Michael Murray

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Portfolio & More: https://linktr.ee/michaeljohnmurray linkedin.com/in/michaeljohnmurray

PROFESSIONAL EXPERIENCE

Seasoned Mechanical Engineer with 15+ years of experience in **design, analysis,** and **manufacturing** across medical devices, power products, and automation. Demonstrated success in **product development, DFM (Design for Manufacturing), FEA (Finite Element Analysis)**, and **cross-functional leadership**. Adept at **guiding teams** to deliver innovative, cost-effective solutions that comply with ANSI, ISO, FDA, IEC 60601, ISO 13485 and other regulatory standards.

Swope Design Solutions San Francisco, CA

Mechanical Engineer June 2022 – Present

- **Led** a project to design and build a pump-to-catheter system for removing arterial calcified lesions.
- **Created** prototypes to establish proof of concept through CNC machining, molding, and 3D printing.
- **Developed** a positioning mechanism for a non-invasive surgical procedure to treat kidney stones.
- **Built** a camera-based automated data matrix scanning and analysis system (designed, wired, and coded using C and Python)
- **Spearheaded** heater system design for a medical device, conducting thermal analysis and testing.
- **Managed** injection-molded part design and tooling, machined molds, and molded parts in silicone.
- **Redesigned** endoscopic robot components for injection molding (mass production), incorporating DFM.
- **Mentored** junior engineers and ensured alignment with project milestones.

True Digital Surgery Santa Barbara, CA

Senior Staff Mechanical Design Engineer November 2020 – November 2021

- **Designed** mechanical subsystems of a positioning system for a robotic neurosurgical 3D microscope.
- **Analyzed** and prevented mechanical failures and confirmed factor of safety per IEC 60601 requirements.
- **Performed** thermal analysis to maintain mechanical integrity under heat application.
- **Developed** fit/function checks using GD&T in accordance with ASME Y14.5 standards.
- **Co-authored** QCIC system structure per ISO 13485 guidelines.

Surround Medical Systems Morrisville, NC

Senior Mechanical Engineer May 2019 – May 2020

- **Led** the mechanical department to design a 3D x-ray positioning system from concept through production.
- **Improved** delivery of x-rays to reduce radiation exposure to patients and ensure image quality.
- **Co-authored** a 510(k) submission for FDA approval.
- **Prevented** mechanical failures through Finite Element Analysis (FEA) and Failure Mode and Effects Analysis (FMEA) studies.

ABB Raleigh, NC

Senior Mechanical Engineer, R&D July 2017 – September 2018

- **Standardized** transformer designs using common parts, reducing cost and lead times.
- **Enhanced** mechanical designs of transformers/enclosures to increase convection efficiency.
- **Led** a project to automate creation of drawings, models, and data, writing a standard for programming.
- **Developed** an outdoor-rated transformer cabinet incorporating weatherproof coating.

Ingersoll Rand Charlotte Area, NC

Design Engineer III August 2014 – July 2017

- **Designed** parts/assemblies for complex, custom industrial centrifugal air compressors (2,000–7,000 cfm, 400–1,250 HP) to meet ANSI and ISO standards.
- **Designed** dual oil cooler system for 5000-cfm air compressors.
- **Optimized** airflow through pre-build assessments, improving compressor performance.

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Newell Rubbermaid – Piedmont Hardware Brands Charlotte Area, NC
Mechanical Design Engineer February 2013 – August 2014

- **Designed** high-volume sheet metal, die cast, injection-molded, and stamped parts (metal and plastic).
- **Utilized** hand calcs and SOLIDWORKS Simulation for Finite Element Analysis, guiding new product designs.
- **Prevented** failure modes through Computer-Aided Engineering (CAE).

Sandvik Mebane, NC
Manufacturing Engineer September 2011 – February 2013

- **Generated** CAD models, CNC programs through CAM, and drawings for high-volume metal-cutting tools.
- **Reduced tooling costs** by 30% via optimized CAM programs for 5-axis milling machines, lathes, and grinders.
- **Designed** and implemented a coolant reclamation system to optimize machining efficiency and cut waste.

ABB Lake Mary, FL
Mechanical Design Engineer August 2009 – September 2011

- **Invented** a remotely operated device for industrial medium-voltage circuit breakers (5–15 kV); recognized with two patents (**U.S. Patents 9,876,335 and 8,654,513B2**).
- **Developed** a Modular Mechanism Operated Cell to retrofit circuit breakers (**Patent 8,878,088**).
- **Improved** circuit breaker thermal flow to prevent overheating and brazing issues.

TECHNICAL SKILLS

DFM, DFA, DFx, (Design for Manufacturing and Assembly)	Advanced	13 yrs
CAD, (Computer-Aided Design), Drafting ***SOLIDWORKS**, Creo Parametric, (Pro/E), NX, Autodesk Inventor, Onshape, Fusion*	Advanced	14 yrs
Product Development, Project Management, Jira, Confluence, and Others	Advanced	10 yrs
FEA, (Finite Element Analysis)	Advanced	9 yrs
GD&T, (Geometric Dimensioning & Tolerancing), Drafting, **ASME Y14.5**	Advanced	9 yrs
FMEA, Failure Mode and Effects Analysis)	Advanced	7 yrs
PDM, **PLM,** Software and Administration, *SOLIDWORKS PDM, Arena, Windchill*	Advanced	6 yrs
Rapid Prototyping • ***3D Printing, Programming:** FDM, SLA, DMLS, SLS, Maintenance & Improvement of Machines* • *Assembly and use of tools and equipment to make and modify parts (full list on website)*	Advanced	10 yrs
Vendor Management	Advanced	8 yrs
CAM, (Computer-Aided Manufacturing), CNC Programming, CNC Operation	Intermediate	4 yrs
Thermal Analysis	Intermediate	4 yrs
Computer-Aided Engineering (*SOLIDWORKS Simulation, Flow*)	Intermediate	4 yrs
CAM, (Computer-Aided Manufacturing), (*HSMWorks, NX*)	Intermediate	4 yrs
Regulations and Standards: **FDA**, **IEC**, IEC 60601, ISO 13485, **ASME**, **ANSI**, **ISO**, UL	Intermediate	4 yrs
Injection Molding, Plastics	Intermediate	5 yrs

EDUCATION

North Carolina State University*, *Mechanical Engineering, 2009
Honors: Cum Laude, Dean's List, 2008 NCSU ME Design Award, Co-Op Program

ADDITIONAL NOTES

References: Available upon request.
Portfolio, Manufacturing Process Experience, and more: **https://linktr.ee/michaeljohnmurray**