

Matthew A. Bilbruck, P.E.

5203 Sweeney Drive
Durham, NC 27705

(217) 370-3063
matt.bilbruck@gmail.com

Professional Summary:

Motivated Design Engineer who consistently uses education, experience, and creativity to provide solutions to a wide variety of complex mechanical design issues.

Experience:

HVAC Systems Engineer – November 2013-September 2017

ENTECH Services Inc. – Bartonville, Illinois

- Provide engineering support of the sales and implementation of HVAC, Energy, Retro-Commissioning, and Building Automation projects throughout the organization.
- Responsibilities included:
 - Design HVAC and Direct Digital Control Systems.
 - Prepare schematic diagrams and detailed engineering drawings for piping, sheet metal, and wiring requirements of the project in the most cost-effective manner.
 - Analyze plans, specifications, contract documents, and site conditions to determine project requirements.
 - Prepare specifications, drawings, sequence of operations, and operating instructions for components and system.
 - Selection of the proper types and size of components to meet design requirements.
 - Participate in project release meetings in order to transfer installation responsibility to the project manager.
 - Create bill of materials and participate in ordering process to ensure proper components required for a completed installation are included.
 - Understand code and permit requirements. Work with regulatory bodies to ensure approvals.
 - Direct and review the preparation of submittal booklets containing schematics, descriptions, technical literature, and operating instructions for the customer.
 - Assist with start-up, certifications, owner training, operating and maintenance manuals, and project turnover. Participate in system commissioning to ensure system operation as designed.
 - Provide estimates including equipment, material, and installation costs of HVAC systems and temperature control systems as required.
 - Perform energy studies, utility rate analysis, and energy cost avoidance calculations to evaluate and suggest multiple strategies to improve the energy performance and reduce energy cost in facilities.
 - Create algorithms for analytics software to execute measurement and verification as well as monitoring, targeting and reporting, and facilitate the measurement of energy performance initiatives.

Engineer – August 2010-October 2013

Volt Technical Resources (Agency Employee for Caterpillar, Inc.) – East Peoria, Illinois

- Responsible for the design and analysis of various light fabrications components for Caterpillar Track-type Tractors and Pipe layers.
- Experience with full program life cycle ranging from concept, prototype, pilot, and production phases along with FEA correlations to OMSA (On Machine Stress Analysis) and shake table validations.
- Responsibilities included:
 - Lead projects with offsite engineering teams to meet project goals and timeline.
 - Collaboration with suppliers to reduce cost and acquire better manufacturability of designed parts.
 - Work with other Light Fabrication teams to drive common part utilization to help reduce cost and obtain common look and feel across different Caterpillar products.
 - Designed new Pressed-fit grating to eliminate welding procedure which reduced manufacturing time, weight, and reduced cost by \$5 per sq.ft. Design will be able to

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be utilized across different product lines for significant companywide cost savings.
(Patent Pending)

- Design and analysis of Access Arrangement for NPI (New Product Introduction) Large Track-type Tractor.
 - Reduced weight from current production design by 5% (45kg).
 - Reduced cost from current production design by 27% (\$944).
- Design and analysis of Fenders for NPI Medium Track-type Tractor.
- Platformed Fender design to be utilized across other Track-Type Tractors.
- Design and analysis of Fuel Tank for D11T Tier 4 Final Track-type Tractor.
- Travel within North America suppliers.
- Work with assemblers on Pilot and Prototype builds to address assembly issues.
- Utilize standard manufacturing criteria in design to reduce manufacturing time and costs. I.e. common bend radius, sheet thickness, straight length after bend, etc.

Associate Engineer (Summer) – Summer 2008

Metropolitan St. Louis Sewer District – St. Louis, MO

- Reviewed plans for sewage and drainage facilities to insure compliance with regulations and engineering design requirements.
- Responsibilities included:
 - Writing the specifications and completing the drawings for two large HVAC projects utilizing AutoCAD.
 - Designing a crane system over primary settling tanks, which utilized knowledge of AutoCAD and mechanic of solids.
 - Creating a rebuild schedule for all major equipment throughout a large treatment plant.

Education:

Bachelor of Science Degree – Mechanical Engineering

Southern Illinois University Edwardsville, Edwardsville, IL

May 2009

- Senior Design: Designed a 100% environmentally friendly refrigerator, which incorporated the use of a Free Piston Stirling Cooler to cool the circulating fluid.
- Heat Transfer Project: Analyzed the heat transfer of an array of micro-channels to a fluid, which was flowing thru the micro-channels.

Associate of Science Degree – Engineering

Lincoln Land Community College, Springfield, IL

May 2007

Technical Skills/Training:

Revit, TraneTrace, Pro/Engineer, Pro/Mechanical, Microsoft Office, AutoCAD, Solidworks, CPI (Continuous Product Improvement) software, Lotus Notes, CPPD (Collaborative Product Process Development) training, GD&T, MSHA Surface Training, C++, Python, Matlab, Visual Basic, ANSYS, Labview, Teamcenter 8, Saint, DatK (Data Analysis Toolkit), CopperTree Analytics: Kaizen

Other Skills and Experience:

- Professional Engineer License – Illinois
- ASHRAE member
- Green Belt Training Passed – Certification Pending
- IHSA Coaching Certification
- Assistant Football Coach – Northwestern High School, 2005
- Volunteer Basketball Coach – YMCA, 2010