

RICO P. COLLADO JR., RMeE

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Education

Central Mindanao University

2021-2025

Bachelor of Science in Mechanical Engineering – Cum Laude

Technical Skills

CAD/BIM: Revit (MEPF), AutoCAD (2D), SolidWorks (FEA/CFD, Sheet Metal), Fusion 360 (Rapid Prototyping)

Programming/Analysis: MATLAB (Data Visualization), EES (Thermodynamic Modeling), Python, Java

Projects

Industrial Plant Fire Protection and Wastewater Treatment Design

Sep 2024 – Jan 2025

- Designed an NFPA 13-compliant wet-pipe sprinkler network for a 36,790 ft² mango processing facility by performing hydraulic calculations to size an 800-gpm fire pump, and optimized a 283-sprinkler head layout in AutoCAD to meet density/area requirements.
- Designed a multi-stage filtration system process flow and technical layout for a 48 m³/day treatment utilizing a 69.12 m³ Moving Bed Biofilm Reactor (MBBR) and activated carbon filtration to achieve a 90% reduction in biological oxygen demand (BOD) for industrial effluent.
- Optimized the spatial configuration for the dual pump rooms and the multi-stage filtration system to support a 24-ton daily production capacity.

Modular Vertical Axis Wind Turbine (VAWT)

Jun 2023 – Jul 2023

- Modeled a 12-blade 300-watt VAWT using GOE 652 airfoil profiles; conducted simulations using SolidWorks to evaluate lift/drag coefficients and potential power ceilings.
- Engineered a 7/16-inch AISI 1018 steel drive shaft with a safety factor of 3.0 to withstand torsional and bending loads during peak wind speeds of 45 km/h.
- Achieved 24% aerodynamic efficiency based on the theoretical maximum output of 1250 W using validated CFD/Simulation results against analytical first-principle calculations.

HVAC Centralized Air Conditioning System and Duct Design

Apr 2024 – May 2024

- Conducted a comprehensive thermal load analysis for a 1,400 sq. ft. residence, utilizing sensible and latent heat gain calculations to size an air handling unit of 2-ton capacity.
- Utilized the equal friction method to design a balanced duct network that optimized airflow and minimized static pressure across the residential layout.

Interpolating Polynomial Equations for Saturated Enthalpy of Water

Aug 2024 – Jan 2025

- Developed six 4th-order interpolating polynomial equations to calculate water enthalpy from 0°C to 370°C, significantly simplifying complex thermodynamic equations of state.
- Achieved high computational accuracy with a minimal inconsistency of 0.2 kJ/kg for temperatures up to 200°C through curve-fitting techniques applied to IAPWS Standards.

Training

Davao Beta Spring | Internship

400 hrs.

- Completed hands-on industrial fabrication operations and quality control, executing lathe, milling, and SMAW operations while utilizing precision tools (calipers, micrometers) to ensure strict adherence to design tolerances and surface finishes.
- Developed a SolidWorks as-built assembly for a rice harvester, producing high-fidelity 3D models and detailed sheet drawing deliverables for manufacturing and production.
- Collaborated with senior technicians to troubleshoot on-site assembly and mechanical issues, diagnosing equipment malfunctions to ensure all machine operations met functional requirements.

Certifications

Packaged Air Conditioner Unit Servicing | TESDA

Installation, preventive maintenance, and troubleshooting of packaged air conditioning units

Drafting Sanitary and Plumbing Layout and Details | TESDA

Reading schematic layouts and construction drawings for water distribution and waste management systems

SOLIDWORKS 2024 Essential Training | LinkedIn

3D part modeling, bottom-up assembly design, and generating production-ready 2D drawings

Essential Training for MEP | LinkedIn

Mechanical, Electrical, and Plumbing schematics and 3D modeling for construction documentation.

Reading Mechanical Systems HVAC, Plumbing, and Schematics | LinkedIn

Interpreting mechanical drawings, including Process Flow Diagrams (PFDs) and Piping and Instrument Drawings (P&IDs), for integrated HVAC, plumbing, and piping systems.