



FIRE & RISK
★★ ALLIANCE ★★

Modeling Services

About Us

Fire & Risk Alliance (FRA) is a leader in fire and risk engineering. Our staff is composed of highly trained and educated engineers and scientists that focus on developing optimized solutions for our clients throughout the world. Our hands-on practical experience, active engagement in the industry, and our applied research ensure that we provide state-of-the-art solutions to our clients.

Fire Modeling

FRA has extensive knowledge of various CFD and zone models including the most widely used complex fire model, the NIST developed Fire Dynamics Simulator. Our staff have been Beta testers and longtime users of fire-specific models to support client projects for over 20 years. The tools can be used to model fire driven flows, evaluate detector activation times, determine the impact of suppression systems, and determine the impact of ventilation and smoke control systems.

These tools are ideal for demonstrating the potential consequences of events or to justify that a design meets or exceeds the required standard. These tools are invaluable in demonstrating compliance to AHJs and in support of performance-based design projects. Additionally FRA uses fire modeling to support our expert witness and applied research efforts.

Capabilities

FRA staff has experience in computer modeling for a wide variety of purposes, including:

- Smoke Control System Design and Smoke Movement Modeling
- Egress Analysis and Design of Passenger Flow Systems
- Fire Detection and Suppression Modeling
- Heat Release Rate Modeling
- Forensic Reconstruction Modeling
- Radiant Heat Transfer Modeling
- Vapor Cloud Dispersion and Explosion Modeling
- LNG Dispersion Modeling
- Amusement Ride Modeling
- ORA and Consequence Modeling

Computer Models

- Fire Dynamics Simulator (FDS)
- FLACS
- CONTAM
- CFAST
- Phast
- FireFOAM
- Pathfinder
- SprayVIZ and Other Proprietary Models Developed In-House

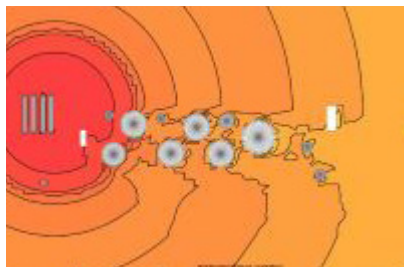


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Smoke Control and Egress Modeling

FRA staff are experts in the use of zone, CFD, and specialty egress/people movement models. These tools are used for the evaluation of smoke movement, design of smoke control systems, and egress analysis in order to ensure that the design of fire protection, notification, and egress systems are appropriate. Smoke movement and control modeling ensures that tunnel or station ventilation conditions are well understood and that fans and vents are located and sized correctly.

Project Experience

- Amusement Park Ride Smoke Control and Egress Modeling
- LNG Facility Dispersion and Explosion Modeling
- Theater Smoke Control and Egress Modeling
- Utility Substation Radiation Modeling
- Atrium Smoke Control Modeling
- Bulk Storage Terminal Radiation Modeling
- Emergency Ventilation System Modeling
- Polyethylene Plant Fire and Explosion Modeling
- Spray Simulation Modeling
- Flame Spread Modeling

From simple models to complex dynamic models such as Pathfinder, FRA can leverage the tools to identify potential pinch points, effects of barriers, signage, and smoke to ensure that occupants in potentially unfamiliar surroundings can egress in a safe manner.

Dispersion, Explosion and Blast Modeling

The release of toxic or flammable substances can pose significant hazards in many industrial and offshore facilities. Evaluating the consequences and risks of accidental releases is an essential component in any risk assessment and is often required by code. FRA has extensive capabilities in the use of CFD tools like FLACS and FireFOAM, as well as empirical models like PHAST and Breeze to assess hazardous consequences of toxic and flammable releases.

These tools are used to identify explosion hazards, develop credible and worst-case scenarios, and evaluate the probability and consequences of accidental explosions. We use the modeling results to recommend preventative, mitigative, and protective measures to reduce the risk to personnel and assets. FRA has all the tools to meet NFPA, FERC, PHMSA, DOT, and other standards.



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