **Materials:** Material selection, lubrication, component geometry
- **Communication:** Customer support, technical presentations, design reviews
- **Project Delivery:** Concept development, production release, continuous improvement

SKILLS

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|-------------------------|-----------------------|----------------------|-----------------------|
| • Mechanical design | • Gear sizing | • Tolerance analysis | • Product validation |
| • Planetary gearboxes | • Torque calculations | • Material selection | • Root cause analysis |
| • Right angle gearboxes | • Bearing selection | • DFM | • Engineering changes |
| • Servo gearboxes | • GD&T | • CNC machining | |

PROFESSIONAL AFFILIATIONS

- Mechanical engineering community participant focused on precision design, power transmission, and manufacturing collaboration.
- Professional contributor across customer, sales, applications, manufacturing, quality, and operations engineering teams.

LANGUAGES

- English (Native)
- Spanish (Proficient)

ADDITIONAL INFORMATION

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

REFERENCES

AVAILABLE ON REQUEST