

## Blake Carlton | Senior Mechanical Forensic Engineer, PE, CXLT

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### Professional Summary:

Mr. Carlton has nine years of experience analyzing hundreds of mechanical failures for residential and commercial equipment. Investigations he has led include plumbing leaks, appliance failures, HVAC failures, corrosion damage, failed electronics, damaged industrial vehicles and tooling, vehicle fires and failures, vehicle fluid analysis, analysis of workplace fatality incidents involving heavy machinery, and categorization of mechanical and material defect failures utilizing fractography.

System failure scenarios he has diagnosed include:

- Leaks caused by appliance failures: refrigerators, water heaters, clothes and dish washers
- Leaks caused by component failures: filters, fittings, metal/plastic tubing, valves, and pumps
- IBC, IRC, IPC, IMC, IFGC, IEBC code applicability and analysis
- Overloading of load bearing fasteners and plumbing fastener connections
- Material degradation caused by corrosion, improper install, or environmental stress cracking
- HVAC leaks and code violations, electrical damage, and mold growth causation
- Vehicle breakdown fuel and fluid sampling analysis
- Vehicle hail damage analysis
- Industrial equipment depreciated value estimation
- Slip trip and fall analysis and slip resistance testing
- Fatigue failure due to cyclical stresses and temperature fluctuation
- Electrical component failure
- Crack propagation caused by material defects
- Manufacturing defects and equipment design defects
- Equipment shipping damage assessments
- Industrial equipment injury analysis

### Licenses and Certifications:

Professional Engineer, State of Texas, License #131172

Professional Engineer, State of Louisiana, License #43213

Professional Engineer, State of Oklahoma, License #32074

Professional Engineer, State of Mississippi, License #31217

Professional Engineer, State of Alabama, License #39734

Professional Engineer, State of Arkansas, License #19891

Professional Engineer, State of Florida, License #90075

CXLT, Tribometer Slip Resistance Testing Certified

EPA Section 608, Safe Handling of Refrigerants (Applicable Refrigerant Types: Universal)

### Deposition Testimony:

Litigation CV available upon request.

### Project Experience:

#### **Water Well Drilling Rig Fire, San Antonio, Texas**

##### **Forensic Mechanical – Vehicle/Industrial Equipment Failure**

Fire origin and source determination for drill rig fire that occurred during drilling operations

#### **Water Heater Failure, Houston, TX**

##### **Forensic Mechanical – Plumbing/Material Failure**

Multiple investigations of tank and tankless water heaters resulting in flooding residences. Determined origin and cause with respect to plumbing code and potential for subrogation.

#### **Washing Machine Failure, Houston, TX**

##### **Forensic Mechanical – Plumbing/Material Failure**

Multiple investigations diagnosing source of overflowing washers.

#### **Vehicle breakdown, Houston, TX**

##### **Forensic Mechanical – Vehicle failure**

Multiple investigations of gasoline and diesel vehicles failing from water infiltration. Conducted fluid sampling and determined source of infiltration.

#### **Slip testing, Houston, TX and Monroe, LA**

##### **Forensic Mechanical – Slip resistance testing**

Multiple investigations testing surface slip resistance per national and local code requirements. Locations tested include hotel baths, tile surfaces, and shopping mall walkways.

#### **HVAC testing, Houston, TX and Lafayette, LA**

##### **Forensic Mechanical – HVAC**

Multiple investigations analyzing failed HVAC equipment. Failures included electrical damage, mold infiltration, and water leaks. Identified damage sources, investigated code violations, and determined validity of claims.

#### **Assembly Tooling Shear Failure, Houston, TX**

##### **Forensic Mechanical – Equipment Failure/Material Analysis**

Heavy metallic tool sheared and became a projectile. Conducted material strength testing to determine maximum load capabilities, system stresses, and operational factor of safety. Confirmed component failure source utilizing finite element analysis.

#### **Assembly Tooling Tensile Failure, Houston, TX**

##### **Forensic Mechanical – Equipment Failure/Material Analysis**

Calculated fastener failure sources including direct bolt shear, shear tear-out, bearing, and tension. Determined fasteners were underrated for application due to excessive tensile forces.

#### **Component mating failure root cause analysis, Houston, TX**

##### **Forensic Mechanical – Equipment Failure**

Tolerance stack-up study on multi-component dimensional tolerances. Concluded material coatings led to assembly interference.

### Professional Experience:

EFI Global, Senior Forensic Mechanical Engineer, 2021 - present  
EFI Global, Forensic Mechanical Engineer, 2018 - 2020  
Technip FMC, Manufacturing Engineer III, 2016 - 2018  
FMC Technologies, Rotational Engineer, 2013 - 2016  
Caterpillar, Technical Marketing Consultant, 2012 - 2012  
JP Kenny, Mechanical Engineer, 2011 - 2011

### Specialized Education:

CXLT Slip Resistance Testing Certification, Excel Tribometers, 2019  
ASME 6A 17D Design for subsea components, OLR Engineering/John H. Fowler, 2014  
Air Conditioning and Refrigeration, TPC Training/Ken Green, 2019  
Practical Fractography, ASM International/John Christie, 2020  
International Association of Arson Investigators (IAAI) – CFITrainer.net

- o investigating Motor Vehicle Fires, 2018
- o Motor Vehicles: The Engine and the Ignition, Electrical, and Fuel Systems, 2018
- o Motor Vehicles: Transmission, Exhaust, Brake, and Accessory Systems, 2018

### Education:

Bachelor of Science, Mechanical Engineering, Texas A&M University, College Station, TX, 2013

### Affiliations:

American Society of Mechanical Engineers  
Texas Board of Professional Engineers  
National Association of Fire Investigators  
Boy Scouts of America – Eagle Scout

### Courses Instructed/ Guest Lecturer:

Texas A&M University MEEN 381: Technical Report Writing and Professional Presenting