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Chris W. Korinek, PE, DFE | Senior Principal Forensic Electrical and Mechanical Engineer

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Professional Summary:

Chris provides forensic engineering analysis in the disciplines of electrical and mechanical engineering. His clients include insurance and legal companies, manufacturers, real estate groups, and construction and defense companies. Chris conducts fire investigations involving electrical systems, fireplaces and chimneys, appliances, vehicles, and structures. He analyses explosions, lightning damage, and injuries. Chris has spoken about electrical and mechanical fires, explosions, and failure analysis extensively in the United States and abroad. He has testified over 60 times in cases involving both State and Federal Courts. As an industry expert, Chris is involved in ongoing research and development in the areas of recreating, studying, and documenting electrical and mechanical failure modes for use in scientific forensic analysis. He is also involved with testing and designing products using his engineering skills.

Chris previously founded and operated a successful forensic engineering firm for over 27 years. In his previous role as a project engineer for a manufacturer, Chris assisted in building the engineering department, which resulted in a $100 million increase in sales in less than a decade. He promoted the use of AutoCAD and Pro-Engineer software and oversaw the testing laboratory. As the lab manager, he was responsible for safety, tooling, fixturing, gauging and all engineering aspects for successful operation. As the wire connector product manager, Chris obtained UL/CSA listing, developed new products/systems, and implemented the Pro-Engineer computer aided drafting (CAD) and computer aided management (CAM) systems. He was also a member of Underwriters Laboratories (UL) Industrial Advisory Council (IAC) for 486C -Splicing Connectors.

As a product design engineer, Chris was involved in an innovative automotive battery design, which included product design, CAD modeling, performance testing in electrical connectivity and mechanical structural integrity, design for manufacturing, safety, and cost analysis. In another project engineer role, Chris designed a new product line of systems for the spa industry including directing test lab technicians to perform function, life cycle, safety, and UL tests. He wrote manuals and safety warnings for systems consisting of pumps, heaters, blowers, filters, and controls in a pre-plumbed and pre-wired configuration. He was a member of UL IAC for 1563 - Standard for Spas and Hot Tubs. He also coordinated sales, production, engineering, safety, and quality efforts concerning existing and new products.

Mr. Korinek's expertise includes:

- Fire scene investigations regarding potential electrical and mechanical causes involving appliances, fireplaces and chimneys, structures, and vehicles.
- Water damage claims
- Electrical injury analysis
- Lightning damage analysis

Licenses and Certifications:

Professional Engineer, Licensed in Wisconsin (#30414), Illinois (#062-056692), Michigan (#6201050939), Minnesota (#43174), Iowa (#16902), Indiana (PE10403231), and Florida (#87281)

Certified Fireplace Inspector, F.I.R.E. Service, FP-175L

Project Experience

The sample projects here outline a small sampling of the types of projects and losses Mr. Korinek regularly investigates. For further information or additional examples, please contact EFI Global.

Port City Bakery, Food Processing Plant Fire, Howard/Green Bay, WI
Fire Investigation, Electrical System Analysis
Investigated the origin and cause of a fire in a large food processing plant involving flour conveying systems, a furnace, and a security camera system. Performed arc mapping on the electrical system to assist in determining the origin and cause of the fire. Performed scene and lab exams, provided a report, and provided expert testimony in deposition and trial. Used technology from new research on poor connections to substantiate our conclusions. Prevailed at trial.

Organic Valley Foods, Food Distribution Headquarters, La Farge, WI
Fire Investigation, Electrical System Analysis
Hired by Insurance Carrier for the building to determine the cause of the fire in a metal building with solar panels on the metal roof. Performed scene and lab exams and provided expert opinions on the fire cause. Oversaw the safety of the scene exams where live solar collectors were continually generating dangerous electrical power even after the fire. Identified cause of fire successfully.

S & C Electrical, Electrical Distribution Equipment Manufacturer Fire, Franklin, WI
Fire Investigation, Electrical System Analysis
Performed investigation on Lithium Battery system inside 40’ shipping container for power substation backup to determine the cause of the loss and successfully processed the scene and found the tool that arced to start the fire. Oversaw the safety efforts to have the site evaluated and remediated for HAZMAT materials at the scene and for evidence storage.

Promise Keepers Fire Loss, Denver, CO
Fire Investigation, Electrical System Analysis
Hired by the plaintiff’s team to analyze the crimp connection quality and the conformance to ASTM standard B60. Performed analysis on CT scans of exemplar crimp connections and provided report and expert testimony in deposition.

Residential Natural Gas Explosion, Fond Du Lac, WI
Fire Investigation, Electrical and Mechanical Systems Analysis
Investigated the cause of a natural gas explosion that destroyed a side-by-side condominium, luckily with no one inside the residences.

Shock Injury, West Bend, WI
Shock Investigation, Electrical System Analysis
Hired by the business at which a shock injury occurred. Performed scene and lab exams, provided a written report. Determined the path of electricity and the likely conditions that allowed this current to flow. This case was resolved prior to trial.

Residential Fireplace Fire, DePere/Green Bay, WI
Fire Investigation, Electrical and Mechanical Systems Analysis
Performed investigation on the installation of the fireplace which allowed the back of the fireplace to overheat and ignited building materials. Insufficient clearance to combustibles was the main issue as is often the case with fireplace and chimney fires. Report was written and deposition testimony given to show installation error was the cause of the fire.

Residential Fireplace Fire, Valders, WI
Fire Investigation, Electrical and Mechanical Systems Analysis
Hired by the insurance carrier for the homeowner and performed scene exams to determine how the overheating of the chimney system occurred. An installation error of not removing an airflow barrier which should have been removed allowed the exterior of the chimney to reach temperatures much higher than normal and, along with insulation, which was within the allowable clearance requirements, building materials ignited to start this residential fire.

Court Qualifications/Depositions

Mr. Korinek 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

Professional Experience:

EFI Global, Senior Principle Forensic Electrical and Mechanical Engineer, 2021 – present.

Synergy Forensic Engineering, Owner, Forensic Electrical and Mechanical Engineer, 1994 – 2021

Gardner Bender/APW Tools and Supplies, Senior Project Engineer, 1990 – 1999

Johnson Controls, Project Design Engineer, Jan. 1998 – Dec. 1998

Milwaukee Area Technical College, Instructor, 1991

Kohler Company, Senior Mechanical Engineer, 1986 – 1990

Sta-Rite Industries, Project Engineer, 1979 - 1986

Formal Education:

Bachelor of Science, Electrical Engineering, University of Wisconsin-Milwaukee, Milwaukee, WI, 2002

Bachelor of Science, Mechanical Engineering, Marquette University, Milwaukee, WI, 1979

Specialized Education/Training:

1. International Association of Arson Investigators (IAAI) Wisconsin Chapter 25, General Fire Investigation Seminar, Topics: Scene Preservation and Coordination, NFPA 1321, Arc Mapping and Fire Investigation, Fatal Fires, Firefighter Behavior Health Alliance First Responder Mental Health, Responsibilities of the Fire Investigator, Building Construction Case Study, Challenges to Expert Qualifications, Methodology, and Opinions, Stevens Point, WI, June 2025

2. National Academy of Forensic Engineers (NAFE) Conference, Daytona Beach, FL, January 2024
3. International Association of Arson Investigators (IAAI) Wisconsin Chapter 25, General Fire Investigation Seminar, Topics: Fuel gas fire and explosion, Mobile home standards, NFPA 921 and 1321, Electric vehicles, and Fire deaths, Wausau, WI, September 2023
4. National Academy of Forensic Engineers (NAFE), San Antonio, TX, January 2023
5. Hazardous Waste Operations and Emergency Response (HAZWOPER), 40 hours, 8-hour refresher courses, Certified October 2013
6. International Association of Arson Investigators (IAAI) Wisconsin Chapter 25, General Fire Investigation Seminar, Topics: Internet Profiling & Intelligence Gathering, Case Study Burn Boston Burn, Stevens Point, WI, June 2021
7. National Academy of Forensic Engineers (NAFE) On-line Conference - Forensic Engineering of Pedestrian and Fall Accidents, Electrical Shocks, Forklift Accidents, Ethics, Remote Forensic Inspections, Report Writing, and Publication Review, January 2021
8. NAFE On-line Conference - Forensic Deposition and Court Testimony, Video Depositions, Evidence Handling, Engineering CV Preparation, Daubert Hearing Case Review, August 2020
9. International Symposium on Fire Investigation (ISFI) Science and Technology, National Association of Fire Investigators (NAFI), Itasca, IL - Explosions and Air Infiltration, Floating Neutrals, Alarm and Signaling Systems, Vehicle Fires, Lithium-Ion Battery Fires, Propane Explosion, Space Heater Fires, and Rooftop Solar Fire, September 2018
10. IAAI Wisconsin Chapter 25, General Fire Investigation Seminar, Manitowoc, WI - Residential Electrical and Gas Fires, Semi-Tractor Trailer and Heavy Equipment Fires, Utility Theft, Statewide Information Sharing Systems, September 2017
11. IAAI Wisconsin Chapter 25, General Fire Investigation Seminar, Steven's Point, WI - Fire Pattern Analysis, Basic Explosion Analysis, Identifying Deceptive Behavior, Dehumidifier Case Study, June 2017
12. ISFI Science and Technology NAFI, Scottsdale AZ - Lithium-Ion Batteries, Receptacle Overheating, Arc Mapping, Heating Elements, Circuit Breakers, Vehicle Fires, Case Studies, Corrugated Stainless Steel Tubing (CSST), Fan Coil Units, Battery Cables, Eastern Kentucky University (EKU) Fire Science Program Development, and Energized Structures, September 2016
13. Webinar by Cozen and O'Connor - Lithium Batteries & Subrogation, March 2016
14. IAAI Wisconsin Chapter 25, General Fire Investigation Seminar, Green Bay, WI - Profiling the Fire Setter, Gas Explosions, Hazardous Materials for the Fire Investigator, and Marine Fires, September-October 2015
15. IAAI Wisconsin Chapter 25, General Fire Investigation Seminar, Stevens Point, WI - Preparing for Daubert Challenges, Civil Litigation Issues, Case Studies, Analytical Interviewing Techniques, Materials and their Reactions to Fire, and Photography, National Fire Protection Association (NFPA) 1033 – 1.3.7 (1, 8, 10, 11, and 15), June 2015
16. IAAI Wisconsin Chapter 25, General Fire Investigation Seminar, Green Bay, WI - Smoke detectors, Ignitable liquid research, evidence collection, forensic examination of fire debris, Vertical ventilation research study, and investigative programs for iPads and tablets, NFPA 1033 – 1.3.7 (2, 3, 5, 6, 8, 9, 10, 11, 13, 14, 15, 16)., September-October 2014
17. National Association of Subrogation Professionals (NASP) Subro College 200 Training Session, Marshfield, WI - Investigation, expert reports, to litigation, to settlement, September 2014
18. IAAI Wisconsin Chapter 25, General Fire Investigation Seminar, Stevens Point, WI -Managing Complex Scene Investigations, Fire Dynamics, and Fire Protection Systems, Forensic Examination of Fire Effects on Human Remains, Building Codes for Fire Investigators, Hazardous Materials (HAZMAT) Scenes and Case Study on Columbus, WI Chemical Plant Explosion, June 2014

19. IAAI Wisconsin Chapter 25, General Fire Investigation Seminar, Brookfield, WI - Wildland Fire Investigation, NFPA 1033, Qualifications, Vehicle Fire Investigation, Arc Mapping, and Fuel/air Explosions, November 2013
20. Dane County Arson Response Initiative (DCARI), Steve Carson, Elevated Fires, September 2013
21. Chevrolet Volt Operation Presentation: Holz Motors, Milwaukee, WI, April 2013
22. Fire and Materials (FM) Conference, San Francisco, CA - Interscience Communications, January 2013
23. IAAI Wisconsin Chapter 25, General Fire Investigation Seminar, Pewaukee, WI, November 2012
24. IAAI Wisconsin Chapter 25, Advanced Seminar, Manitowoc, WI - Building Construction, CSST Fires, Arc Mapping, NFPA 921 Updates, Juvenile Fire setters, and Case Studies, November 2011
25. National Propane Gas Association (NPGA) Certified Employee Training Program, Green Bay, WI, 1.0 Basic Principles and Practices, July 2011
26. IAAI Advanced Seminar - Forensic Investigation of Vehicle Fires, April 2011

Affiliations:

International Association of Arson Investigators (IAAI)
Fireplace Investigation Research and Education (F.I.R.E)
National Academy of Forensic Engineers (NAFE)
National Society of Professional Engineers (NSPE)
National Fire Protection Association (NFPA)
American Society of Mechanical Engineers (ASME)
Institute of Electrical and Electronic Engineers (IEEE)

Courses Instructed/Guest Lecturer:

"Goals, Methodology, and Tools for Investigating Electrical Shocks", NAFE, January 2021

"Poor Electrical Connections: Physical Features, Material Characterization, and Newly Identified Characteristic Traits, Before and After Fire Exposure" (Copper-Copper, Brass-Brass), ISFI Science and Technology NAFI, September 2018

"Pre- and Post-Flashover Characteristics of an Electrically Heated Poor Connection between Copper and Steel", Fire and Materials Conference, Interscience Communications, January 2013

"Investigation and Insurance Litigation of a Fire" Forensic Electrical Engineering aspects of Fire Investigation, National Business Institute (NBI), December 2011

"Performing Engineering Investigations for Subrogation", National Association of Subrogation Professionals (NASP), June 2011

"Mechanical Systems, Principles, and Identification, including Heat Transfer, Venting, Fireplaces and Chimneys, and Chimney Testing", International Association of Arson Investigators (IAAI) Wisconsin Chapter 25, June 2010

"Advancements in Electrical Fire Investigation", Wisconsin Fire Loss Group (WFLG), October 2009

"Improving Electrical Safety in Tall Buildings", University of Cantabria, Santander, Spain, October 2006

"Electrical Poor Connections, What to Look for", Racine County Fire Investigation Task Force, March 2004

"Finding Evidence of Electrical Fires", Winnebago County Fire Investigation Task Force, July 2002

"Understanding Electricity and Electrical Fires", Core Engineering, 2002

"Electrical Overheating", International Association of Arson Investigators (IAAA), November 2001

"Understanding Electricity and Electrical Fires", International Association of Arson Investigators (IAAA), May 2001

"Electrical Overheating", Gateway Technical Institute, 2000.

"Understanding Electricity and Electrical Fires", Milwaukee County Safety Academy, 2000

"Electrical Overheating", Washington County Fire Investigation Task Force, 1999, 2000

Publications

Korinek, Chris and Timothy, "Guide for Fire and Explosion Investigations" - NFPA 921, Newly published aspects of Poor Electrical Connections, 2024 edition.

Korinek, Chris. "Methodology and Tools for Forensic Engineering Analysis of Electrical Shocks". National Academy of Professional Engineers (NAFE), 2023.

Korinek, Chris. "Guide for Fire and Explosion Investigations" - NFPA 921, Fireplace and Chimneys, Member of Committee for writing the Building Systems Chapter, Heating Systems, 2020

Korinek, Chris and Timothy, "Poor Electrical Connections: Physical Features, Material Characterization, and Newly Identified Characteristic Traits, Before and After Fire Exposure" (Copper-Copper, Brass-Brass), ISFI Science and Technology NAFI, September 2018

Korinek, Chris and Timothy, "Pre- and Post-Flashover Characteristics of an Electrically Heated Poor Connection between Copper and Steel", Fire and Materials Conference, Interscience Communications, January 2013

Korinek, Chris. "The Basics of Electrical Overheating", Electrical Construction and Maintenance (ECM), June 2009

Korinek, Chris. "Safer Electrical Systems in Tall Buildings", International Congress, 2006

Korinek, Chris. Photos appearing in: "Ignition Handbook" by Vytenis Babrauskas Ph.D., Fire Science Publishers, 2003

Korinek, Chris. "Evaluation of Electrical Burn Injuries Using Impedance Measurements," University of Wisconsin – Milwaukee, Mechanical Engineering Department, 2002

Korinek, Chris. Select Chapters in "Kirk's Fire Investigation," John D. DeHaanas5th, 6th, and 7th Editions, Prentice Hall, 2002, 2006, 2011

Korinek, Chris. "Classification of Electrical Overheating Modes," Fire and Arson Investigator, July 2001

Korinek, Chris. "Understanding Electricity and Electrical Fires," Video, May 2001

Korinek, Chris. "Service Tips - Ground Fault Circuit Interrupter," Pool and Spa News, November 1984

Korinek, Chris. "Shedding Light on the Purposes of the Ground Fault Circuit Interrupter," Pool and Spa News, April 1982

Patents

1. Twist-on wire connector adapted for rapid assembly, 7/2/2002, No. 6,414,243
2. Twist-on wire connector with torque limiting mechanism, 6/26/2001, No. 6,252,170
3. Torque limiting socket for twist-on wire connectors, 3/6/2001, 6,198,049
4. Power operated torque driver for screw-on wire connectors, 7/28/1998, No. 5,784,935
5. Wire stripper with integral cable sheath cutter, 3/28/1998, No. 5,732,471
6. Twist-on Wire Connector, No. DES. 379,348
7. Insulating cover for a wire joint, 12/13/1994, No. 5,373,107
8. Shock absorber assembly for a table or the like, 3/20/1990, No. 4,909,473

Honors and Awards:

First Place - Senior Design Team Competition, University of Wisconsin – Milwaukee, 2002
General Manager's Award, Certificate of Excellence, Applied Power/Gardner Bender, H1/H2 Wire connector designs and manufacturing/tooling implementations, 2006
President's Award, Certificate of Excellence, Applied Power/Gardner Bender, G1/G2 Wire connector designs and manufacturing/tooling implementations, 2004
EMTI - Delavan Rescue Squad Inc., 1983-1986
Customer Care Award, Sta-Rite Industries, Portable Spa System Design - Fort Wayne Pools, 1983