

Rafael Escobar

☎ (704) 555-4196 ✉ rafael.escobar@example.com 💼 linkedin.com/example/rafaelescobar 📍 Charlotte, NC 28203

SUMMARY

Manufacturing Engineer with 10 years of experience improving **assembly** and **fabrication** operations across heavy equipment and **industrial machinery**. Leads subsystem workstreams from concept, technical specifications, and supplier reviews through installation, commissioning, validation, ramp up, and stable production. Hands on work includes robotics, PLC connected equipment, machine vision, torque systems, tooling, fixtures, layouts, material flow, line balancing, digital production data, and standard work. Uses Lean Manufacturing, Six Sigma, PFMEA, **root cause analysis**, process validation, and structured project controls to improve safety, quality, throughput, uptime, cost, and manufacturability. Partners with operations, quality, maintenance, supply chain, facilities, safety, IT, contractors, and system integrators. Brings practical startup judgment, clear documentation, and steady cross functional coordination to complex manufacturing launches.

EXPERIENCE

Senior Manufacturing Engineer, Assembly and Fabrication

March 2023 - Present

Blue Ridge Machinery Systems

Charlotte, NC

Leads assembly and fabrication workstreams for production expansions, supporting equipment concepts, supplier coordination, commissioning, validation, readiness, ramp up, and stabilized production. Partners with operations, quality, maintenance, supply chain, facilities, safety, IT, contractors, and system integrators on complex launch work.

- Led expansion workstreams through equipment concepts, layouts, readiness criteria, and implementation planning.
- Delivered robotic assembly cells with PLC controls, **torque systems**, **error proofing**, and digital production data.
- Directed supplier reviews for fixtures, **material handling**, guarding, and **machine controls** before installation.
- Used capacity models, cycle studies, line balancing, and flow analysis to guide **ramp up** plans.
- Facilitated PFMEA and root cause analysis, converting startup issues into validated corrective actions.
- Created **operating procedures**, training input, maintenance handoffs, and readiness documentation for launched processes.

Manufacturing Engineer II, Assembly Operations

July 2020 - February 2023

Piedmont Industrial Equipment

Concord, NC

Managed manufacturing engineering projects for heavy equipment assembly lines, coordinating scope, schedules, technical requirements, risk, capital constraints, validation, documentation, and **production readiness**. Worked closely with maintenance, quality, automation, and operations teams on repeatable process improvements.

- Managed assembly projects across scope, schedules, technical requirements, risk, and capital constraints.
- Developed tooling, fixtures, workstations, fastening methods, and material presentation for repeatable quality.
- Implemented **machine vision** checks and PLC connected error proofing with **automation** specialists.
- Built validation plans documenting capability evidence, issues, corrective actions, and readiness decisions.
- Applied **Lean Manufacturing** and Six Sigma to flow interruptions, rework, and **equipment** losses.
- Maintained **standard work**, layouts, process documentation, work instructions, and training materials.

Manufacturing Engineer, Automated Welding

June 2018 - June 2020

Carolina Fabrication Technologies

Gastonia, NC

Supported automated welding and fabrication for industrial machinery structures, with responsibility for weld cells, fixtures, forming, cutting, material handling, commissioning, troubleshooting, process parameters, inspection points, and technical documentation.

- Supported **automated welding** with **weld cells**, fixtures, forming, cutting, and material handling.
- Developed fixture changes that improved part location, operator access, repeatability, and safe handling.
- Analyzed cycle time, downtime, defects, and material movement to prioritize production constraints.
- Supported robotic welding **commissioning** through acceptance checks, controls verification, and operator trials.
- Used **root cause analysis** to resolve recurring weld and dimensional issues after **validation**.
- Coordinated standard work and technical documentation with production, **quality**, maintenance, and engineering.

Manufacturing Engineer I, Assembly Processes

October 2016 - May 2018

Triad Motion Equipment

Winston Salem, NC

Supported assembly process development for industrial equipment, building early experience in operation sequencing, tooling, material presentation, time studies, line balancing, equipment trials, readiness tracking, and cross functional launch execution.

- Documented assembly sequences, **tooling** requirements, quality checks, and material presentation methods.
- Conducted time studies and **capacity** analysis supporting **line balancing** and staffing decisions.
- Created fixture concepts and workstation **layouts** with engineers, technicians, and operators.
- Maintained work instructions and standard work after validated process and **engineering** changes.
- Investigated recurring assembly defects using structured problem solving with quality personnel.

- Supported equipment **installation**, production trials, commissioning, and readiness tracking.

PROJECTS

Automated Assembly Cell Launch 📅 2024

Connected robotics, PLC controls, torque systems, error proofing, and digital production data through commissioning and validation for a new assembly cell.

Robotic Welding Commissioning 📅 2019

Supported weld cell installation with acceptance checks, controls verification, operator trials, fixture reviews, corrective actions, and validated process updates.

Assembly Flow and Capacity Study 📅 2022

Combined cycle studies, capacity modeling, line balancing, and material flow analysis to identify bottlenecks and shape a practical ramp up plan.

LEADERSHIP & AWARDS

- Lean Six Sigma Green Belt recognition, applied to manufacturing flow, rework, and equipment loss reduction, 2022.
- Senior engineering leadership for assembly and fabrication expansion workstreams, supplier reviews, commissioning, and production readiness.
- Cross functional launch leadership across operations, quality, maintenance, supply chain, facilities, safety, IT, and system integrators.

EDUCATION

Bachelor's Degree in Mechanical Engineering

2016

University of North Carolina at Charlotte GPA: 3.5

Charlotte, NC

Coursework: Manufacturing processes, robotics, controls systems, mechanical design, engineering economics

CERTIFICATIONS

- Lean Six Sigma Green Belt 📅 2022
- Bachelor of Science in Mechanical Engineering 📅 2016

TECHNICAL SKILLS

- Manufacturing Processes:** Assembly, Fabrication, Welding
- Robotics Systems:** Robotic welding, Assembly robotics, Robot cells
- Controls Engineering:** PLCs, Machine controls, Torque systems
- Quality Methods:** PFMEA, Process validation, Quality controls
- Continuous Improvement:** Lean Manufacturing, Six Sigma, Standard work
- Production Analysis:** Capacity analysis, Cycle time studies, Line balancing
- Material Systems:** Material flow, Material handling, Material presentation
- Equipment Launch:** Commissioning, Installation, Production trials
- Digital Manufacturing:** Connected equipment, Digital production data, Digital production systems
- Project Controls:** Scope planning, Schedule control, Risk assessment
- Fabrication Technology:** Forming, Cutting, Automated welding
- Assembly Technology:** Fastening, Error proofing, Line design

SKILLS

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|-----------------------------|------------------------------|------------------------|----------------------|
| • Manufacturing engineering | • PLCs | • Tooling and fixtures | • Production ramp up |
| • Assembly | • Machine vision | • Line balancing | • Lean Manufacturing |
| • Fabrication | • Connected equipment | • Material flow | • Six Sigma |
| • Robotics | • Digital production systems | • Commissioning | |

PROFESSIONAL AFFILIATIONS

- Manufacturing engineering practice across assembly, fabrication, robotics, tooling, fixtures, controls, and production systems.
- Cross functional collaboration with operations, quality, maintenance, supply chain, facilities, safety, IT, contractors, and suppliers.

LANGUAGES

- English (Native)
- Spanish (Proficient)

ADDITIONAL INFORMATION

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

REFERENCES

AVAILABLE ON REQUEST