

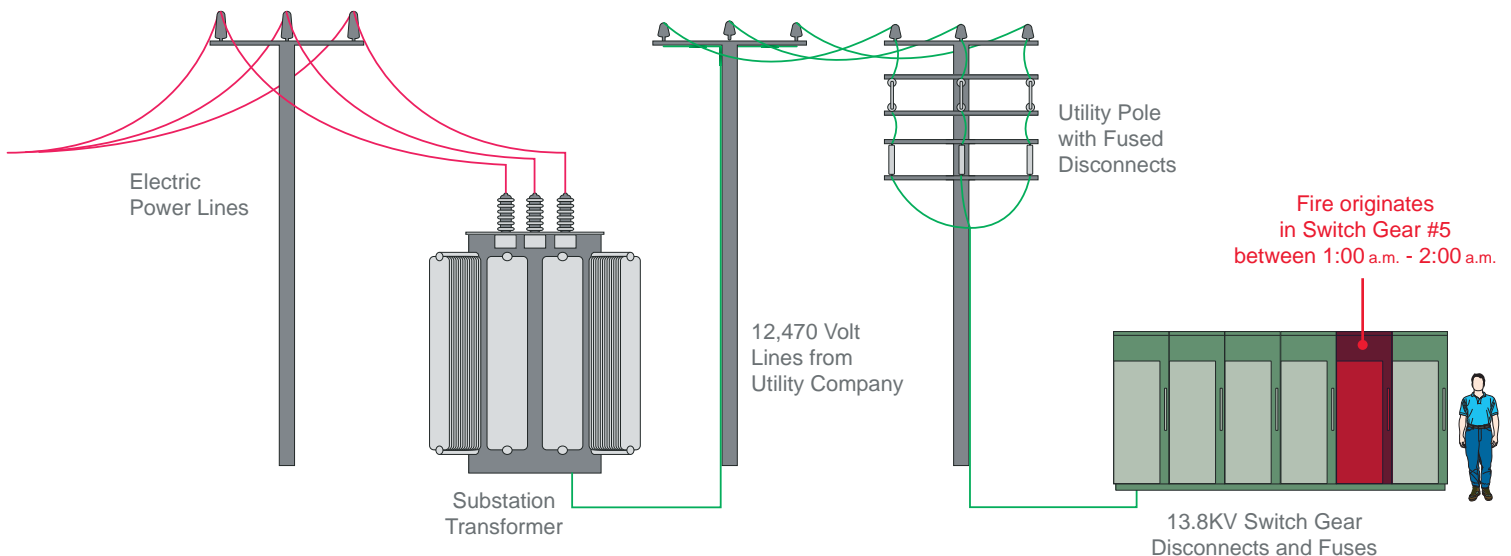
Electrical and Electronics

Packer Engineering, Inc. serves the electrical and electronics industry by providing a staff of experienced engineers, scientists, technicians, and support personnel.

Packer distinguishes itself by maintaining complete in-house laboratory facilities, including extensive visual, computer and information services. Our clients benefit from Packer Engineering's years of experience and expertise, as well as our diligence toward timely customer response. Count on Packer Engineering to provide total solutions to the most difficult problems, anywhere in the world, 24 hours-a-day, 7 days-a-week.

Services

- Electrical Accident Investigation & Evaluation
- Design Analysis & Performance Evaluation
- Electrical Fire Investigation & Analysis
- Electrical Component Testing & Failure Analysis
- Electrocutation / Electrical Shock Evaluation
- Intellectual Property Analysis
- Product Safety Issues
- Bench & Field Durability & Tribological Testing
- Electrical Arc Blast Investigation
- Electronic Materials Analysis
- Printed Circuit Board Analysis
- Microelectronics Evaluations
- Semiconductor Materials & Products Analysis
- Manufacturing Process Evaluations
- Litigation Investigative Services



Demonstrative evidence used to show the delivery of power and reduction of power in a switch gear fire.

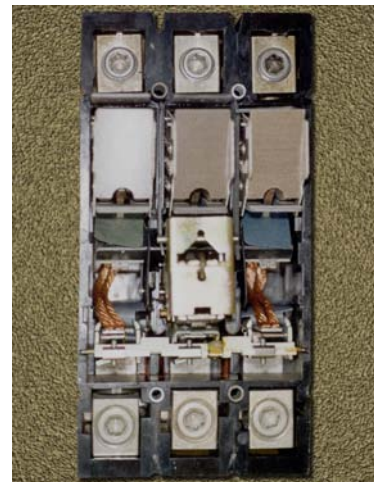
Electrical and Electronics

Projects

A three-phase electric motor used in a spray booth lost one of its phases in an earlier fire. Despite this fact, the owner placed the motor back into service. One week later, paint mist was ignited by a fault in the motor, which resulted from the earlier degradation of the motor windings. This culminated in a fire, which destroyed the entire building. Packer Engineering determined the owner of the facility had ignored all national and local electrical codes requiring an explosion-proof motor in this application, plus he had continued to use the damaged motor. These two errors, combined with an inadequate ventilation system and poorly designed sprinkler system, led to extensive property loss.



A large restaurant caught fire and burned to the ground. The owner claimed electrical arcing in a piece of conduit started by a circuit breaker malfunction caused the fire. Packer Engineering was hired to investigate the allegation. By simulating energized electrical cables inside of conduit and performing phase-to-ground fault tests, our findings disproved the proposed theory. When simulating their fire hypothesis, the fault did not sustain itself. The physical evidence showed a case of arcing through char was a result of the ongoing fire, and not the cause of the fire.



Packer Engineering examined a cross-sectioned tantalum capacitor that had been experiencing intermittent performance, while soldered to a printed circuit board (PCB) assembly for an automotive safety control system. The Scanning Electron Microscope (SEM) revealed the source of the malfunction was the absence of a welded connection internal to the construction of the capacitor. We further determined the manufacturer of the capacitor had changed manufacturing processes to one which was susceptible to this type of failure mode and had inadequate quality control procedures in place. Through testing and process control documents, we established the breadth of the affected manufacturing lots and the time-frame in which the malfunction could be expected to occur.

