

BONGANI DINDI

MECHANICAL
ENGINEERING
GRADUATE

PROFILE

Motivated mechanical engineering graduate with strengths in CAD design, system modelling, and hands-on prototyping. Experienced in Python, SolidWorks, MATLAB, design and laboratory testing. Passionate about renewable energy systems, mechanical innovation, and applying analytical thinking to real-world engineering challenges.

PROJECTS

Bi-Stable Clamp Valve Mechanism

- Role: Mechanical Designer
- Tools: SolidWorks, Python
- Designed and analyzed a 3D-printed bi-stable clamp for embedded 3D printing systems.
- Modelled kinetic and kinematic behaviors of system using Python.
- Performed geometric optimization and fatigue considerations for long-term use.
- Wrote a technical report on system feasibility

Linear Reciprocating Wear Tester Recommissioning

- Role: Embedded Systems Developer & Mechanical Technician
- Tools: Arduino Uno, C++, Sensors, SD Logging
- Repaired mechanical components of the wear tester and restored full operational functionality.
- Designed and integrated an Arduino-based control system for real-time sensing, actuation, and data acquisition.
- Implemented interfaces for a Hall-effect sensor, relay module, keypad, SD card module, and LCD display to automate test cycles and enable live data recording.

Veterinary Positive-Displacement Infusion Pump

- Role: Mechanical Systems Designer
- Tools: SolidWorks, Python
- Designed a modular positive-displacement infusion pump for veterinary dosing and batch dispensing applications.
- Analysed flow accuracy, back-pressure behavior, friction effects, and load-compensation requirements for reliable low-volume delivery.
- Developed subsystem concepts for rate-control and volume-dispense modes, focusing on robustness, low power consumption, and high pressure capability.
- Designed pump drivetrain

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EDUCATION AND WORK EXPERIENCE

KEARSNEY COLLEGE: 2019

UNIVERSITY OF CAPE TOWN: 2020-2025

- BSc(Eng) Mechanical Engineering

NORTHLINK COLLEGE: 2024

ONE EIGHTY MATERIALS ENGINEERING SOLUTIONS (PTY) LTD: 2025

- Intern

SKILLS

- Technical Skills: SolidWorks • MATLAB • Python • Arduino • Excel/VBA • Milling Machine Operation • Hand tool skills • Circuit Design Basics • Embedded system integration • Data Logging • Technical reporting • Prototyping workflow, iteration & test planning

- Mechanical Engineering Competencies: Mechanical design • Stress & fatigue analysis • Prototyping • Fluid dynamics • Vibrations • Experimental methods • Systems Thinking

- Professional Skills: Team collaboration • Technical communication • Attention to detail • Leadership • Problem-solving

LANGUAGES

- English