Pablo Cruz Perez

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Date of birth - 06/19/2000 • Nationality – Mexican

Mechanical engineer

Hands-on Mechanical Engineer with cross-functional experience in vehicle systems, automation, and performance analysis, combining mechanical design, data acquisition, and field testing.
Strong analytical mindset and practical expertise in CAD/CAE, vehicle diagnostics, and controls integration (PLC, LiDAR, sensors).
Driven by innovation and sustainability, with proven ability to bridge engineering and user experience through experimentation, testing, and real-world evaluation of automotive systems.

WORK EXPERIENCE

AV Flexologic B.V. *Jun 2025 – Present*

Field & Service Engineer *Monterrey, NL / Alphen aan den Rijn, Netherlands*

- Led installation, calibration, and validation of automated industrial machinery across the U.S., Mexico, and Europe.
- Commissioned mechanical, pneumatic, electrical, and AI-based vision systems, ensuring optimal system performance.
- Conducted root-cause analysis and field data collection to improve mechanical reliability and precision control.
- Operated and fine-tuned PLC-based systems, sensors, actuators, and camera calibration for high-accuracy alignment.
- Served as technical lead during commissioning projects, representing the company with customers and vendors.

Elettric 80 Mexico Jun. 2024 – Jun 2025

Resident Automation Engineer *Wytheville, VA.*

- Supported installation, testing, and performance validation of LGV (Laser-Guided Vehicles) for clients such as PepsiCo and Kraft Heinz.
- Managed troubleshooting for LiDAR-based navigation, motion systems, and hydraulic actuation.
- Conducted data-driven diagnostics using PLC and sensor logs, improving vehicle uptime by 20%.
- Applied RCA, 8D, and 5 Whys methodologies for mechanical and control failures.

John Deere Mexico Apr. 2022 – Dec. 2023

Design Engineer Intern *Monterrey, NL.*

- Designed and optimized hydraulic and pneumatic systems for heavy equipment applications.
- Developed a modular hydraulic line system adaptable to multiple configurations, reducing component cost by 20%.
- Decreased hose routing length by 13% through kinematic and motion-path analysis.
- Supported validation of prototype components, documentation, and benchmarking of mechanical subassemblies.

EDUCATION

Tecnologico de Monterrey Jun. 2024

Bachelor of Science in Mechanical Engineering *Monterrey, NL.*

- Automotive Concentration
- Chassis Leader, Electric Vehicle Competition Team – led structural design and testing of EV chassis.
- Coursework in Vehicle Dynamics, Powertrain Systems, and Automotive Materials.

CERTIFICATIONS AND SKILLS

- Certifications: SolidWorks (CSWA, CSWP) • OSHA General Industry Safety • Gasoline Engine Repair (Electrónica Monterrey)
- Core Skills:
    - Vehicle Systems: Chassis, Powertrain, NVH Testing, Ride & Handling Evaluation, Vehicle Dynamics
    - Design & Simulation: SolidWorks, Creo, CATIA, ANSYS, FEA, DFMA, GD&T
    - Controls & Automation: PLCs (TwinCAT, Siemens, Allen-Bradley), Sensors, LiDAR, Robotics, TwinSAFE
    - Data & Software Tools: Python, MATLAB, SQL, Excel for Engineering, MS Project
    - Prototyping & Fabrication: Welding, CNC Machining, 3D Printing, Composite Design
    - Additional: Ubuntu/Linux, CAN data analysis, VR-based model visualization

PROJECTS

1. Lithium Battery Casing Redesign for Light Delivery Vehicle Aug 2022 – Dec 2022
    - Optimized battery housing for strength-to-weight ratio using ANSYS and SolidWorks.
    - Reduced weight and cost through material and structural optimization validated by simulation.
2. AGV Chassis Design and Manufacture Aug 2022 – Dec 2022
    - Designed and built a steel chassis for an autonomous guided vehicle, integrating manufacturability and vibration constraints.
    - Applied material selection, FEA validation, and welding process planning for a fully functional prototype.
3. John Deere 7 Series Hood Lift Mechanism Redesign Aug 2021 – Dec 2021
    - Redesigned mechanism to prevent component collision using CAD modeling and motion analysis.
    - Validated design using ANSYS and MATLAB; reduced mechanical interference by 100%.

EXTRACURRICULAR ACTIVITIES

TEC Racing, Monterrey, NL Aug. 2019– Jun. 2022

Chassis & Suspension Design Lead | 2019–2022

- Designed and manufactured an electric vehicle chassis optimizing torsional stiffness and mass balance.
- Conducted FEA validation and dynamic testing to correlate simulation with real-world results.
- Oversaw prototype manufacturing via CNC machining and 3D printing.