

FIRE PROTECTION ENGINEERING

TOP FACTORS IN A FPE FORENSIC INVESTIGATION: BY THE NUMBERS



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Across the world, the term for a fire protection engineer (FPE) may change but the basis of the work is the same: to identify fire risk and hazards, and design ways to control, detect, or suppress fires. FPEs have expertise in different types of systems used across multiple industries and can help determine not only the cause but also any potential liability.

Forensic FPEs can help pinpoint fire origin and cause through applications of science and engineering.

3 Common Scenarios in Forensic FPE Investigations:

1. Faulty or defective fire protection systems
2. Improper maintenance or installation of fire protection systems
3. Structure ill-equipped to mitigate fire properly through systems or equipment

What do all three of these have in common? They are all part of a FPE function or failure.

2 Main Factors in a FPE Evaluation:

1. Fire Protection System Functions:

- Active systems (sprinkler and alarm systems)
- Passive systems or alarm systems
- System performance
- Smoke evacuation systems

According to the NFPA's annual fire department experience survey, fires considered large enough to activate sprinklers operated sprinklers 92% of the time and were effective in controlling 96% of the fires in which they operated.

2. Fire Protection System Failures:

- Product failures (fittings, piping, sensing devices)
- Improper installations or fabrication issues
- Improper maintenance/testing of the systems
- System or process failure (change in hazard)

Aside from the most common scenarios, there are also a number of reasons in which you may need to bring in a FPE due to the complexity of a claim.

6 Reasons an FPE Might be Needed

1. High Value Cases

- Ensure proper investigation was followed (especially when there is a potential for litigation)

2. Cases Involving Complex Systems

- Pumped water supplies
- Dry pipe systems
- Pre-action/deluge water systems
- Water mist systems
- Foam systems
- Gaseous extinguishing systems
- Marine
- High rise/atrium
- VESDA, UV/IR, or linear beam detection



3. Complex Contracts

- Duties owed per standards and working practices
- Appropriate code/standards for design, inspections testing, maintenance, and performance requirements

4. Product Materials Evaluations

- Flame spread or flame rating of materials (i.e., can it support fire spread?)
- Consumer products safety and flammability

FPEs can provide safety validation through product testing for heat and flammability.

5. Cases Where Room Fire Dynamics Need to be Explored

- Origin and cause
- Fire propagation rate or smoke development is in question
- Smoke development/toxicity
- Means of egress evaluations

6. Code Evaluations

- Use and occupancy classifications
- Fire and smoke protection features
- Interior finishes - low-flammability and/or low smoke production
- Fire protection system evaluation
- Means of egress



If you need an investigation performed by an experienced FPE, contact us through www.envistaforensics.com.