

Samuel Ferrec Mechanical Design Engineer
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Education

Waukesha County Technical College; <i>Waukesha, WI</i>	T.D. Tool & Die Making	Aug '20 – May '22
• Designed and built a mold and stamping dies to produce plastic-injection parts and sheet metal parts		
Rensselaer Polytechnic Institute; <i>Troy, NY</i>	B.S. Mechanical Engineering	Sept '10 – May '13
SUNY Orange; <i>Middletown, NY</i>	A.S. Engineering Science	Jan '09 – May '10

Design & Prototyping Tools

Software Packages: SolidWorks, SolidWorks CAM, Mastercam (with 3D toolpathing), Manual CNC programming, Unigraphics NX & Teamcenter, ANSYS Workbench/Mechanical

Machine Tools: CNC Mill & Lathe, Manual Mill & Lathe, Surface Grinder, EDM processes & Part inspection

Current Role

Milwaukee Electronics, *Glendale, WI* Aug '22 – Present

Lead Mechanical Engineer, Lead CNC Programmer & Lead CNC Machinist, Products Group & EMS

- Design test fixtures, assembly fixtures, jigs, and pallets for electronics manufacturing and verification
- Define product requirements / criteria & Develop industrial oil and gas cathodic protection products
- Manufacture and assemble fixtures, jigs, prototypes, and one-off production pieces in our machine shop using a variety of CNC and manual machine tools, 3D printers, and a variety of hand tools
- Mentor manufacturing engineering and NPI engineering in pallet, jig, & fixture development

Design Experience (in order of relevance)

Milwaukee Tool, *Brookfield, WI* Dec '17 – Aug '18

Mechanical Design Engineer, New Product Development

- Designed a first of kind, highly innovative drain cable feeding machine focused on enhancing the productivity & ergonomics for plumbers using drain cleaning trade tools
- Correlated FEA results to field test hardware and lab test data to develop design improvements
- Performed DFM with suppliers to solve manufacturing challenges and improve designs for plastic, die-cast, and powder metal components
- Developed rigorous test procedures to validate prototype & production tools to ensure design robustness
- Collaborated with domestic and Chinese teams to identify and solve end-user needs, involving purchasing, industrial design, marketing, electrical engineering, reliability, manufacturing, and rapid prototyping

UTC Aerospace Systems, *Rockford, IL* (A United Technologies Company) Feb '14 – Nov '17

Mechanical Engineer, Electric Power Generation Engineering

- Lead assembly tooling design and implementation at Puerto Rico Operations plant site
- Facilitated DFMEA review for generator housings which lead to an increased focus on part cleanliness
 - Developed requirements and procedures for improved part cleanliness, which reduced test yield failures due to Foreign Object Debris (FOD) across all programs, saving \$500K annually
- Lead root cause investigations and corrective action implementation to improve a military program's test yield from development (<50%) to final production (98%)
- Increased generator durability by 200%, meeting full life requirements, by redesigning faulty components
- Engaged international engineering and manufacturing teams (Singapore & Puerto Rico) to aid in the development of product and to facilitate the transition from development to production

Harley-Davidson Motor Company, *Wauwatosa, WI* Dec '18 – July '20

Mechanical Design Engineer, Current Products - PIER

- Redesigned a motorcycle side stand to eliminate a safety issue which arose from warranty claims
- Developed and executed solutions resolving quality, assembly, supplier security, and regulatory issues
- Lead collaboration and drove alignment among a diverse, international, cross-functional set of stakeholders (India, Thailand, & Brazil) to maintain compliance in all sales markets

Other Professional Experience

Omega Tool Inc, *Menomonee Falls, WI* Feb '21 – July '21

CNC Programmer/Operator, Vertical Machining

- Programed 2D & 3D toolpaths in Mastercam, set up, and run 3-axis CNC mills to machine mold components for the medical industry.

UTC Aerospace Systems, *Rockford, IL* (A United Technologies Company) Jan '12 – Dec '13

Mechanical Engineering Co-op

- Engine Systems, Dynamics – Instrumented/operated test equipment and analyzed vibration/pressure data
- Engine Systems, Quality – Streamlined CoPQ sorting process to ensure proper cost allocation
- Procurement, Cost Reduction – Transitioned component suppliers, saving 20% cost over 1000+ parts

Innovation

Milwaukee Tool, MX Fuel Sewer Drum Machine

- SEWER CLEANING MACHINE; US Pat. No. 11,185,897; Published Nov 30, 2021;
- Designed and developed CABLE DRIVE™ to automatically feed and retract drain cleaning cable. The system includes RAPID STOP™, an emergency-stop which mechanically disengages the feed mechanism. The system is designed to quickly engage & disengage the feed mechanism.
- Developed proof-of-concept for a “cable counter” to measure the length of cable in the drain, for the user to know how much cable is left in the machine.

Milwaukee Tool, Head Attachment Kit for 5/8" & 3/4" Drum Cable (used w/ MX Fuel Sewer Drum Machine)

Designed and developed a one-piece construction for all cutter head designs and spade head designs

- Designed all head attachment to be interchangeable between 5/8" & 3/4" cable sizes

UTC Aerospace Systems, Part Cleanliness

- Discovered need for higher part cleanliness on components specifically susceptible to damage from FOD or susceptible to introducing FOD to the system. (e.g. pistons & cast housings)
- Developed new cleanliness requirements, cleaning procedure, process flow, inspection criteria & procedure, and control plan. Wrote new engineering spec.

Leadership Experience

FIRST Robotics Mentor; BEAST Robotics (Team 2202)	Sept '19 – May '22
Epikos Church Small Group Leader	Jan '19 – Feb '21
Heartland Community Church, 20s/30s Ministry Leader	Mar '15 – Nov '17
UTC Aerospace Systems Co-op & Intern Mentor	Sept '13 – Nov '17

Selected Accolades

Tool & Die Making Program Award (Student of the Year 2021-2022)	Academic Sp '22
Gene Haas CNC Scholarship	Academic Sp '22
Tool, Die & Machining Association of Wisconsin "Tools to Succeed" Award	Academic Fa '21
• Awarded to a deserving student, selected by the instructors, who demonstrates an elevated aptitude in the trade, takes pride in their work, helps others, and is "someone we'd be happy working alongside"	
Outstanding Performance in Machine Tool Operation (Student of the Year 2020-2021)	Academic Sp '21
Level I Award for outstanding contributions & support of the F-35 Generator	Professional '15
Level II Award for significant/critical contributions to a strategic military project (JSF)	Professional '14
Level III Award for critical F35 Generator validation tasks	Professional '14

Personal Interests

Being creative & working with my hands. Rebuilding old motorcycles & home repair/remodeling	
• Milwaukee Makerspace member	Feb '19 – Present
Rock Climbing, Sailing, Hiking, Camping, Backpacking	
• Milwaukee Community Sailing Center (MCSC) member	July '18 – Present
• Adventure Rock Climbing Gym member	Dec '17 – Present