

Tyler Kiefer

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Skills

Programming Languages:

- Python
- C
- HTML/CSS
- Javascript

Kinematic Design

Systems Design

Lithium Battery Enclosure &
Module Design

Design for Machinability &
Manufacturing

Belt Drive Design

CAD Modeling

GD&T Drawings

Part Design:

- Sheet Metal
- Machined
- Weldment
- Casting
- Molded Plastic

Computer Software:

- Solidworks
- Creo (Pro/E)
- OnShape
- MasterCAM
- Linux
- Docker
- Windows & MS Office

Education

Michigan Technological University
Bachelor of Science in Mechanical Engineering

Houghton, MI
2010

Active member of **SAE Aerospace Design** club. Competed with universities across the country and world to design and build an RC plane to lift and successfully land with the most amount of payload weight.

- Regularly finished top 10 out of ~45 universities, including a 1st place finish.

Codecademy
C, Python, Full Stack

Present

Certifications

CompTIA
Security+

Actively Pursuing

- Exam to be taken August, 2024

Engineering Experience

Kiefer Engineering, Inc.
Owner / Engineer

Colorado Springs, CO
Feb 2022 – Present

- Consulted for multiple clients on wide range of projects from lithium battery systems to heavy agricultural machinery.
- Managed project timelines and set goals to ensure milestone dates were met.
- Led team of 8 engineers across multiple consecutive projects and coordinated effort to complete projects successfully.
- Wrote Python code to simulate articulation of boom arms and suspension height on autonomous agricultural sprayer machine.
- Improved C code for BMS of solar storage lithium battery solution.
- Redesigned inverter enclosure to reduce cost.

Voltabox
Mechanical Design Engineer

Austin, TX
May 2020 – Feb 2022

- Led mechanical design of 24 KWh auxiliary battery system for commercial vehicle.
 - Successfully packaged modules, electrical chassis, and inverters into small space allowance.
 - Achieved manufacturing friendly design.
- Provided insight to reduce cost on large battery rack by allowing for simpler parts with greater tolerance allowance.
- Designed and conducted FEA of articulating lifting structure to move 5000 lb battery system.
- Collaborated to diagnose and solve laser welding issues on battery cell tabs.
- Improved effectiveness and safety of laser weld mask for pouch cell module. Achieved increased consistency of welds across module.
- Created novel method for handling and installing battery modules.
- Routinely modeled and created GD&T drawings; checked and released peer drawings.
- Designed, machined, and built weld mask prototype for cylindrical cell UPS battery pack.

- Collaborated directly with John Deere on ground-up designs for combine harvesters, cotton harvesters, and large tractors.
- Managed teams of 8+ modelers to efficiently bring projects from concept to CAD models and GD&T drawings.
- Taught internal class on drive belt implementation.
- Commended for my contributions to DJH Engineering winning the prestigious John Deere Supplier of the Year Award four times during my tenure.

S430/S440 Combine

- Developed a belt drive system containing twelve belts to drive all functional components of the combine.
- Performed kinematic analysis to optimize feeder house cylinder size and location.
- Designed crop separator rotor system to isolate seed and grain from crop efficiently.
- Created grain tank fill auger and unload auger systems.
 - Performed kinematic analysis to size the hydraulic cylinder as required to extend/retract the unload auger.

X9 Twin Rotor Combine

- Generated position sensor transfer functions for all three moving structures of the feeder house.
- Selected to be on urgent task force to improve cooling package debris mitigation and engine cooling as performance issues were found late in testing.

9R Tractor

- Worked with engine team to design cooling package and layout of hose routing to radiators.
- Designed aesthetic rotational molded plastic air intake stack.

- Assembled and tested high-tech, 140 cell, 30 kW, fuel cell stacks.
- Routinely designed, created GD&T drawings, and machined parts with quick turn-around times.
- Collaborated on proposals for U.S. DoD and DoT contracts.
- Designed microflow sensor chamber for a DoD project.
- Designed and built test equipment for GPS aware FLIR locating system for a DoD project.
- Programmed and operated Bridgeport CNC mill.

Related Hobbies

Over the past 18 years I have been installing, configuring, and operating many home servers.

- Running Proxmox home server running multiple virtualized operating systems.
- Home Assistant open source smart home platform integrating dozens of household devices as well as custom programmed automations.
- Integrated Frigate NVR utilizing AI driven vehicle and person detection to trigger smart phone notifications.
- Debian VM running Samba file server, multiple Docker containers including Rustdesk, Plex, Syncthing and others.
- Regularly design and create custom parts and assemblies on home 3D printer.