Jonathan Heins

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Experience

Sullair, A Hitachi Group Company | Michigan City, IN

Subsidiary of the Hitachi Company that develops and manufactures portable and stationary rotary screw air compressors. Applications include construction, oil & gas, laboratories, pharmaceutical, and general manufacturing.

Intermediate Designer / New Product Development

October 2021 – Present

- 3D Model components and subassemblies for industrial and portable products including control systems, wiring harnesses, exhaust systems, cosmetic & structural sheet metal, castings, fuel systems, weldments, etc.
- Support supply chain, operations, and sales with current sourcing crisis by integrating rapid product adaptations, modifications, and redesigns. Design changes has enabled Sullair to continue operations.
- Reviewed Geometric Dimensioning and Tolerancing (GD&T) prints for ASME Y14.5 compliance and design intent; recommendations improved communication, design for manufacturing and assembly (DFMA), and component quality.
- lead for global new product development between Hitachi Industrial Systems and Sullair engineering: design and systems unification and standards commonization task force.

Associate Designer / New Product Development & Sustaining Engineering

August 2019 – October 2021

- Designed sheet metal, piping, hoses, and tubing for powertrain integration.
- Developed electrical control boxes (enclosures, panels, wiring harnesses, components, and assemblies).
- Created control system diagrams (piping, instrumentation, and plumbing diagrams, electrical control wiring diagrams).
- Achieved 100% first pass yield on engineered orders for fiscal year 2021.
- Led and advised team in quality issues and involved with cost reduction efforts.

Dwyer Instruments | Michigan City, IN

Manufacturer of process instrumentation focused on the HVAC industry. Designs & manufactures gages, transducers, flowmeters, and other instrumentation to measure flow, pressure, temperature, air quality, humidity, etc. Also develops PID Controllers, switches, valves, and other electronic/electromechanical devices for process control.

Mechanical Designer / New Product Development & Sustaining Engineering

July 2018 – September 2019

- Co-designed prototype capacitive pressure sensor. Prototype was modelled and simulations performed used Solidworks finite element analysis. Prototype developed was operational and demonstrated feasibility to executive team.
- Modelled complex legacy components from hand drafted 2D drawings enabling manufacturing to utilize CAM software for retooling.
- Developed in-house Python scripts to assist design department with documentation data entry, saving more than an hour per engineering change order. Program is still in use today.
- Created 3D printing standard operating procedures (SOP) for quality inspection. SOP was used for the companies first 3D printed production product.
- Revised drawings and maintained product documentation (bills of material, artwork, manufacturing routings, manuals).

Technical Support Engineer / Sales & Aftermarket

August 2017 – September 2018

- Interpreted data sheets, specifications, and customer requirements to create project bids.
- Instructed engineers and technicians with installation, calibration, and application of products.
- Troubleshot any customer issues and identified warranty claims.
- Self-taught department expert in MODBUS and BACNET digital communication protocols. Trained department personnel and lead product demonstrations to new employees, enabling department to support products that previously were unsupported.
- Maintained internal database of company technical information. Database used by engineers in the performance of engineering calculations (air flow from differential pressure, valve pressure drop from Cv).

J&L Dimensional | La Porte, IN
Manufacturer service provider of casting finishing, salvage/repair, fluorescent penetrant inspection (FPI), and dimensional inspection services for the aerospace investment casting industry. Customers include SpaceX, Rolls-Royce, GE Aviation, Pratt-Whitney, Arconic (Alcoa), Precision Cast Components (PCC), Chromealloy, and Department of Defense.

Layout Inspector Level 2
May 2015 – August 2018

- Developed Python software that automated data pre-processing, analysis, and inspection report creation that saved the company over $60,000 per year, increased production output by 50%, reduced human error, and lead to a $250,000 Department of Defense contract developing digital thread cloud software technology in partnership with Purdue University and Rolls Royce.
- Dimensionally inspected turbine blades, stators, segments, and other cast components utilizing precision hand tools.
- Programmed robotic 3D scanner system, Coordinate Measuring Machines (CMM), and wire EDM machines for production parts and one-off jobs.
- Used AutoCAD and/or a light table to inspect airfoil sections basic dimensions (leading/trailing edge radii, chord length, max thickness, etc.). Additionally, inspected sections for profile, displacement, and twist about the stack axis.
- Gained in-depth knowledge of mechanical drawings, ASME Y14.5 Geometric Dimensioning and Tolerancing, and advanced datum definition.
- Learned lean manufacturing processes including production part approval processes (PPAPs), Gage repeatability and reliability (Gage R&R), and first article inspection (FAI).

Senior Design

Feasibility Study and Simulation of adding Hydrogen Fuel to a Combined Cycle Natural Gas Combustion Turbine at an Electric Generation Plant

- Awarded Undergraduate Research Grant ($600) from Purdue University Northwest for Spring 2022
- Computational fluid dynamics (CFD) Simulation of converting a gas turbine combustor from natural gas to blended hydrogen and hydrogen fuel for Northern Indiana Public Service Company.
- Hoping to publish research in Fall 2022

Relevant Coursework & Certifications

Finite Element Analysis (FEA): Brief history of finite element method and ANSYS; direct formulation; minimum total potential energy formulation; verification of results; trusses.

Combustion/Computational Fluid Dynamics: Graduate-level courses that introduced analysis of hydrogen and hydrocarbon fuel combustion and numerical methods applied to CFD. In addition, gained experience with computational fluid dynamic tools (Ansys Fluent).

Certified Solidworks Associate (C-SFCZT2JCFM): Issued April 2018 by Dassault Systems through Purdue University Northwest.

CMM Operator AUKOM – Level 1: Issued February 2017 by Made to Measure Inc (Chicago, IL).

Introduction to Scripting with ATOS (Python): Issued October 2016 by Capture3D (Detroit, MI).

GD&T Advanced Applications: Issued February 2015 by The International Institute of Geometric Dimensioning and Tolerancing (Minneapolis, MN).

Skills

Programming: Python, G-CODE, and MATLAB
CAD Software: Siemens NX and Solidworks, over 10,000 hours of experience each
CAE Software: ANSYS FEA and Fluent, Solidworks CFD and FEA.
CAM Software: PC-DMIS, Calypso, PrusaSlicer/Simplify3D (3D Printing), ATOS GOM Inspect Professional

Education

Purdue University Northwest | Hammond, IN *August 2013 – Present*
Bachelor of Science in Mechanical Engineering Expected Graduation, December 2022