HA BAO NGOC TRAN

INFO

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WORK RIGHTS
New Zealand Citizen

TECHNICAL EXPERTISE

Design & Engineering

- Mechanical system & machine design
- Heavy equipment & custom machinery development
- Design for Manufacture (DFM) & Design for Assembly (DFA)
- Hydraulic and pneumatic systems
- Structural & fatigue analysis (hand calculations + FEA)
- CFD simulation

Software

- Solid Edge
- SolidWorks
- Autodesk Inventor
- AutoCAD
- MATLAB, Python

Manufacturing & Production

- Sheet metal fabrication
- CNC machining
- Tube laser cutting & bending
- Welding & assembly processes
- Production documentation & BOM management
- Supplier coordination & quality control

AWARDS

Zonta International Amelia Earhart Fellowship
Mercer Memorial Scholarship in Aeronautics
University of Auckland Doctoral Scholarship

PROFESSIONAL SUMMARY

Mechanical Design Engineer (PhD-qualified) with industry experience delivering custom heavy equipment and mechanical systems from concept through fabrication, assembly, and commissioning. Proven capability in manufacturable design, hydraulic integration, and supplier coordination within production environments.

Strong expertise in 3D CAD modelling, structural analysis, CFD, and DFM/DFA with demonstrated success in improving manufacturing efficiency and reducing cost.

KEY ACHIEVEMENTS

- Delivered multiple custom drill rig assemblies from concept design to commissioning.
- Developed internal BOM automation tool to improve manufacturing workflow efficiency.
- Reduced production costs through structured application of DFM principles.
- Designed and built tidal turbine achieving 39.1% energy conversion efficiency near the theoretical maximum.
- Contributed to aerodynamic testing supporting Olympic-level performance optimisation.

EMPLOYMENT

Mechanical Design Engineer
ATROX Drilling Equipment Auckland & Waikato, New Zealand
July 2024 – Current

- Designed complex components and assemblies for custom drill rigs using Solid Edge.
- Converted client requirements into practical manufacturable designs for heavy equipment applications.
- Produced detailed fabrication drawings for CNC machining, sheet metal, welding, and assembly.
- Applied DFM principles to improve manufacturability, quality, and production costs.
- Designed hydraulic pipe routing integrated into drill rig systems.
- Developed internal BOM automation tool, eliminating external outsourcing and improving workflow efficiency.
- Managed supplier communication, purchasing, and quality assessment of outsourced components.
- Supported assembly, commissioning, testing, and troubleshooting of drill rigs on-site.
- Produced commissioning documentation, checklists, and user manuals.

Key impact:

- Improved production workflow efficiency through automation and structured design processes.
- Reduced reliance on external engineering services.

Laboratory Technical Assistant
The University of Auckland Auckland, New Zealand
November 2023 – March 2024

New Zealand ASEAN scholarship
National Mechanics Competition Medallists

REFERENCES

Available upon request

- Conducted aerodynamic testing supporting national cycling performance optimisation.
- Set up wind tunnel experiments and analysed aerodynamic performance data.
- Supported experimental planning and equipment integration.

Graduate Teaching Assistant
The University of Auckland Auckland, New Zealand
July 2019 – June 2024, Jul 2016 - Nov 2016

- Supported laboratory delivery for thermo-fluids and aero-hydrodynamics courses.
- Set up wind tunnel and CFD experiments.
- Maintained and repaired laboratory equipment.
- Assisted students in applied engineering problem-solving.

Intermediate University Lecturer
Vietnam Maritime University Haiphong, Vietnam
August 2013 – July 2019.

- Delivered mechanical engineering and structural analysis courses.
- Supervised postgraduate research projects.
- Managed structural analysis laboratory operations.
- Secured industry-linked research funding.

Naval Architect Intern
Pha Rung Shipbuilding and Bach Dang Shipbuilding Ltd Haiphong, Vietnam
July 2012 - October 2012, July 2011 – October 2011

- Produced ship component drawings and structural design.
- Supported fabrication and welding of structural assemblies.
- Conducted cost estimation and repair assessments.

EDUCATION

Doctor of Philosophy - Mechanical Engineering
The University of Auckland
2019 – 2024

Master of Engineering (First Class Honours) - Mechanical Engineering
The University of Auckland
2016 - 2017

Bachelor of Engineering (First Class Honours) - Naval Architecture
Vietnam Maritime University
2008 - 2013