

Morris Richardson

Morris.Richardson@icloud.com | 206.305.6714 | Seattle, WA 98102 | www.linkedin.com/in/morris-richardson-iii

Education

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B.S. Mechanical Engineering: Mechanical Design

Kettering University, MI.

M.S. Mechanical Engineering: Computational Modeling/Fracture Mechanical.

Kettering University, MI.

Relevant Experience

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Amazon

❖ Research and Development Hardware Engineer | Hardware Development

- Experimental and Numerical Investigation of Thermoaerualic Flow Behavior Inside of a Docked Trailer, sustainability program
- Design investigation of Kinetic Energy Harvesting for autonomous IIOT applications
- Investigation of Autonomous Drones for Construction Site Inspection and Monitoring Applications

Johns Manville (Berkshire Hathaway)

❖ Sr. Research Engineer | Product Development

- Led technical research, development, and design for Johns Manville \$400M Filtration, Separation and Engineered Fibers product portfolio. Spanning 5 manufacturing plants in North America and Europe.
- Managed prototyping, trial planning, technical & quality specs, design criteria, human resources and budget for glass fibers, synthetic and glass nonwoven products.
- Launched over 12 products using rotary, pot & marble, spunbond, melt blowing, air-laying, and wet-laying processes.
- Implemented UL, FDA, ASTM and ISO standards for new and existing products. To ensure product compliance, safety, and performance.
- Oversaw technical service and application support for new and existing customers by assisting in customer fitness for use, application studies, and technical support. This involved analyzing processes and testing data with statistical and analytical techniques.

❖ Sr. Research Associate | Modeling and Simulation

- Executed high-temp creep experiments and FEA thermomechanical modeling of precious metals and ceramic matrix composites, increasing product life by 75%, by minimizing structural compliance.
- Produced CFD conjugate heat-transfer simulations with radiation and electromagnetism models, improving system temperature distribution by 30%.
- Generated FEA fatigue crack growth simulation to reduce stress intensity factor by 30% and increase product life by 45%.
- Created custom Java/C++ subroutines for model optimization, result processing and setup automation for ANSYS and STARCCM+. Reducing computational cost by 50%.
- Generated CFD models and CAD designs for next-generation glass fiberizer system, to increase process throughput by 25%.
- led over 5 research projects involving advanced material applications, high-energy power transmission and material coatings.
- Mentored and trained 12 new team members on modeling techniques, engineering or physics fundamentals, and patenting processes.

❖ Sr. Mechanical Engineer | Process Development and Design

- Set \$1M capital engineering annual operating plan (AOP), managing over 25k hours of capital projects to closure.
- Developed 4 new process technologies. Related to casting, cold forming, laser welding and automated assembly, for the manufacturing of custom precious-metals and super alloys.
- Oversaw standard operating procedures and tooling design for all superalloy manufacturing, testing and assembly. Lowering production cost by 40%, labor and inventory combined.
- Generated 3D models and drawing packages for all superalloy and precious metal product designs. Also, implementing GD&T, AWS, ANSI and ISO design standards.
- Implemented first product data management (PDM) tool and integrated between engineering and manufacturing to improve document control and reduce turnaround time by 50%.
- Validated test methods for quality control, including NDT, ultrasound, dye penetrant, pressure testing, 2D/3D scanning.

Patents/Publications

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- **Richardson, M.** FLUID COOLED COMBUSTION BURNER (2020) Patent No.: US 10,858,278 B2
- **Richardson, M.** BUSHING WITH RIBBED TIP PLATE; (2020) Patent No.: US 10,189, 738 B2
- **Richardson, M.** COUPLER WITH MAGNETIC ELEMENT FOR TOWING UTILITY CARTS; Patent Pending CDN:P76313-US01
- **Johns Manville Internal Publications:**
 - Coupled CFD/FEA Model Results of New Bushing Terminal Designs,2011. Alessandro G. Borsa, Morris Richardson III, and Dean Gaertner.
 - Bushing Terminal Ear Failure Characterization, 2012. Alessandro G. Borsa, Morris Richardson III, and Barry Fitzpatrick
 - New Ceramic Material and Support Tube Design for Longer Bushing Life, 2013. Alessandro G. Borsa, Morris Richardson III, Dean Gaertner, Garrett Jacobson, and Barry Fitzpatrick
 - Creep Model Validation of Stress, Temperature, and Time, 2013. Alessandro G. Borza, Narayana Rao Chalasani, Morris Richardson III
 - Geometrical Optimization of Sheet Structural Components, 2015. Morris Richardson III
 - Validation of new ANSYS Fluent 17.0 internal ohmic heating, 2016. Alessandro G. Borsa & Morris Richardson III
 - Optimized Boundary Conditions for Simplified Bushing Model, 2016. Alessandro G. Borsa, Morris Richardson III
 - Bushing Cooling Tube & Fin Modeling Results, 2017. Alessandro G. Borsa, Morris Richardson III
 - Simplified Bushing Model in Star-CCM+, 2017. Morris Richardson III , Alessandro G. Borsa
 - Impact of Bushing Block Materials on Temperature Distributions,2017. Morris Richardson III, Alessandro G. Borsa
- **Amazon Services Internal Publications:**
 - Investigation of Thermoaerulic Flow Behavior Inside of a Docked Trailer, 2023. Morris Richardson III
 - Dynamical Motion Analysis of a Rectangular Prism Transitioning from Elevated Plane, 2023. Morris Richardson III

Skills/Interest

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- Programming:** MATLAB, Java, C++, Visual Basic, Python, Linux
- Software:** ANSYS, Solidworks, StarCCM+, NX, Nastran, GeoDict, BEASY, Minitab, PDM, Siemens PLM
- Leadership:** President: NSBE, MI State Rep.: EWB, Chair: JM Center of Excellence
- Volunteer:** Society of Women Engineers, Engineers Without Borders, NSBE, RC Health EMT
- Interest:** Teaching/Mentoring, Snowboarding, Scuba, Guitar, Linguistics, Dance