KRISTEN L. LUSSIER, P.E., CFEI, IAAI - CFI
SENIOR STAFF CONSULTANT

kllussier@engsys.com

As Senior Staff Consultant in the fire and explosion practice, Kristen investigates fire and explosion incidents across the United States with Engineering Systems Inc. (ESi). Kristen has performed on-site and laboratory investigations regarding hundreds of fires and explosions related to a variety of industries including residential, commercial, industrial, automotive, and fuel gas systems. Utilizing her degrees in mechanical engineering and fire protection engineering, Kristen provides clients with expert consultation regarding fire origin and cause, fire dynamics, fire testing, gas dispersion, and fire suppression systems. She also consults on mechanical systems and compliance with industry codes and standards. Kristen developed ESi Houston's explosion chamber, which is capable of various testing including the competency of ignition sources as well as flammability of diffuse fuel in air mixtures. She is a skilled problem solver and leverages the diverse resources of ESi to solve complex problems.

Prior to joining ESi, Kristen worked at Fiat Chrysler Automobiles as a Design Release Engineer, where she was responsible for the design, development, and production of HVAC controls and sensors for twelve different vehicle lines. She also conducted testing and validation of new software and hardware, managed issues for program launches, and authored and maintained specifications for design and validation activities.

Kristen is a licensed professional engineer in the state of Texas.

Areas of Specialization

Fire and Explosion
Oil, Gas & Industrial
Gas Dispersion
Residential Fires & Explosions
Fire Protection Systems
Heavy Equipment Fires
Vehicle Fires

Education

Master of Engineering, Fire Protection Engineering, University of Maryland, 2023.
Bachelor of Science, Mechanical Engineering and Mathematics (Cum Laude), Tufts University, 2013.

Licensed Professional Engineer (P.E.)

State of Texas   License No. 138384
NCEES Record   ID No. 20-079-69

Professional Affiliations/Honors

American Society of Mechanical Engineers (ASME)

Member

International Association of Arson Investigators (IAAI)

Certified Fire Investigator, IAAI-CFI, #03-0328192, 2024

Member

National Association of Fire Investigators (NAFI)

Certified Fire and Explosion Investigator, CFEI, # 24691-14303, 2020
Member

National Fire Protection Association (NFPA)

Member

Society of Fire Protection Engineers (SFPE)

Member

Positions Held

Engineering Systems Inc., Conroe, TX

Senior Staff Consultant, 2021 – Present
Staff Consultant, 2019 – 2020

Fiat Chrysler Automobiles, Auburn Hills, MI

Design Release Engineer, 2013 - 2018

Continued Education

From Evidence to Insight: Forensic Evaluation of Gas-Related Explosions Using Damage Indicators,

Engineering Systems, Inc., Akansha Khandelwal, 2025

Failure Modes of NG Risers Exposed to External Fire, Engineering Systems, Inc., Erich Baine, 2025

Fire Fatality Investigations, Engineering Systems, Inc., Jennifer Nara, 2024

Self-Heating of Polymeric Material (LTLTIW), Engineering Systems, Inc., Mike Hanks, 2024

Kitchen Fire Suppression Systems, Engineering Systems, Inc., Scott Dillon, 2024

Fire Protection Systems, CFItrainer.net, 2024

ENFP662 Performance Based Design, University of Maryland, 2023

ENFP663 Advanced Fire Risk Modeling, University of Maryland, 2023

The HAZWOPER Standard, CFItrainer.net, 2023

ENFP661 Forensic Fire Analysis, University of Maryland, 2023

Hazardous Waste Operations and Emergency Response (OSHA HAZWOPER), 2023

Asbestos Awareness Training, 2023

ENFP613 Advanced Life Safety Analysis, University of Maryland, 2022

IAAI Expert Witness Courtroom Testimony Course, IAAI, Wayne Tyson, 2022

ENFP664 Advanced Industrial Fire Safety, University of Maryland, Arnaud Trouvé, 2022

ENFP653 Advanced Fire Suppression, University of Maryland, Jason Sutula, 2022

ENFP625 Advanced Fire Modeling, University of Maryland, Arnaud Trouvé, 2022

Motor Vehicle Fire Investigation (Three-Day), IAAI, 2022

Investigating Motor Vehicle Fires, CFITrainer.net, 2022

ENFP652 Fire Assessment Methods, University of Maryland, Marc Janssens, 2021

ENFP651 Advanced Fire Dynamics, University of Maryland, Stanislav Stoliarov, 2021

ENFP655 Smoke Control, University of Maryland, James Milke, 2021

NFPA 1033 and Your Career, CFITrainer.net, 2021

The Practical Application of the Relationship Between NFPA 1033 and NFPA 921, CFITrainer.net, 2021

The Scientific Method for Fire and Explosion Investigation, CFITrainer.net, 2021

Ethics and the Fire Investigator, CFITrainer.net, 2021

PE Mechanical Machine Design & Materials Live Online Course, Ray Burynski, 2020

Fire Investigation Training Program – Pittsburgh – Main Program, CFEI Training, 2020

An Analysis of The Station Nightclub Fire, CFITrainer.net, 2019

Charleston Sofa Super Store Fire, CFITrainer.net, 2019

Digital Photography and the Fire Investigator, CFITrainer.net, 2019

Documenting the Event, CFITrainer.net, 2019

Physical Evidence at the Fire Scene, CFITrainer.net, 2019

Writing the Initial Origin and Cause Report, CFITrainer.net, 2019

Fire Flow Analysis, CFITrainer.net, 2019

NRTLs in the Forensic World, Engineering Systems Inc., Perry Hopkins, 2019

Cargo Vessel MV Courage Vehicle Fire, Engineering Systems Inc., Hernan Mercado, 2019

Case Study – Bottle Rockets, Engineering Systems Inc., Michael Pratt, 2019

VOC Detection Camera, Engineering Systems Inc., Matt Wilbur, 2019

Self-Heating, Engineering Systems Inc., Dale Mann, 2019

Case Study – Oil Field Fires, Engineering Systems Inc., Michael Craddock, 2019

Case Study – Williams v. CenterPoint, Engineering Systems Inc., Amy Gray, 2019

Gas Dispersion Analysis, Engineering Systems Inc., Shireen Afshan, 2019

29 CFR 1910.120 Hazardous Waste Operations & Emergency Response, Engineering Systems Inc., Scott Dillon, 2019

Forensic Analysis Involving Fugitive Natural Gas and Propane, Weyler, M., Weyler Engineering, PC, SunCam, 2019

Presentations

1. **K. L. Lussier**, "Live Burn Discussions" and "Q&A Session", ESi Training Day. May 2025.
2. **K. L. Lussier,** "Fire Scene Best Practices", Engineering Systems, Inc., Aurora, IL. August 2024.
3. **K. L. Lussier**, "Analyzing AMR and Smart Meter Data", presented to various legal and insurance audiences. 2024.
4. **K. L. Lussier,** H. Mercado, "Electric Vehicle Fires", DRI Fire Science Conference. Washington D.C. August 2023.
5. **K. L. Lussier,** "Proactive Investigation", ESi Lessons Learned Day. July 2023. Additional presentation at VP meeting. October 2023.
6. **K. L. Lussier,** D. Estrada, **"**What is Forensic Engineering: How does it relate to me?" Society of Women Engineers Local Detroit Conference. February 2023.
7. **K. L. Lussier,** "Gas Leak Residential Explosion Case Study", ESi Lessons Learned Day. July 2022.