

Ward Arms | Senior Principal Forensic Engineer | PE | CFI(V)

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Professional Summary:

Forensic Engineer, with Bachelor of Science degrees in Electrical Engineering and Materials Science from the University of Minnesota College of Science and Engineering (Minneapolis). Licensed Professional Electrical and Computer Engineer. Licensed Class A Journeyman and Master Electrician. International Association of Arson Investigators - Certified Fire Investigator – CFI(V). National Association of Fire Investigators – Certified Fire and Explosion Investigator (CFEI).

Licenses and Certifications:

Professional Engineer:

Alabama #31555, Alaska #242454, #Arizona #50855, Arkansas #14309, California #19254, #Colorado #PE.0044155, Connecticut #PEN.0027719, Delaware #17033, Florida #70909, Georgia #PE034513, Hawaii #PE-14168, Idaho #9171851, Illinois #062062426, Indiana #PE11011531, Iowa #P20015, Kansas #PE21321, Kentucky #27242, Louisiana #PE0035204, Maine #PE12304, Maryland #38671, Michigan #6201056929, Minnesota #23384, Mississippi #19755, Missouri #2010001769, Montana #106012; Nebraska #E-13425, Nevada# 020775, New Jersey #06076400, New York #109357, North Carolina #036585, North Dakota #PE-6654, Ohio #PE.74416, Oklahoma #24547, Oregon #84319PE, Pennsylvania #PE077321, South Carolina #28278, South Dakota #10188, Tennessee #113703, Texas #105591, Utah #7643679-2202, Virginia #0402047599, Washington #46749, Wisconsin #40906-6; Wyoming #12800

Licensed Class A Journeyman & Master Electrician, (MN - #AM007921, IA - #EL208109JA)

National Council of Examiners for Engineering and Surveying Record (NCEES) ID:17-624-74

Licensed Private Pilot – FAA Certificate #472906044

FAA Certified Remote Pilot Suav #5021019

State of Minnesota Certified Private Investigator #989

International Association of Arson Investigators (IAAI), Certified Fire Investigator, CFI(V) #16-071052

National Association of Fire Investigators (NAFI), Certified Fire and Explosion Investigator (CFEI) #24214-13991

Professional Experience:

EFI Global, Forensic Engineer/Fire Investigator, 2019 - Present
Energy Systems Group, Director of Electrical Engineering, 2014 - 2019
NV5, Director of Electrical Engineering, 2013 - 2014
Hallberg Engineering, Director of Electrical Engineering, 2009 - 2013
The Egan Companies, VP of Electrical Engineering & Construction, 2007 - 2009
Target Corp, Electrical Engineer / PM, 2002 - 2007
Parsons Electric Corp, Senior Project Manager/Electrical Engineer, 1991 – 2001
Honeywell – Undersea Systems, Electrical & Materials Engineering Aide, 1987 – 1989

Formal Education:

B.S. Electrical Engineering, University of Minnesota (Minneapolis), 1991, College of Science & Engineering
B.S. Materials Science & Engineering, University of Minnesota (Minneapolis), 1989, College of Science & Engineering
MBA, University of Minnesota (Minneapolis), 1998, Carlson School of Management

Specialized Education/Training:

Microsoft, Certified Artificial Intelligence Engineer, Associate #51C745-5LE88B, 2026
Microsoft, Certified Data Engineer, Associate #DE5C6R-D14E5E, 2026
Microsoft, Artificial Intelligence Fundamentals, Certification #77534D-Q2E667, 2025
Microsoft, Data Fundamentals, Certification #F4BA73-I2DFD8, 2025
University of Wisconsin (Madison), Fundamentals of Distributed Energy Resources (tested), 2022
University of Wisconsin (Madison), National Electrical Safety Code (17 hours, tested), 2021
North Star Imaging Inc, Digital Radiography and Computed Tomography (40 hours, tested), 2021
Boston Safety Training Inc, Arc Flash Safety Training (8 hours, tested), 2021
Rochester Institute of Technology, Computer Forensics (40 hours, tested), 2020
Western Michigan University, Investigation of Gas & Electric Appliance Fires (tested), 2019
Power Line System Design – PLS-CADD (30 hours), 2019
Caterpillar (San Diego), Gas Turbine Operation & Maintenance Principles (30 hours, tested), 2018
Caterpillar (San Diego), Power Generation Principles and Applications (30 hours, tested), 2018
Microsoft Technology Associate, Software Development Fundamentals #G6084420 (tested), 2018
Microsoft Technology Associate, Network Security Fundamentals #G6401061 (tested), 2018
Microsoft Technology Associate, Networking Fundamentals #G4085302 (tested), 2017
Rockwell Automation, Controllogix PLC Fundamentals (40 hours, tested), 2016
University of Wisconsin (Madison), Modern Power System Protection: Applications and Performance Analysis, 2013
University of Wisconsin (Madison), Fundamentals of Substation Equipment and Control Systems, 2011
Georgia Tech (Atlanta), Power Systems Relaying: Theory and Application, 2010
University of Wisconsin (Madison), Principles of Substation Design and Construction, 2010
University of Wisconsin (Madison), Coordination of Industrial & Commercial Electrical Power Systems, 1993
University of Wisconsin (Madison), Protection of Industrial & Commercial Electrical Power Distribution Systems, 1993

IAAI/CFI Courses:

IAAI, Motor Vehicle Fire Investigation, (3 days, tested), 2024
Knowledge 1, Motor Vehicle Fires (8 hours, tested), 2024

Alternative Fuel Vehicles	12/30/2021
Arc Mapping Basics	3/31/2019
Charting Your Career Path In Fire Investigation	4/14/2020
Critical Evaluation and Testing of Commonly Reported Accidental Causes	4/14/2020
The Deposition Part 1: Format, Content, and Preparation	6/10/2019
The Deposition Part 2: Questioning Tactics and Effective Responses	6/10/2019
Digital Photography and the Fire Investigator	4/29/2019
Discovery in Civil Cases	4/30/2019
Documenting the Event	6/25/2019
Effective Investigation and Testimony	4/16/2020
Electric & Hybrid Vehicle Design Basics	6/2/2021
Electric & Hybrid Vehicle Fires	6/2/2021
Electrical Safety	7/23/2019
Emerging Technologies in Fire Investigation	1/1/2022
Ethics and the Fire Investigator	4/17/2020
Evidence Examination: What Happens at the Lab?	4/28/2020
Explosion Dynamics	4/3/2019
Fire Chemistry	5/17/2019
Fire Effects Part 1: Heat Effects on Fuel	6/16/2023
Fire Effects Part 2: Combustion By-Products Effects	6/16/2023
Fire Flow Analysis	5/18/2019
Fire Investigation for Fire Officers	4/9/2020
Fire Investigator Scene Safety	4/9/2020
Fire Protection Systems	7/23/2019
Fundamentals of Interviewing	4/17/2020
The HAZWOPER Standard	4/29/2020
How First Responders Impact The Fire Investigation	4/12/2020
IAAI-FIT Test	10/14/2020
The Impact of Ventilation in Building Structures on Fire Development	4/28/2020
Insurance and the Fire Investigation	4/19/2020
Introduction to Appliances	2/16/2020
Introduction to Evidence	6/27/2019
Introduction to Fire Dynamics and Modeling	4/6/2019
Investigating Motor Vehicle Fires	7/13/2019
Investigating Natural Gas Systems	4/29/2020
Lithium-Ion Battery Fires	6/2/2021

MN March 2019	3/29/2019
Motor Vehicles: The Engine and the Ignition, Electrical, and Fuel Systems	7/28/2019
Motor Vehicles: Transmission, Exhaust, Brake, and Accessory Systems	7/28/2019
NFPA 1033 & 921: 2022/2021 Editions Important Updates	10/31/2022
NFPA 1033 and Your Career	4/16/2020
Photovoltaic Cells & Systems	9/19/2021
Physical Evidence at the Fire Scene	4/14/2020
Post flashover Fires	4/28/2020
The Potential Value of Electronic Evidence in Fire Investigations	1/1/2022
The Practical Application of the Relationship Between NFPA 1033 and NFPA 921	4/28/2020
Preparation for the Marine Fire Scene	6/21/2023
Process of Elimination	7/13/2019
Residential Electrical Systems	4/30/2019
Residential Natural Gas Systems	4/17/2020
The Scientific Method for Fire and Explosion Investigation	12/13/2019
Search and Seizure	1/1/2022
Site Safety Assessment	2/16/2023
Thermometry, Heat, and Heat Transfer	6/1/2019
Understanding Fire Through the Candle Experiments	12/13/2019
Understanding Undetermined	5/31/2019
Writing the Initial Origin and Cause Report	4/14/2020
Fire Investigation for Fire Officers	
Concentration in: Motor Vehicle Fires	4/14/2020
Principles of Fire Investigation	4/19/2020
Wildland Fires Investigation	2/6/26

Affiliations Past & Present:

Institute of Electrical and Electronics Engineers (IEEE)
 National Academy of Forensic Engineers (NAFE)
 National Society of Professional Engineers (NSPE)
 National Fire Protection Association (NFPA)
 International Association of Arson Investigators (IAAI)
 National Association of Fire Investigators (NAFI)

Publications:

Arms, Ward & Hansen, Wes. "Electric Vehicle Charging Stations: Technology, Reliability, and Loss Considerations" EFI Global/Sedgwick, 2023

Expert Testimony – Past Four Years:

Mr. Arms has extensive experience testifying as an expert witness in mediation, arbitration, depositions, and trials and has been accepted as an expert witness in numerous jurisdictions.

**List of Expert Witness Testimony Experience is Available Upon Request*