Quintin de Jongh

Mechanical Engineer

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Cape Town

Summary

Mechanical Engineer with 3+ years of experience in automated machine design, product development, and engineering R&D. Proven ability to design and build bespoke mechanical systems — from concept and CAD through CAE (CFD/FEA), mechatronic integration, control systems (PLC/HMI), and full commissioning. Strong hands-on experience developing functional prototypes and transitioning them to field-ready, manufacturable solutions. Skilled in designing systems that interact with advanced materials, including high-temperature alloys and complex fluid–structure environments. Adept at integrating material behavior, thermal dynamics, and mechanical constraints into robust product and machine designs. Confident working across disciplines to deliver high-performance, scalable innovations.

Professional Experience

Mechanical Engineer - CAE and Product Development Consultant

October 2024 - Present

Cauchy Consult

- Lead mechanical design and product development projects with a focus on advanced energy systems and thermal-fluid applications.
- Spearheaded the continued development and optimization of a hydrogen reformer, leading redesign efforts to improve thermal efficiency, flow uniformity, and system robustness.
- Designed mechanical components and assemblies using FreeCAD and SALOME, with direct application to high-temperature, reactive environments.
- Developed and executed detailed CFD simulations in OpenFOAM, including mesh generation, solver configuration, and post-processing — informing key design iterations and system improvements.
- Automated simulation workflows using Bash scripting and Python, enabling rapid design evaluation and parametric studies across multiple project phases.
- Translated simulation insights into manufacturable designs, aligning closely with fabrication constraints, material properties, and functional requirements.
- Delivered design recommendations and detailed reports to clients, working cross-functionally to bridge CAE, prototyping, and product validation.

Mechanical Engineer

January 2023 - October 2024

Skeg Product Development

- Engineering lead and project manager for the design, development, testing, commissioning, and experimental validation of a high-temperature hydrogen reformer through two prototype iterations, and a Direct Contact Membrane Distillation desalination system deployed across Saudi Arabia.
- Developed complex control and automation software/HMIs using TwinCAT 3 and built a front-end web application with Angular to support system operation and monitoring.
- Combined hands-on engineering tasks—such as leak testing, assembly, welding, and fabrication—with design and management responsibilities including CAD and mechanical design, thermodynamic and mathematical modeling, CFD and FEA simulations, electromechanical integration, client progress meetings, and project budgeting.
- Provided mechanical engineering support across multiple projects, including tolerance and geometric analysis for a precision airfield light alignment tool, structural analysis of large molded fruit-picking crates, data analysis for alginate product development, and sheet metal design for equipment frames and casings.

Graduate Engineer

March 2022 - December 2022

BMEC Technologies

- Contributed to the development and commissioning of an ozone dispersion sanitation system and a zone-based automatic seed dispersion device by supporting mechanical and mechatronic design, Flutter web and micro-controller programming, and PCB design and assembly.

Education

MSc in Mechanical Engineering (with Distinction)

February 2021 - April 2022

University of Cape Town

Thesis: "Flexible Media Polishing Machine Design, Development and Experimentation for the Polishing of Ti-6Al-4V Components"

BSc in Mechanical Engineering

January 2016 - December 2020

University of Cape Town

Thesis: "Development of an Intelligent Grinding System", awarded with Distinction
Dean's Merit List for High Academic Achievement (2017)

Relevant Skills

- Product and Mechanical Design
- Computer Aided Engineering
- Machine Building
- Machine Control and Automation
- System Design
- Mechanical Simulations
- Process Modeling and Validation
- Experimental Design and Implementation (DOE)
- Project Management
- Front-End Web Development
- Client Liaison

Softwares and Packages

- SOLIDWORKS
- PTC Creo Parametric and Simulate
- OpenFOAM and Autodesk Simulation CFD
- FreeCAD
- SALOME and Paraview
- BECKHOFF TwinCAT 3 (PLC and HMI)
- MATLAB
- HTML, CSS, JS, and Flutter/Dart
- Python
- 3D Printing Slicer Softwares
- MS Office (including Visio & Project)
- Adobe Softwares (InDesign, Illustrator)

Journal Papers and Academic Experience

- During my time in academia (postgraduate), I was published in three journal papers and three conference papers relating to advanced manufacturing techniques.
- I worked as a lecturer for a year while completing my Master's degree and I also convened and worked as a primary lecturer for one course (manufacturing sciences for engineers).
- For full details of my academic experience and journal history, please visit my self coded portfolio website's curriculum vitae page: https://quino97.github.io/contact.html

Hobbies and Interests

Software Development

- Intermediate Python & Dart/Flutter
- Front-End Web Development using HTML, CSS & JS

Running and Fitness

- Completed over 20 races (including 2 marathons)
- A 5km Personal Best time of 17:44 and a half-marathon Personal Best of 1:21:53

Woodwork, 3D Printing and Household Projects

- I enjoy 3D printing gadgets and mechanical devices (FDM and Resin) as well as woodworking projects and home improvement e.g. building outdoor couches and a Murphy bed.