





# TODD HARTZLER

PROFESSIONAL ENGINEER - ELECTRICAL

## CONTACT

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 HECS.US

## EDUCATION

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### MASTER of SCIENCE

(Engineering)

MN State University, Mankato  
1999

### BACHELOR of SCIENCE

(Electrical Engineering)

Mankato State University  
1997

## LICENSES

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### Professional Engineer - PE

Arizona

Illinois

Iowa

Kansas

Minnesota

Missouri

Nebraska

North Dakota

South Dakota

Texas

## SUMMARY

Todd Hartzler is a Forensic Electrical Engineer with over 2,200 cases of experience investigating the electrical aspects of: Fires (cause vs effect, arc mapping); Equipment Damage (fire, water, lightning, electrical surge); Personal Injury (electrical shock, worksite safety, training) and Electrical Codes & Standards (NFPA 70 National Electrical Code, National Electrical Safety Code, NFPA 70E Electrical Safety in the Workplace). He has provided Expert Testimony in more than 40 depositions and trials for State and Federal courts in civil and criminal cases.

## WORK EXPERIENCE

### **Hartzler Engineering & Consulting Services, Clive, IA**

Forensic Electrical Engineer | 2023-Present

### **Independent Forensic Investigations Corporation, Urbandale, IA**

Co-Founder, Vice President & Forensic Electrical Engineer | 2006-2023

- Business management, supervision of engineering services and staff
  - Develop KPI's and lead monthly staff meetings
  - Develop back office systems for IT, accounting, payroll, case management
  - Oversee regulatory and business licensing compliance
  - Work with outside accounting, legal, and insurance vendors to provide our staff and business with appropriate services
- Site and Lab inspections, documentation, photography, evidence collection
  - Plan and lead investigator/expert group inspections. Work out schedules with 2-20 investigators, develop written protocol (outline) for safety and investigation steps, key points, and methodology. Lead group introductions, Q&A, and negotiate concerns.
- Review electrical plans, environmental control programming, alarm systems
- Analysis of circuit breakers and fuses
- X-ray imaging analysis
- Author and review engineering reports
- Present investigation conclusions to insurance companies and legal counsel
- Provide sworn expert testimony in depositions and courtroom trials
- Produce and present engineering/technical training classes for industry seminars, clients, and the Iowa Fire Service Training Bureau

### **Leuwerke & Associates, Des Moines, IA**

Forensic Electrical Engineer | 2004-2006

### **OnSite Engineering & Forensic Services, Prior Lake, MN**

Forensic Electrical Engineer | 2000-2004

### **Anderson Engineering of New Prague, New Prague, MN**

Forensic Electrical Engineer | 1999-2000

Electrical Engineering Intern | 1996-1998

## ASSOCIATIONS

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### NSPE

National Society of Professional Engineers

### NFPA

National Fire Protection Association

### IEEE

Institute of Electrical & Electronic Engineers

### IAAI

International Association of Arson Investigators

## PRESENTATIONS

### **Fire/Arson Investigator 2-Week School – IA Fire Service Training Bureau**

Fundamentals of Electricity and Electrical Arc Mapping of a Fire Scene | 2006-2010, 2023

### **Iowa IAAI Annual Fire Investigation Conference**

Fire Investigations Involving LiPo Batteries | 2017

An Electrical Analysis of CSST | 2009

### **Iowa-Nebraska IASIU 2014 Annual Seminar**

Top 3 Types of Electrical Items Examined for Fire Causation | 2014

### **Nebraska IAAI Annual Fire Investigation Conference**

Fundamentals of Electricity; Electrical Arc Mapping of a Fire Scene; An Electrical Analysis of CSST | 2009

## PROFESSIONAL CONTINUING EDUCATION

### **IEEE Product Safety & Compliance Engineering Symposium | 2020, 2022, 2024**

- Evolving the Safety Approach to Address the Expanded Applications of Lithium Ion Batteries
- Electrical Fire Patterns in Vegetation
- LV Circuit Breaker Ground Fault Protection Utilizing Primary Injection Test Method
- Water Infiltration in Common Residential & Commercial Power Cables
- Contact Burn Injuries Parts 1&2 Effects of Contacting Object Conditions on Burn Thresholds
- Wireless Power Transfer Fundamentals, by Tom Tidwell
- Simulation Based Testing for Early Safety Validation of Robot Systems by T Huck
- Basic Product Safety for Electronic Products by Julio Posse
- Deeper Dive into Product Safety Requirements by John Allen
- Electric Shock, Compliance 101 by Peter Perkins
- North American and IEC standards: A Comparison in the Approach to Safety of Energy Storage Systems, by Laurie Florence
- The Need for Adequate Sampling in a Well-functioning Market Surveillance System, by Ivan Hendrix
- Enhancing the Safety for Immersive Technology Equipment (VR/AR/MR), by Flore Chiang
- UL 60335-1 Ed. 6 - Standard for Safety of Household and Similar Electrical Appliances, Part 1, Luiz Claudio Bonilla de Araujo
- Demystifying Batteries from Cell to End Product, Rich Byczek
- New FCC RF Exposure Compliance Rules, Vina Kerai
- Forensic Analysis of Trucking and Equipment Accidents and Failures, Patrick D Riedlinger
- Origins and Basics of Electrical Fire and Shock Protection, Mike Sherman
- Hydrogen Technologies for Refueling Station Facilities, Bob Deadman
- Designing Industrial Control Panels for Use in Hazardous (Classified) Locations, Aaron Roberts
- USB Breaking the 100W Barrier, William Susiene
- Risk Assessment Basics for EMC, LVD and RED Directives, Patricia Knudsen
- Datacenter Liquid Cooling Revolution, William Susiene
- Cybersecurity: Definition, Importance and Scope within Product Regulatory Compliance, Anoop Tewari
- Magnetic Resonance (MR) Safety Testing for Implantable Active and Passive Medical Devices. Norbert Kuala, Cirtec, and Ji Chen, University of Houston

## PROFESSIONAL CONTINUING EDUCATION

### **IEEE Product Safety & Compliance Engineering Symposium | 2013, 2015**

- Rebuilt Medical Electrical Equipment
- HBSE and Risk Assessment
- Estimation of Failure Rate for Products Based upon Component Failure Rates
- Human Error and Product Safety
- EMC Troubleshooting and Tools
- Design Recommendations for Single and Multi-cell Lithium Ion Battery Packs
- Health Monitoring of Lithium Ion Batteries
- Combustion Hazards of Lithium Ion Batteries
- Strive for Zero Defect in Fail Safe Control Systems
- Transient and Over-stress Protection
- Post Fire Analysis of Solid State Devices
- ESD Design, Troubleshooting
- Basic Requirements of a Product: Going from the Plug through the Enclosure and Components
- Dielectric Strength Testing Transient Overvoltage Withstand Testing
- Touch Current and Electric Shock Tutorial
- Introduction to IEC 60335 - Household and Similar Electrical Appliances - Safety
- Electrical Safety Testing in a Production Environment
- Human Factors Engineering in Medical Devices
- Failure Mode & Effects Analysis (FMEA) Methods and Accelerated Testing Concepts
- Seawater Immersion Abuse Testing of Electric and Hybrid Vehicles
- Lesson Learned from Battery Failures
- Computational Analysis of Electrical Shock Hazard and Safety Evaluation using Human Body Models
- The General Motors Ignition Switch Recall
- HBSE and Interlock Schemes. The Interlock and Its Parameters
- USB Port and Power Delivery
- Application of HBSE to the Fire Risk of Clothes Dryers
- New Approaches to Safe Ventilation of Equipment Containing Lead Acid and NiCd Batteries
- Assessing Hazards of Systems vs Products: Case Study of Roof-Mounted Photovoltaic Panels and Fire Testing to ANSI/UL 1703

### **Electrical Safety in the Workplace, NFPA 70E**

- National Fire Protection Association Seminar, 14-hours | 2010
- How OSHA uses NFPA 70E | 2021

### **International Association of Electrical Inspectors (IAEI) 12-hrs, NE Annual Conference | 2012**

#### **Iowa IAAI Annual Fire Investigation Conference**

2006, 2007, 2009, 2010, 2011, 2012, 2013, 2015, 2016, 2017, 2018, 2019, 2021, 2022, 2023

- Burn to Learn - 7 hours of live burn testing with Jamie Novak
- Vehicle Fires, parts I & II, Trace Lawless
- Fire Scene Photography
- Social Media and Technology in Investigations
- Methamphetamine Labs - Awareness & Hazards
- Evidence Collection and Processing, Jess Dunn
- Alternative Fuel Vehicles and Their Hazards, parts I & II, Trace Lawless
- Demystifying Fire Suppression Systems, Margueritte Hickman
- Arc Mapping

## PROFESSIONAL CONTINUING EDUCATION

### **IAAI International Training Conference | 2006, 2016, 2018**

- Flammable Gas Explosions from the Engineer's Perspective, John Schumacher
- Validation of Hypothesis with Scientific Methods (Fire Re-creation), Joe Urban, Ph.D.
- Reconstruction of the Fire Scene with Electrical System
- Evidence: Notification, Examination, Dealing with Spoliation
- Lightning, a Striking Phenomenon
- The Four Corners of Origin Determination: Witness Statements, Fire Patterns, Arc Mapping and Fire Dynamics.
- A Decade of CSST Experience, Mark Goodson
- Tomorrow's Investigations – Smart Homes, Electric Cars and an Internet Connected World. Ron Kilgore and Michael Custer
- Cooperative Response to Fire Investigations, Phil Brown & Bob Juergens
- Flashover, Jim Quintiere
- The Discovery and Science of Smart Meter Fires – Introduction to the discovery of Radio Frequency
- Radiation and the related breakdown of electrical wiring insulation leading to fire causation. Vito Babrauskas and James (Jim) Brown
- Recovering Data from Fire Damaged Electronics, Tully Kessler
- Commercial Kitchen Fires, R. Kirk Hankins, Chip Barnhart
- Application of Two Comparative Reduced Scale Enclosure Burns for Investigation and Hypothesis Testing, Mark Campbell
- Alarm Science Boot Camp for Investigators, Jeff Zwiirn
- Analysis of Pinched Cords & Overdriven Staples, Michael Keller, Cameron Novak
- Managing Complex Scene Investigations - West TX Fertilizer Plant Explosion
- Alternative Fuel Vehicles and Their Hazards, Trace Lawless
- Thermodynamics: Defined & Discussed
- Review of Soil Gas Migration in Natural Gas Explosions
- New Equipment and Technology for Fire Investigator
- Dust Explosion Hazards
- Lithium Ion Batteries: Implications in Fire and Explosion Investigations
- Arc Mapping Research and Updates

### **Investigation of Electrical and Appliance Related Fires, 2008**

IAAI and Association of Home Appliance Manufacturers, 24-hours

- Appliance Fire Investigation in the Legal Arena, Tim Mullin
- Evidence Identification, Recovery, Storage and Presentation, Jim Allen
- Electric Heat Generation Mechanisms, Jim Olson
- Electrical Components, Scott Barnhill
- Materials in Appliance Design, Wayne Morris
- Design, Construction, and Maintenance of Appliances, Scott Barnhill
- Wiring, Extension Cords, Receptacles and Gas Connections, Wayne Morris
- Forensic Examination in Fire Investigation, Randall Bills
- Analysis of Electronic Devices in Area of Origin-Result or Cause? Donald Hoffman

## PROFESSIONAL CONTINUING EDUCATION

**Live Burn Cells, Grinnell Mutual Re-Insurance Co. | 2009, 2010**

**The Solar Energy Course for Architects, Engineers and Contractors, 6.5-hrs, HalfMoon LLC, | 2010**

**National Society of Professional Engineers (NSPE)**

- Annual Convention | 2005
- NSPE online technical and ethics courses | 2014, 2015, 2017, 2019, 2020, 2021, 2022, 2023

**Minnesota Society of Professional Engineers MNSPE Fall Learning Event | 2004**

**National Expert and Witness Litigation Seminar Presented by SEAK | 2004**

**NFPA World Safety Conference | 2003**

**Minnesota IAAI Annual Fire Investigation Conference**

2000, 2001, 2002, 2003, 2004

**Investigation of Gas and Electric Appliance Fires, 14-hrs, by Fire Findings | 2001**

**Minnesota Institute Legal Education (MILE) Fire Seminar | 2000**

**Vehicle Fires and Investigation, 8-hrs, Hosted by IAAI, IASIU and AVCAM | 1999**

**Wisconsin IAAI Annual Arson Seminar | 1999**

## EXPERT TESTIMONY - PAST FOUR YEARS

**John Kugler / American Family Mutual Ins. v.**

**McCook Public Power District / Bruce & Esther Hampton | 2021**

Nebraska District Court, Red Willow County, CI 19-40, Deposition for Plaintiff

**Travis Kroneman / Farm Bureau v. HP Inc. | 2021**

United States District Court, Northern District of Iowa - Eastern Division, 6:20-cv-02006-CJW-KEM, Deposition for Plaintiff

**Will Bates Jr. v. State Farm Fire & Casualty | 2021**

Iowa District 5 Court, Guthrie Center, LACV08009, Trial for Defendant

**State v. McCoy, Lucas Anthony | 2022**

Iowa District 8 Court, Fairfield, 08511 FECR005103, Trial for Defendant

**Farmers Mutual Ins. of Nebraska v. Deere & Company d/b/a John Deere Company | 2022**

United States District Court of Nebraska, 8:21-cv-234, Deposition for Plaintiff

**Raya Nsheiwat and Shalabh Kumar v. American Family Ins. | 2023**

United States District Court, District of Southern Iowa, 3:21-cv-00068-SHL-SBJ, Deposition for Defendant

**Jeff & Kristy Skarin v. State Farm | 2024**

Iowa District Court, Harrison County, LACV031058, Trial for Defendant