Adam Bovie, P.E., IAAI-FIT

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PROFESSIONAL PROFILE

Mr. Bovie is a Senior Managing Engineer at Brillouin Consulting and a licensed Professional Electrical Engineer specializing in forensic investigation and failure analysis of electrical and electronic systems. He has led investigations for insurance, legal, government, aviation, and manufacturing clients across a wide range of complex incidents. His expertise includes Lithium-ion battery failures — from consumer products to utility-scale BESS events — as well as analysis of data ranging from aviation FDR / CVR data to utility SCADA records during fire and energy storage incidents. He has been retained on matters involving IoT hardware hacking, arc flash events in renewable energy systems, and failure analysis of hydrogen buses and battery electric vehicles. Mr. Bovie has presented at the University of Southern California and at major industry events including the California Conference of Arson Investigators, CAMX, and the IEEE Product Compliance Symposium. His published work includes case studies and best practices on the use of CT radiography in accident investigations. He is certified as an IAAI Fire Investigation Technician (IAAI-FIT) and holds memberships in IEEE, NSPE, IAAI, NAFI, and CCAI. His continuing education includes FEMA and IAAI coursework in fire/explosion investigations, and specialized training in ICS and cyber-physical security from InGuardians and Black Hat.

POSITIONS

Brillouin Consulting — **Orange County Area, CA**
Senior Managing Engineer — Jun 2025 - Present
Lead expert in electronic devices, electrical systems, control systems, Li-ion battery controls and protection. Adam's areas of specialization incudes, but is not limited to: utility scale battery energy storage system (BESS) risk assessment and FA; consumer and Industrial Lithium-ion battery failures; data science including aviation FDR, CVR and electric utility SCADA / relay data; electric & alternative fuel vehicle fires; PCB & electronic component failures; electrical fire, arc flash, and explosion investigation; electronic control system software & hardware failures; EM interference & radio communications failures; identification of counterfeit and malicious components within the supply chain; 3D-Computed Tomography (CT) analysis of products; risk assessment & exploitation of industrial control systems ; software & hardware Internet-of-Things (IoT) device analysis and cybersecurity risk assessment; wildfire origin & cause proximal to power & communications infrastructure

Engineering Systems Inc. — **Anaheim, CA**
Senior Staff Consultant — Oct 2022 - Jun 2025

Kars' Advanced Materials — **Anaheim, CA**
Principal Electrical Engineer — Feb 2022 - Oct 2022

Kars' Advanced Materials — **Anaheim, CA**
Origin & Cause Investigator — 2018 - 2022

Kars' Advanced Materials — **Anaheim, CA**
X-Ray Tomography Specialist — 2017 - 2022

Kars' Advanced Materials — **Anaheim, CA**
Technical Specialist — 2015 - 2017

ACADEMIC CREDENTIALS

Arizona State University — **Tempe, AZ**
Bachelors of Science, Electrical Engineering (ABET, Cum Laude) — 2022

University of California — **San Diego, CA**
Bachelors of Arts, Music — 2006

California State University, Fullerton — **Fullerton, CA**
California SB-2142 Teaching Credential — 2010

ATF / IAAI — **Huntsville, AL**
IAAI Fire Investigation Technician — 2018

IAAI Vehicle Fire Investigation — **Newport Beach, CA**
Certificated Training — 2019

IAAI Marine Fire investigation Training — **Irvine, CA**
Certificated Training — 2025

LICENCES & CERTIFICATIONS

- Professional Engineer, CA (E24063)
- NFPA Certified Fire Inspector

PROFESSIONAL AFFILIATIONS

- Institute of Electrical and Electronics Engineers (IEEE)
- National Society of Professional Engineers (NSPE)
- National Association of Fire Investigators (NAFI)
- California Conference of Arson Investigators (CCAI)
- International Association of Arson Investigators (IAAI)

PUBLICATIONS | PRESENTATIONS

- Kar N.K., Bovie A., Roig T., “The Complimentary Use of 3D X-ray Micro-Computed Tomography with Traditional Metallography,” Advanced Materials and Processes, January/February 2022.
- Kar N.K., Bovie A., “Failure Analysis of a Composite Rudder Stock using 3D X-Ray Microcomputed Tomography,” Journal of Failure Analysis and Prevention (2019) Accepted.
- “Oh CELL No!: The Hidden Risks and High Costs of Low-Quality Battery Systems,” IEEE Product Safety Engineering Society International Society of Product Compliance Engineering Symposium, Westin St. Francis, San Francisco, May 2025
- "Save that part! Using industrial CT, SEM, and microscopy to improve composite materials," The Composites and Advanced Materials Expo. Anaheim Convention Center, Anaheim, CA, October 2022
- "Electrical Fire Case Study & Live Test Burn with Instrumentation," California Conference of Arson Investigators Roundtable. Chino, CA, August 2022
- “CT Scans - Hollywood vs. Reality, and Best Practices for Getting Answers," California Conference of Arson Investigators Training Seminar. Anaheim, CA, June 2022

SELECTED PROJECT EXPERIENCE

- Renewable Energy – Utility Scale Battery Energy Storage System (BESS)
  - Investigated the failure of a battery energy storage system (BESS) and subsequent highly publicized fire spread. Analyzed SCADA system data to isolate the failure location to a power conversion unit used in multiple locations. Further isolated the failure using environmental anomalies specific to a single location. Performed extensive video analysis to show a lack of basis in opposing expert hypothesis. Performed further analysis and discovered key indicators of incipient failure. Assisted client in implementing operational changes and data analysis to prevent further incidents.
- Electrical Failure – Investigation of Public Utility Equipment in Fire Investigation
  - Investigated the electrical infrastructure associated with a brush and structure fire which resulted in the destruction of a large recreational facility. Reviewed previous expert report and re-inspected locations. Irregularities in evidence collection and preservation by the utility were seen. Analyzed line geometry, circuit protection, and collected evidence to determine root cause. Presented findings at mediation and secured a favorable settlement within hours.
- Aviation – FDR and CVR Analysis with AIS Data Integration
  - Investigated an incident during a historical blizzard event in which a commercial aircraft ingested a large amount of snow into an outboard engine during taxiing operations. Data analysis of EDR and CVR when combined with AIS position data showed pilot did not heed NOTAMS regarding cleared area locations. EDR data further showed pilot exacerbated damage by attempting to restart an engine contaminated with FOD and completely obstructed by snow. Secured settlement favorable to client.
- Industrial Electrical Failure – Large Offshore Aerospace Factory Fire
  - Investigated a $20M fire loss involving an in-tank heater at an airframe parts manufacturing facility located offshore. Investigation revealed the heater had been modified by the end user and critical safety features had been removed. Inspection further revealed the addition of an off-the-shelf light timer to activate the unit with no operator present in the factory and no safety mechanism on the device. Produced a report and media which enabled client to be released with prejudice from the case.
- Medical Devices – Communications Failure
  - Investigated a failure involving a medical alert device which was failed to activate. Using software defined radio tools and protocol analysis, it was determined that the device base station was incorrectly programmed and did not alert the user or the alert monitoring service of a dangerous condition.
- Medical Devices – Design Defect
  - Investigated a component level failure involving medical equipment suffering abnormally high failure rates. Schematic analysis revealed a design change which omitted protection circuitry and allowed back-EMF to damage a critical component. Using custom testing apparatus, it was determined that a specific sequence of commands would cause the issue, which was duplicated at-will. Repudiated analysis by opposing expert claiming ESD as the root cause with at-will demonstration of failure in an ESD controlled environment. Assisted in design FMEA of next-generation unit and retrofitting of current units.