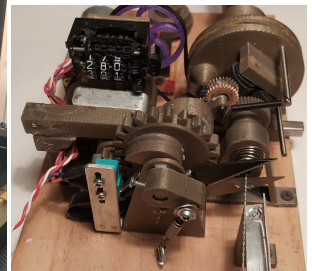
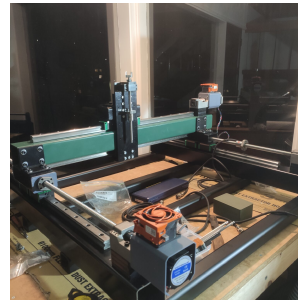
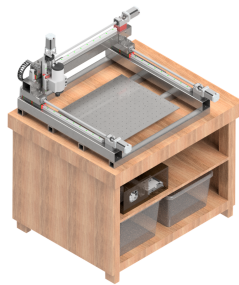
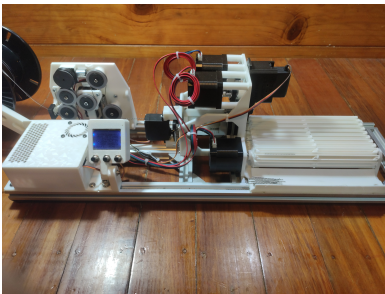


A driven, hands-on Mechanical Engineering Graduate from the University of Auckland, with a longstanding interest in fusion and fission, with a strong desire to pursue a career in applied superconductors.

1 Recent Projects (more at benbridgerengineering.com)

- [Twisted-Pair Winder Version 3](#) - An updated version of the winding machine using steppers and a custom PCB.
- [Automatic Twisted-Pair Cable Winding Machine](#) - A machine to automatically wind and cut twisted-pair cable.
- [Steel-Capable CNC Router/Gantry Mill](#) - 2.2kW spindle, HGR25 linear rails, 600x540x100mm work volume.
- [Parametric Maypole Braider](#) - A parametrically designed Maypole Braider made in OpenSCAD.



2 Education and Extracurricular

- Graduated Mechanical Engineering (Honours) at the University of Auckland (Second Class, First Division).
- Final Year Project in dust ingress testing of CNG fuelling nozzles - designing an automated test rig to cycle nozzles and simulate field conditions; analyzing test results to quantify effectiveness of sealing solution prototypes.
- UAC Human Powered Aircraft Project Lead for Transmissions - developing a lightweight propeller hub and chain drive system. Team leader in the model aircraft design competition (2023-2024).
- Construction Lead in the University of Auckland Foiling Yacht Club (2022-2023).
- Auckland Programme for Space Systems, member of team Circle of Life, winner of the award for Most Ambitious Mission Proposal (2021).
- University of Auckland Tramping Club (AUTC) Ark in the Park, and Auckland University Robotics Association (AURA) Volunteer (2023).
- NZ Scholarship Physics (2020).

3 Skills

- Experienced in CAD design and physical hardware prototyping, part sourcing, and DFM/DFA. Experience building test rigs and production machinery.
- Documentation and clear communication of work as well as producing engineering drawings and schematics.
- Comfortable working in a team environment as well as autonomously - experience working alone for extended periods in the backcountry.
- Competent with the safe use of both hand and machine tools not limited to lathes, mills, cutoff saws, TIG welding, as well as pneumatic tools.
- Experienced in electronics assembly, including hot air reflow and hand soldering, and working with ESD and moisture-sensitive SMT devices.
- Comfortable using a range of CAD packages such as *Onshape*, *Autodesk Inventor*, *Siemens SolidEdge*, *OpenSCAD*, some experience with *SolidWorks*. Experience using *KiCAD* for schematic and multilayer PCB design.
- Familiar with C, MATLAB, Python, and embedded systems programming. Basic understanding of PLC programming and ladder diagrams - Mitsubishi MELSEC/GXWorks2
- Static structural, some fluid, and thermofluid Finite Element Analysis (Ansys)

4 Work Experience - *References available upon request*

HTS Magnets Intern - HTS Magnets Intern

Tasks and Responsibilities:

- Aided in the preparation, winding, and potting of several large production NI HTS coils.
- Conducted a project to test and validate an alternate method for NI coil potting. Wound and potted a number of NI test coils, which were then sectioned and examined; began the design and construction of a vacuum potting oven.

Industrial Printing Equipment - MD Contracting Ltd

May 2025 - July 2025

Tasks and Responsibilities:

- Decommissioning several industrial printing presses and perforators (HP Indigo, EMT) testing of servo motors/drives - Mitsubishi MELSERVO J4 Series, diagnosing book binding and paper drill machine faults.

Pest Trapper – Otago Pest Services Ltd

December 2024 – March 2025

Tasks and Responsibilities:

- Wallaby control and poisoning operations in the Central Otago region - Sign surveying and ground-bait/poison laying, trail camera setup.
- Haast Kiwi/Tokoeka Sanctuary trapping operations - trap checking and maintenance, working alone for extended periods (7-9 days).

Engineering Intern – Oasis Engineering Ltd

November 2023 – February 2024

Tasks and Responsibilities:

- Worked on a project to improve the dust ingress resistance of CNG fuelling nozzles.
- Worked with the Product Development Team on testing and validation of new CNG fuelling products.
- Designed and built pneumatic test rigs for product testing.
- Produced complete part drawings for handoff to CNC machining.

Key Achievements:

- Created an automated Excel workflow to automate component label generation before stock-take.
- Designed and built a pneumatic separation rig (~1.5kN) for testing CNG breakaway couplers. The rig is still in use and has been adapted for a similar use case.
- Continued the dust ingress project as a sponsored final year project, building an automated cycle test rig and data collection system to test and characterize nozzle performance.

Oscilloscope Assembly – Cleverscope Inc

December 2019 – 2023

Tasks and Responsibilities:

- Assembly of oscilloscopes and other electrical test equipment and components.
- Testing and calibration, including at voltages up to 500V.
- Hot-air SMT reflow and hand soldering.
- Creation of assembly jigs and automation tools to speed production and reduce product variability.
- Stock taking and collating part BOMs for production runs.
- Board repair and diagnosis.

Key Achievements:

- **Designed and built a machine to automatically and continuously wind twisted pair cable** for use in high-voltage (20kV breakdown) isolation transformers, improving speed and consistency. A later improved machine was developed to better automate the process, and further improve output consistency.
- **Discovered a circuit design flaw** in the CS1200 Remote Probe that would intermittently prevent the device from entering standby mode (floating enable-pin on switchmode converter IC).

Electrical Switchboard Assembly – LM Control Ltd

January 2020 – March 2020

Tasks and Responsibilities:

- Switchboard construction and assembly, including drilling, cutting, riveting of steel cabinets, DIN rail, and other components.
- Installation of mains and three-phase electrical components and wiring of switchboards according to wiring diagrams.
- Creation of neat and organized wiring looms.