# Angel Manguerra

***Mechanical Engineer***

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## OVERVIEW

Versatile Mechanical Design Engineer with recent focus on hardware design for clean power technology.

- Proficient CAD modelling on Creo, SolidWorks, and CATIA
- FEA on Creo, Abaqus and SolidWorks
- Part and assembly drawing following GD&T
- Rigorous validation and lifecycle testing of new components
- Collaborates with interdisciplinary team members for design reviews and system requirements
- Manages customer and supplier relationships

## WORK EXPERIENCE

March, 2022 – March, 2024

- CAD Modelling and Drawings on Creo
- FEA on ABAQUS
- Windchill PLM
- Instron material testing
- Hands-on fuel cell assembly and testing
- Failure analysis (DFMEA)
- Inspect components using metrology tools (VMS, CMM)
- High volume design (casting and molding)
- Supplier qualification

**Hardware Design Engineer**
*AVL Fuel Cell Canada, Burnaby, Canada*

On the hardware design team, I supported the release of 3 fuel cell hardware designs and was a major contributor for a new, high-volume system. I was responsible for design of new hardware components, from initial concepts to validation, prototype assembly, and customer handoff. This involved: research of new materials, in-process component testing, detailed component-level calculations, DFM, failure analysis, validation testing, detailed CAD and drawing creation, inspection plan setup, and prototype assembly.

I actively interfaced with customers and suppliers to ensure that all specifications were met. I worked closely with the quality engineer to inspect parts and address issues, and with the assembly engineer to support production builds. I learned and applied basics of high voltage design for the isolation components. I was also highly involved in the fuel cell stack shock and vibration tests.

July, 2021 – March, 2022

- Welding joint analysis
- Sheet metal design and fabrication
- FEA on SolidWorks
- Full renders using KeyShot
- CAD on 3D Evolution
- PDM admin and library maintenance (DDM CAD)
- SOP definition and writing

**Mechanical Engineer Contractor**
*Sepro Mineral Systems, Langley, Canada*

At Sepro, my team designed mining equipment meant as stand alone products or as part of larger custom mining rigs. I was responsible for the final CAD model for each project which included BOM clean up, part documentation into PDM, interfacing with the manual writing team, final CAD rendering, and customer handoff package. As a part of the PDM admin team, I helped standardize processes and maintain existing libraries. I also contributed to the design of walkways, ladders, and stairs on larger mining plants – making sure that these components met all safety standards. I also designed retrofit sheet metal parts and conducted welding joint analyses to minimize the frequency of part replacement.

May, 2020 – July, 2021

- Advanced Excel spreadsheet manipulation
- Custom client schedules, budgets and tools
- SOP definition and writing
- Building business relationships with international partners

**Project Engineer**
*Western Transloading Company (WTC), Vancouver, Canada*

WTC is a startup logistics company that specialized in grain shipping and grew to include many other export commodities. I was part off their new freight forwarding division which worked closely with clients all over Canada. I interfaced with the Canadian railways, international shipping lines, grain farmers, and import companies in large port cities. My major contribution was the creation of reliable operation workflows and internal processes that accounted for all the interdependencies. My SOPs cut down each shipment's processing time by 50% and made vessel assignment almost automated using detailed Excel formulas.

November, 2018 – February, 2020

- CAD on SolidWorks
- Robot movement space analysis on SolidWorks Motion
- Detailed tolerance stack up calculations
- Injection molded part design
- Aseptic seal design
- Mechanical integration of sensors
- DFMEA for production components

**Mechanical Engineer**
*VanRx Pharmasystems, Vancouver, Canada*

At VanRx, I was responsible for the technical side of our single-use, medical flow path product line comprised of 30+ custom assemblies. My responsibilities included customer and vendor communication, drawing checks, incident investigations, and new product introduction. I also started and led projects that improved product-handling and product quality – such as improved aseptic packaging design.

As part of the mechanical team, I designed tight-tolerance mechanical components such as a robotic end-effector, sensor integration components, and an aseptic door seal. I also improved the design of an injection molded part, effectively reducing the number of rejected parts to nearly zero, all without the need for mold re-tooling.

## PREVIOUS INTERNSHIPS

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|---|---|
| 2017 | **Drive Systems Assembly Engineering Intern**<br>*Tesla Motors, Palo Alto, California, USA* |
| 2017 | **Mechanical Design Engineering Intern – Low Voltage Wire Harness Team**<br>*Tesla Motors, Palo Alto, California, USA* |
| 2016 | **Engineering Research Intern**<br>*Institute for Technical Combustion, Hanover, Germany* |
| 2015 | **Vacuum Group Engineering Intern**<br>*TRIUMF, Canada's National Lab for Particle/Nuclear Physics, Vancouver, Canada* |
| 2015 | **Industrial Engineering Intern**<br>*Fleet Maintenance Facility Cape Breton, Canadian Forces Base, Victoria, Canada* |

## EDUCATION

**Mechanical Engineering (Bachelor's Degree)**
*University of Victoria*

## OTHER EXPERIENCE

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| 2016 - 2018 | **Mechanical Design Team Member**<br>*Autonomous Underwater Vehicle Interdisciplinary Club (AUVIC), UVic* |

## VOLUNTEER WORK

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|---|---|
| February, 2021 – February, 2024 | **Advisory Planning Committee Member**<br>*City of New Westminster* |
| January, 2023 – March, 2024 | **Volunteer Stylist**<br>*Dress for Success Vancouver* |

## MODELLING AND MACHINING

**3D Modelling Tools:**

Creo, ABAQUS, SolidWorks, Solid Edge, AutoCad, Catia V5, NX, 3D Evolution, KeyShot

**Shop and Lab Tools:**

Instron, CMM, Laser Vision Measuring Machine, drill press, laser cutter, extrusion 3D printer, various shop saws