

Akira Bowman

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SUMMARY

Senior mechanical manufacturing engineer with nine years of experience developing precision electromechanical and regulated medical device processes from prototype and pilot builds through validation, launch, and **scalable production**. Leads NPI for **surgical robotics**, haptic mechanisms, multi axis assemblies, calibration, testing, and manufacturing transfer. Hands on work covers motors, encoders, sensors, bearings, cable and belt drives, electronics, fixtures, metrology, bonding, dispensing, controlled lubrication, and **precision machined structures**. Advanced user of SolidWorks, **ASME Y14.5 GD&T**, tolerance stack up analysis, PFMEA, MPI, DHR, eDHR, MES, PLM, SPC, Cpk, DOE, and Minitab. Six Sigma Black Belt who connects component variation with friction, sensing accuracy, input fidelity, reliability, and production yield while coaching engineers, technicians, suppliers, and cross functional partners.

EXPERIENCE

Principal Manufacturing Engineer, Surgical Robotics

February 2024 - Present

Vector Surgical Technologies

San Jose, California

Leads NPI manufacturing engineering for a multi axis surgeon control assembly, supporting precision joints, motors, encoders, sensors, cable drives, bearings, harnesses, and machined structures from pilot builds through validated production. Coordinates R&D, Quality, Test, Operations, technicians, and suppliers across regulated release activities.

- Led pilot production for surgeon control assemblies using motors, **encoders**, sensors, bearings, and cable drives.
- Established datum, fixture, preload, torque, metrology, and test strategies for friction and sensing performance.
- Released MPIs, travelers, eDHR workflows, **inspection criteria**, PFMEA updates, BOM changes, and MES routes.
- Directed SPC, Cpk, Pareto, DOE, and Minitab investigations across mechanical, electrical, sensing, and **calibration** failures.
- Specified micro torque, press fit, bonding, dispensing, **bearing installation**, and alignment equipment using SolidWorks.
- Coached engineers and technicians on **encoder calibration**, **friction characterization**, burn in, validation, and defect prevention.

Senior Manufacturing Engineer, Haptic Mechanisms

January 2022 - January 2024

Pacific Robotic Medical Systems

Sunnyvale, California

Owned manufacturing transfer for regulated haptic electromechanical modules, converting prototype methods into repeatable production processes. Managed equipment, process development, validation, configuration, documentation, and release work across Engineering, Quality, Operations, and supplier teams.

- Transferred regulated haptic modules from prototype **assembly** into repeatable production processes for volume ramp.
- Developed cable, belt, and gear mechanism sequences with **bearing preload**, lubrication, bonding, and torque controls.
- Designed fixtures and metrology methods for **multi axis calibration** using encoder, friction, and motion acceptance data.
- Managed equipment, **validation**, configuration, documentation, and **production release** deliverables across cross functional teams.
- Resolved nonconformances through structured **root cause analysis** and controlled process changes before production ramp.
- Maintained BOM, process, configuration, and release traceability through MES and PLM documentation.

Manufacturing Engineer II, Medical Equipment

July 2019 - December 2021

Nova Precision Medical Devices

Fremont, California

Developed regulated manufacturing processes for electromechanical medical equipment containing motors, encoders, bearings, PCAs, harnesses, springs, seals, adhesives, lubricants, and machined components. Translated product requirements into tooling, inspection, validation, supplier, and process control plans.

- Developed regulated assembly processes for **motors**, encoders, **bearings**, PCAs, harnesses, springs, seals, and adhesives.
- Created process flows, work instructions, **fixtures**, **inspection** methods, PFMEAs, DHR records, and MES controls.
- Applied SolidWorks, **ASME Y14.5 GD&T**, and tolerance stacks to resolve fit and alignment issues.
- Executed SPC, Cpk, capability studies, DOE, and Minitab analysis for yield and calibration variation.
- Supported validation protocols for bonding, fastening, calibration, **burn in**, and functional test processes.
- Translated product requirements into tooling, measurement, equipment, supplier, and process control requirements.

Mechanical Manufacturing Engineer, Motion Control

June 2017 - June 2019

Bay Motion Instruments

Santa Clara, California

Supported assembly engineering for high reliability motion control products using precision bearings, shafts, motors, encoders, belts, cables, sensors, and harnesses. Built fixtures, documented controlled processes, investigated failures, and supported pilot builds and technician training.

- Supported motion control assembly using precision bearings, **shafts**, motors, encoders, belts, cables, and **sensors**.
- Built alignment, fastening, press fit, and measurement fixtures for repeatable technician operations.
- Troubleshoot mechanical and electromechanical failures using dimensional inspection, electrical testing, and **instrumentation**.
- Prepared BOM updates, assembly instructions, inspection plans, **travelers**, and engineering change documentation.

- Performed SPC and **capability analysis** to identify drift in torque, alignment, and dimensional characteristics.
- Supported pilot builds and technician training in lubrication, **bonding**, fastening, and sensor integration.

PROJECTS

Multi Axis Surgical Control Industrialization 📅 2024

Converted a precision surgeon control assembly from pilot production into validated manufacturing, combining calibration, metrology, fixtures, process controls, and regulated documentation.

Haptic Module Manufacturing Transfer 📅 2023

Transferred haptic electromechanical modules into repeatable production through mechanism assembly, encoder calibration, validation planning, MES traceability, and supplier coordination.

Medical Equipment Calibration Process 📅 2021

Improved calibration and functional verification for regulated electromechanical equipment through tolerance analysis, SPC, DOE, Minitab studies, and controlled process updates.

LEADERSHIP & AWARDS

- Six Sigma Black Belt recognition for advanced process improvement and statistical problem solving, 2022.
- Recognized by engineering and operations peers for coaching technicians through precision assembly and calibration challenges.
- Selected to lead cross functional manufacturing reviews for regulated electromechanical production releases.

EDUCATION

Master of Science in Mechanical Engineering

2017

San Jose State University GPA: 0

San Jose, California

Coursework: Robotics, manufacturing systems, mechanical design, control systems

Bachelor of Science in Mechanical Engineering

2015

California State University, Sacramento GPA: 0

Sacramento, California

Coursework: Machine design, manufacturing processes, materials, engineering mechanics

CERTIFICATIONS

- Six Sigma Black Belt 📅 2022
- ASME Y14.5 GD&T Training 📅 2021

TECHNICAL SKILLS

- **Mechanical CAD:** SolidWorks, 3D tolerance stack up, precision mechanism design
- **Geometric Dimensioning:** ASME Y14.5 GD&T, datum schemes, tolerance analysis
- **Statistical Quality:** SPC, Cpk, capability analysis
- **Design Experiments:** DOE, Minitab, Pareto analysis
- **Manufacturing Documents:** MPI, travelers, work instructions
- **Quality Records:** DHR, eDHR, inspection criteria
- **Manufacturing Systems:** MES, PLM, BOM management
- **Precision Assembly:** Bearing preload, press fit, micro torque
- **Motion Mechanisms:** Cable drives, belt drives, gear drives
- **Calibration Testing:** Encoder calibration, burn in, functional verification

SKILLS

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|----------------------|----------------------|---------|-----------|
| • Surgical Robotics | • Calibration | • PFMEA | • Cpk |
| • NPI | • SolidWorks | • MES | • DOE |
| • Precision Assembly | • GD&T | • PLM | • Minitab |
| • Haptic Mechanisms | • Tolerance Analysis | • SPC | |

PROFESSIONAL AFFILIATIONS

- Professional collaboration with mechanical, electrical, quality, test, operations, supplier, and technician teams.
- Ongoing engagement with regulated medical device manufacturing practices, precision engineering, and surgical robotics development.

LANGUAGES

- English (Native)
- Spanish (Intermediate)

ADDITIONAL INFORMATION

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

REFERENCES

AVAILABLE ON REQUEST