Raphael Silveira e Silva

Belo Horizonte, Brazil | Available for Relocation | Visa Sponsorship Required  
*Email:* [*rsilveira@simaprojetos.com.br*](mailto:rsilveira@simaprojetos.com.br) *| Phone: +55 (31) 99424-7765 |*

*LinkedIn:* [*www.linkedin.com/in/raphael-silveira-s*](http://www.linkedin.com/in/raphael-silveira-s) *|* [*raphael-silva-portfolio*](https://raphael-silva-engineer.github.io/mechanical-design-engineer/)

# Professional Summary

# A hands-on Senior Mechanical Design Engineer with over 15 years of experience leading the design of complex, high-speed automation and special purpose machinery, with direct experience designing bespoke automation for the packaging and printing industries. A proven leader in owning the full project lifecycle, from concept and design qualification (DQ) through to FAT and SAT. Expert in SolidWorks, PDM systems, and designing for GMP and CE compliance. Passionate about mentoring junior engineers and driving design innovation to deliver robust, reliable, and efficient equipment.

# Key Skills & Areas of Expertise

* **Mechanical Design & Automation:**
  + Special Purpose & Packaging Machinery, High-Speed Mechanisms, Robotics Integration (Cobots/Delta), Vision Systems, Pneumatics, Servo Systems, Cams & Mechanical Drives.
* **CAD, PDM & Simulation:**
  + CAD: SolidWorks (Expert), Inventor, Siemens NX, AutoCAD
  + PDM: Experience with PDM systems for BOM management and version control
  + CAE: FEA & Motion Simulation (SolidWorks Simulation), Tolerance Stack-ups.
* **Leadership & Project Ownership:**
  + Mentoring & Coaching Junior Engineers, Leading Internal & External Design Reviews, Project Planning, FAT/SAT Support, Cross-functional Team Leadership (Controls, Electrical, PM).
* **Compliance & Quality:**
  + GMP Requirements, CE Marking, Machine Safety Standards (ISO 12100, ISO 13849), Risk Assessments, DFMEA, Design for Manufacture (DFM).

# Professional Experience

**SIMA Projetos e Soluções Industriais – Belo Horizonte, Brazil**

*Co-Founder & Engineering Director* | 2016 – Present

Led the mechanical design function, mentoring a team of engineers and technicians in the development of bespoke automation solutions. Owned all projects from concept to completion, ensuring compliance with rigorous industrial and client-specific standards.

**Highlighted Automation & Machine Build Projects:**

**Punch-Cutting System for Citroën C3 XTR Bumper**

* + *Challenge:* Design a precision punch-cutting machine for mounting holes in large, externally visible plastic bumpers, requiring **flawless surface finish, exact positioning, and high repeatability**.
  + *My Contribution:* Led the full **mechanical design using Siemens NX**, collaborating closely with the design studio to translate Class-A surfaces into manufacturable geometry. Engineered punch-and-die tools actuated by hydraulic cylinders, with pneumatic positioning systems. Integrated light curtains and sensors for operator safety. The solution was approved, installed on the PSA production line, and adapted for other models, demonstrating my ability to deliver **high-precision, repeatable systems** from concept to production.

**Autonomous UVC Disinfection Robot (Pharmaceutical & GMP Compliant)**

* + ***Challenge:*** To design a complex, autonomous robotic system for use in pharmaceutical manufacturing environments, requiring adherence to **GMP principles** and robust safety integration.
  + ***My Contribution:*** I led the end-to-end mechanical design and system integration. This involved integrating **robotic (AMR) and vision systems**, specifying all servo and drive components, and ensuring the final product was suitable for a regulated environment. I owned the design reviews and risk assessments to guarantee safety and performance.

**UV Curing System for Metal Printing (Complex Machine Build)**

* + ***Challenge:*** To build a special-purpose machine requiring precise, real-time control over multiple integrated systems (thermal, hydraulic, electrical).
  + ***My Contribution:*** I architected the entire electromechanical system, produced all 3D models and 2D manufacturing drawings in SolidWorks, and created the detailed BOMs. I led the cross-functional design reviews with the controls team to ensure a seamless integration of pneumatics, sensors, and servo systems, and supported the project through internal pre-FAT and final FAT.

**Compact UV Curing System for Offset Press (High-Speed Mechanism)**

* + ***Challenge:***To design a high-precision module to operate within a 2mm tolerance of **high-speed mechanisms** in a printing press, a machine type highly relevant to the packaging industry.
  + ***My Contribution:*** I engineered a solution from first principles, utilizing DFM and rapid prototyping to validate a custom, ultra-compact module. This project showcased my expertise in designing for tight spaces and high-speed applications, performing tolerance stack-ups, and collaborating with suppliers for custom component fabrication.

**AC Implementos Rodoviários – Contagem, Brazil**

*Mechanical Project Manager* | 2014 – 2016

* Directed the design of mechanical subsystems for trailers and road equipment, including hydraulic, locking, and suspension systems.
* Optimized parts for manufacturability (DFM) and reduced costs through component standardization.
* Coordinated with suppliers and internal teams during prototype testing and full-scale production.

**Fourmec Industrial – Belo Horizonte, Brazil**

*Mechanical Design & Managing Partner* | 2008 – 2014

* Led the design and manufacturing of custom machinery for clients in food processing, packaging, and logistics.
* Applied advanced modeling techniques for sheet metal, structures, and product enclosures.
* Developed automated platforms compatible with ABB/Fanuc robots and integrated pneumatic and hydraulic components to deliver turnkey solutions.
* Managed mechanical and electrical teams, delivered turnkey solutions including installation and staff training.

# Education & Certifications

**Bachelor of Science in Mechanical Engineering**

Centro Universitário de Belo Horizonte (UNIBH), Brazil – 2021

**NR-12 Machinery Safety Certification** (Comprehensive industrial safety standard, foundational for CE/ISO compliance)

**Basic Python Programming (**Acquired foundational skills in Python for engineering applications, including scripting, logic, and basic automation tasks)

# Languages

**Portuguese:** Native | **English:** Fluent | **Spanish:** Working Proficiency

# Work Eligibility

Brazilian citizen | Requires sponsorship | Available for immediate relocation