

Nicolaus S. Faino

P.E., M.S., CFEI
Senior Consultant



Nicolaus Faino is a Senior Staff Consultant, mechanical engineer, and human factors expert who investigates incidents ranging from personal injuries to water losses and fires/explosions.

Mr. Faino's case work has included the forensic investigation of incidents related to human interactions with products, warnings and instructions, and other machinery and equipment. He specializes in product failure analysis, design of mechanical systems, and human factors. He has investigated equipment and component failures and has experience in the design and fabrication of mechanical components. Mr. Faino also has experience with slip, trip, and fall incident investigation and in matters involving building code requirements, such as doors, stairs, and walkways. He is also an NFSI Walkway Audit Certificate Holder (WACH) and conducts slip meter testing.

Mr. Faino is a Certified Fire and Explosion Investigator and has performed a variety of fire investigations related to vehicles, machinery, and appliances. He is experienced with compressed gases, machinery components, and other mechanical systems, and has previous experience with installation of gas piping systems in laboratories. Prior work experience includes design and operation of high temperature systems, material processing, Finite Element Analysis (FEA) stress modeling, safety protocols, and the design, fabrication, operation, and analysis of instrumented test systems.

In addition, Mr. Faino also has extensive experience with water losses and appliance failures. Mr. Faino investigates residential and commercial domestic water plumbing, hydronic piping, and drain/waste failures related to water loss damage and construction defects in locations ranging from residential homes to high profile condo high-rises.

Mr. Faino holds a B.S. and M.S. in mechanical engineering from the Colorado School of Mines. His research and development background includes renewable energy applications, advanced aerospace energy system development, hydrogen and oxygen system design, alternative energy systems research, and ceramics processing for fuel cell applications. Additionally, he is currently pursuing an M.S. in human factors from the University of Idaho.

Contact Information

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ESI Seattle

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Areas of Specialization

- Product Safety and Design
- Warnings and Instructions
- Human Factors
- Fire and Explosion
- Plumbing and Piping Systems
- Water Losses

Education

M.S., Psychology – Human Factors. University of Idaho. (*Anticipated 2026*)

M.S., Engineering – Mechanical Specialty. Colorado School of Mines. 2011

B.S., Engineering – Mechanical Specialty. Colorado School of Mines. 2009

Licenses & Certifications

- State of Washington P.E. License No. 57122
- State of Utah P.E. License No. 11635965-2202
- State of Idaho P.E. License No. 19324
- State of California P.E. License No. M 40099
- State of Hawaii P.E. License No. PE-19067
- State of Florida P.E. License No. 90220
- State of Oregon P.E. License No. 96798PE
- State of Montana P.E. License No. PEL-PE-LIC-73527
- NCEES Record ID No. 16-955-41

Additional Certifications

- Walkway Auditor Certificate Holder (WACH) - National Floor Safety Institute (NFSI)
- Certified XL Tribometrist (CXLT), (2022 – 2025) - Excel Tribometers, LLC
- Certified Fire and Explosion Investigator (CFEI) - NAFI, License No. 21247-12071
- Safety Auditor Certificate (SAC) - NASP
- Classes 1,4,5 Forklift Trucks - CertifyMe.net
- Lift Equipment Operator - Overton

Positions Held

Engineering Systems Inc., Seattle, WA

- Senior Consultant, 2026 – Present
- Senior Staff Consultant, 2021 – 2025

Case Forensics / Jensen Hughes, Mountlake Terrace, WA

- Senior Mechanical Engineer, 2020 – 2021

- Mechanical Engineer, 2015 – 2020

Versa Power Systems, Inc. / FuelCell Energy, Inc., Littleton, CO

- Mechanical Engineer II – System Test, Safety Officer, 2012 – 2015

ITN Energy Systems, Inc., Littleton, CO

- Fuel Cell Process Engineer, 2011 – 2012

Colorado School of Mines, Golden, CO

- Graduate Research Assistant, 2009 – 2011
- Graduate Teaching Assistant, 2009
- Undergraduate Research Assistant, 2008 – 2009

TANCO Engineering, Inc., Longmont, CO

- Project Manager Intern, 2007

Continuing Education

- **Certified Playground Safety Inspector Preparation Course**, National Recreation and Park Association, 2025
- **PSYC 4460: Psychology of Emotion**, University of Idaho, 2025
- **PSYC 513: Advanced Research Methods**, University of Idaho, 2025
- **PSYC 512: Research Methods**, University of Idaho, 2024
- **36th Annual Product Liability Conference**, University of Wisconsin-Madison, 2024
- **ED 574: Qualitative Research**, University of Idaho, 2024
- **Internal Review Board (IRB) basic investigator**, CITI, 2024
- **Walkway Auditor Certificate Program**, NFSI, 2024
- **PSYC 561: Human Computer Interaction**, University of Idaho, 2024
- **PSYC 509: Human Factors in Engineering Design**, University of Idaho, 2023
- **PSYC 444: Sensation & Perception**, University of Idaho, 2023
- **PSYC 552: Ergonomics & Biomechanics**, University of Idaho, 2023
- **35th Annual Product Liability Conference**, University of Wisconsin-Madison, 2023
- **Certified XL Tribometrist Certification Program**, Excel Tribometers, LLC, 2022
- **The Anatomy of Fatigue-Related Accidents**, HFES webinar, 2022
- **Construction Change Orders**, LinkedIn Learning, 2022

- **Construction Management: Reading Drawings & Specifications**, LinkedIn Learning, 2022
- **Construction Estimating: Specifications and CSI MasterFormat**, LinkedIn Learning, 2022
- **OSHA # 2045 Machinery and Machine Guarding Standards**, University of Washington, 2022
- **Using Warnings and Instructions to Increase Safety and Reduce Liability**, University of Wisconsin-Madison, 2022
- **Safety Auditor Certificate**, National Association of Safety Professionals, 2021
- **Wildland Fire Investigation**, IAAI CFI Trainer, 2021
- **Introduction to Appliances**, IAAI CFI Trainer, 2021
- **Explosion Dynamics**, IAAI CFI Trainer, 2021
- **Emerging Technologies in Fire Investigation**, IAAI CFI Trainer, 2021
- **The Deposition Part 1 & 2**, IAAI CFI Trainer, 2020
- **Understanding Undetermined**, IAAI CFI Trainer, 2020
- **Using Resources to Validate your Hypothesis**, IAAI CFI Trainer, 2020
- **Lift Truck Operations 1 & 2**, Jensen Hughes Academy, 2020
- **Water-Hammer Training Course**, Jensen Hughes, 2020
- **SOLIDWORKS: Simulation for Finite Element Analysis**, LinkedIn Learning, 2020
- **FARO Scene 3D Laser Scan Registration**, LinkedIn Learning, 2020
- **Matterport 3D Scanning and Visualization**, LinkedIn Learning, 2020
- **Laundry Exhaust & Make Up Air – Definitions, Theory, & Application**, LF Systems, 2020
- **Building and Elevator Systems**, CED Inc., 2020
- **Scientific Protocols for Fire Investigation**, Washington State Association of Fire Marshals, 2017
- **Closed Loop Systems – Open Tower/Heat Exchanger or Fluid Cooler**, Baltimore Aircoil Co., 2017
- **54th Annual International Fire, Arson, & Explosion Investigation Training Program**, NAFI, 2016
- **FARO Focus 3D Scanner certification**, FARO, 2016

Professional Affiliations/Honors

ASM International

- American Society of Mechanical Engineers (ASME)
- National Association of Fire Investigators (NAFI)
- National Association of Safety Professionals (NASP)

- Human Factors and Ergonomics Society (HFES)
- American Society of Testing and Materials (ASTM)
Committee Member, F15 – Consumer Products

Project Experience

Human Factors Investigation

- Evaluated warnings and instructions manuals for both industrial equipment and provided input to improve documentation, including updating symbols and safety messaging to be consistent with applicable ANSI and ISO standards.
- Inspected premises related to a trip and fall incident and evaluated the location with respect to applicable building codes as well as human factors concepts related to perception. Determined that fixture layout was consistent with applicable clearance requirements, and the alleged trip hazard demonstrated qualities such as high contrast color and different patterns that would increase conspicuity.
- Evaluated and tested chairs related to personal injury claims. Determined if the products met applicable standards. Tested the chairs under various configurations and loading conditions to simulate both expected and improper usage of the products, using the results to compare with the subject evidence.
- Conducted human factors testing with respect to interactions with hot beverage containers. Involved in test procedure design and managed recruitment and evaluation of human subject participants.

Fire and Explosion

- Developed a Mathematica thermal model to calculate the heat transfer of falling metal particles emanating from arced power lines and the final temperature and resting location. Incorporated data used from 3D scans of power poles to obtain dimensional data and analyze line sag to calculate and correlate the tension, sag, and intersection of the power lines depending on the pole locations, heights, and tilts.
- Instrumented and tested various exemplar and subject fire-related components and structures, ranging from small butane stoves to a full-size partially reconstructed wood frame house with an integrated wood fireplace and flue pipe. Analyzed the data which included temperatures, pressures, flow rates, and electrical power, and compared various operating conditions and configurations.
- Investigated an array of commercial restaurant and residential kitchen fires related to both electric and gas cooking appliances. Includes the area of origin and cause determination, evaluation of natural gas and propane piping systems, and equipment operational testing.

Plumbing, Piping, and Water Losses

- Evaluated the system designs and installation conditions related to large losses for high rises and other buildings that utilized polypropylene (PP-R) piping. Included identification of locations of interest and installation of temperature, pressure, and flow monitoring instrumentation for in-situ operation condition data collection.

- Conducted testing to determine the failure mechanism of a fractured copper stub-out, which included simulating the failed joint under various configurations including intentionally introduced installation defects and operating conditions. Combined with site visit documentation and water meter data was able to determine the most probable cause of failure.
- Inspected and evaluated an alleged failure of a well pump on a large residential property, which required multiple site visits, coordination of the pump removal, and documentation of the pump, well house, and storage tank conditions and elevations.

Patent Application

Michael Stowell, Paul Thoen, Eric White, **Nicolaus Faino** (2014). Use of Microwaves in Annealing Fuel Cell Anode Materials and Plasma Deposition of Electrolyte Materials. U.S. Patent Application #61/947,176, filed March 2014. Patent Pending

Publications

N. Faino, "Human Factors Concepts for Designing Safe Products," IEEE Symposium on Product Compliance Engineering, San Francisco, CA, May 2025

W. Wong and **N. Faino**, "Risk Assessments After When Things Go Wrong," IEEE Symposium on Product Compliance Engineering, San Francisco, CA, May 2025

N. Faino, "Risk Assessment and its Importance in Safe Design and Product Liability Litigation," 36th Annual Product Liability Conference, University of Wisconsin-Madison, Madison, WI, October 2024

N. Faino, "Human Factors and its Role in Product Safety Design," IEEE Symposium on Product Compliance Engineering, Bloomington, MN, October 2024

N. Faino, "Three-Dimensional (3D) Scanning in Forensics Investigations," Defense News, Washington Defense Trial Lawyers, 5 June 2018

N. Faino, "3D Laser Scanning and Forensic Investigations," Fire Prevention Institute, Washington State Association of Fire Marshals, 2016

N. Faino, W. Rosensteel, B. Gorman, N. Sullivan, "Progress Toward Inkjet Deposition of Segmented- in-Series Solid-Oxide Fuel Cell Architectures," SOFC XII Conference, Montreal, Canada, May 2011

S. Babiniec, A. E. Richards, **N. Faino**, N. Sullivan, "Development, Fabrication and Testing of Perovskite-Based Anodes in Tubular SOFCs," SOFC XII Conference, Montreal, Canada, May 2011

S. Babiniec, N. P. Sullivan, A. E. Richards, **N. Faino**, "Multi-Phase Tubular Perovskite-Based Anodes for use in Hydrocarbon-Fueled Solid-Oxide Fuel Cells", European Fuel Cell Forum, Lucerne, Switzerland, June 2010