

Rodrigo Antonio Aliaga Velez

Mechatronic Engineer

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La Paz, Bolivia

Lean Six Sigma Black Belt and Mechatronic engineer with expertise in industrial optimization, automation, maintenance management and IIOT development. Proven experience leading and executing projects at world-class companies. Skilled about applying agile methodologies and Lean Six Sigma principles with a strong focus for both continuous learning and teaching.

Work Experience

IOT Engineer and Automation Engineer

Jun 2023 - Present

Fogsphere | United Kingdom (Remote Work)

Business or Sector.- Start up, IIOT, Technology development

- Development of IIOT Systems using Siemens, Mitsubishi and Allen Bradley PLCs.
- Implement Teltonika IOT gateways, MQTT (EMQX broker) using industrial protocols like PCCC, OPC-UA, profinet, InfluxDB, mongo DB and PostgreSQL databases, Grafana, HTLM CSS and JavaScript visualization. Using Docker containers and Linux command line.
- Development scripts for real time acquisition on Python for edge device execution.
- Coordinate development for IIOT visualization solution with PWC designers for KSA water plants (Kingdom of South Arabic).
- Installation of IIOT solution for Sea Water Reverse Osmosis in UAE – Dubai.

Part time Professor

Jan 2023 – Dec 2023

Escuela Militar de Ingeniera University | La Paz Bolivia (On site Work)

Business or Sector.- University Education

- Professor part time of the subject Internet of Things and Fast Prototyping
- **Internet of things.-** Taught sixth-semester Systems Engineering students. covered wireless communication, electronic boards for IoT development, IoT architecture and infrastructure, mobile telephony for IoT, security in information transmission, and web servers. Utilized tools like Node-RED, Grafana, and time series databases.
- **Fast prototyping.-** Taught ninth-semester Mechatronics Engineering students. Focused on design methodologies, project planning, product development processes, prototype analysis, concept generation and selection, and prototype architecture and design. Included industrial design, design for manufacturing, assembly, maintenance, packaging, and ergonomics. Incorporated computer-aided drawing for the final project.

Maintenance Planner

Nov 2020 – Sept 2022

ABInBev Cerveceria Boliviana Nacional | Santa Cruz

Business or Sector.- Food manufacturing

- Led a team of 37, managing preventive, corrective, and predictive maintenance for brewery operations using RCM principles, coordinating Milling, Brewing, Fermentation, Filtration, and Degermination activities.
- Managed maintenance and project budgets, allocating 0.5M USD using ZBB and Lean Six Sigma principles.
- Improved maintenance plans based on RCM principles, developed IIOT dashboards, and optimized spare parts inventory.
- **Led the Degermination Line project, reducing stoppages from 30 per month to 4 and increasing MTBF from 18 hours to 165 hours and MTTR from 6 hours to 42 minutes.**

Maintenance Production Planner

Ago 2019 - Oct 2020

ABInBev Cerveceria Boliviana Nacional | La Paz – El Alto

Business or Sector.- Food manufacturing

- Led a team of 41, managing maintenances KPIs and coordinating technical shutdowns form Packaging, Cooking, Industrial Services. Executing maintenance for mechanical, electrical and instrumental operations.
- Managed Overhauls and both local and foreign third-party work.
- Led calibration project for plant instruments achieving of 80% on calibration costs.
- **Led automation and upholding projects of packaging with an impact of 31 % production increase over two years.**
- **Developed a 3D device to prevent surface contact during covid 19 it was replicated across 3 plants for all operators almost 400 devices.**
- Developed an IIOT system for electrical 15 plant meters using Modbus RTU.

Electromechanical Supervisor

Oct 2017 – Jul 2019

ABInBev Cerveceria Boliviana Nacional | La Paz – El Alto

Business or Sector.- Food manufacturing

- Managed the plant electromechanical workshop, delivering maintenance services to Packaging, Processing and Industrial Services.
- Supported industrial plant services, including Electric Power, CO2, Steam Water, and Ammonia Generation.
- Managed spare parts procurement (Local and imports) and warehouse logistics
- Led Automation, control and IIOT projects upholding obsolete PLCs foundation of the project, improvement of PI Obsolescence from 12 % to 85 % of control panel.
- Improved the ESM (Electric Safety Management) performance from 16% to 70% in 8 months through team training, equipment upgrades, and PPE investments, Emergency Responses, Annual PHA and Risk management.
- Improved the SSM (Steam Safety Management) program from 70% to 96 %, training replacing steam pipes, and traps, improving condensate return, Management of changes, Emergency Responses. Annual PHA and Risk management.

Project Engineer

Aug 2016 – Sept 2017

Rugged Controls SRL | La Paz – El Alto

Business or Sector.- Food manufacturing

- Design, Planning, and Development of Industrial Automation Projects. Electrical Drawings and Control Panels: Designed and developed electrical drawings and assembled control panels for mining, fertilizer, and food industries using Allen-Bradley, Siemens, and Omron PLCs.
- Panel Migration: Proficient in migrating electrical panels in dairy and milling industries.
- Web Applications: Development of Web applications for automatic quotations and the company's main webpage. HTML, CSS, Javascript and PHP.

Software and Microelectronics Development Assistant

Dec 2014 – Jun 2016

PFM | La Paz

Business or Sector.- Engineering Medical Development

- Fronted development for metrology service for cleanroom for medical product manufacturing.
- Frontend and backend development for production journaling platform.
- Assembled and soldered electronic circuits, and programming microcontrollers.

Education

Bachelor's Degree in Mechatronics

Jan 2012 – Dec 2015

"San Pablo" Bolivian Catholic University (La Paz – Bolivia)

- Automatic control, Mechanisms, Mechatronics Systems, Communication protocols, Pneumatics, Electronics, Power electronics, Servo mechanical design, 3D Design, Computer Numerical Control, Artificial intelligence, Programming, Artificial Vision.

Feb 2024 – Jun 2024

Graduate Certificate in Agile Professional Project Management

Bolivian Private University (La Paz – Bolivia)

- Agile Project Management, Lean Methodology, Lean Startup, and Kanban Methodology. Experienced in SCRUM Methodology, including planning, sprints, review, retrospective, and scaling. Skilled in Technological Innovation Management, Design Thinking, and strategic project alignment for organizational success.

Dec 2017 – Aug 2017

Graduate Certificate Instrumentation and Advanced Control of Industrial Processes

Bolivian Private University (La Paz – Bolivia)

- Standard ISA 5.1, Industrial Safety in Petroleum Processes, HMI and SCADA design, Process Control of Pumps, Boilers, Condensers, Advanced control of industrial processes.

Mar 2016 – Dec 2016

Diploma of Higher Education

"San Pablo" Bolivian Catholic University (La Paz – Bolivia)

- Learning Assessment, new teaching role, ethics, didactics, curricular design, approach by competences, new technologies in the classroom, Planning the Teaching-Learning Process

Graduate Certificate Automation on Mechatronic Process

Aug 2015 – Dec 2015

“San Pablo” Bolivian Catholic University (La Paz – Bolivia)

- Industrial sensors, Electropneumatic, Artificial vision, PLC's, Controller Networks, Smart control Process Validation

Course Industrial Instrumentation + PLCs ABB

Jan 2021

Gabriel Rene Moreno University (Santa Cruz - Bolivia)

- Industrial sensors, Electropneumatic, Artificial vision, PLC's, Controller Networks, Smart control Process Validation

Course Deep Learning

May 2021 – July 2021

“San Pablo” Bolivian Catholic University (La Paz – Bolivia)

- Fundamentals of Deep Learning, computer Vision, Convolutional Neural Networks, Recurrent Neural Networks, Deep Unsupervised Learning, Cloud for Deep Learning, Ethics for Artificial Intelligence.

Course Electrical Safety Management (ESM)

Oct 2019

Quilmes Brewery and Malting

- Electrical Hazard Analysis (EHA), Management of change of electrical Systems, Qualified and unqualified technicians, Work Permits, contractor management, NFPA 70E, Electric ARCs and Boundaries, Emergency Response

Dec 2018

Course Process Ammonia Safety Management (PSM)

Quilmes Brewery and Malting

- Process Hazard Analysis (PHA), Management of change of ammonia Systems, LOTO application and ammonia purge, Work Permits, contractor management, Ammonia Leakage, Emergency Response.

March 2018

Course Industrial Services

Quilmes Brewery and Malting

- Water management, steam generation and distribution, Ammonia for refrigeration, Energy Transformation and distribution medium to low voltage, effluent treatment plant, recovery and CO2 Treatment. Air generation treatment and distribution.

Core Skills

Technical Skills

- **Programming/ Web development:** Python, Javascript, HTML, CSS, Node Red, Grafana, Influx DB, PHP, PostgreSQL Used for real-time data and process optimization at PFM and ABinBev. Linux Ubuntu, OpenWRT, KaliLinux, Raspbian, Linux and Windows command line. Docker containers.
- **Network** Industrial protocols, OPC – UA , OPC – DA, Profibus, Profinet, PCCC, Modbus TCP, Modbus RTU. Teltonika gateway configuration, VPN Configuration.
- **PLC Programming.** Good command of Siemens, Tia portal, Intermediate with Allen Bradley, ABB and Omron.
- **Software** SAP R3 Production, Power BI management, Office Suite,
- **Mechanical Design.** Solidworks, Cura for 3D printing.

Soft Skills

- Adaptability, Lean Problem-Solving methodologies, Responsibility, Reliability Centered Maintenance, Avid Learner, Project Management, Teaching.
- **Lean & Agile Principles:** Applied Lean Six Sigma methodology and Agile Project Management in maintenance and IIOT projects. Maintenance and production KPIs and budgets, optimized processes using RCM principles, and supported agile project execution.

Languages

- Spanish (native) English (fluent), Portuguese (basic).