

Forensic Engineering Experts

Industrial

Marine
Oil & Gas
Manufacturing
Transportation
Power Generation
Aerospace & Aviation
Gas & Electric Utilities
Petrochemical & Refining
Construction & Environment

Legal

Corporate Counsels
Defense Attorneys
Plaintiff Attorneys

Insurance

Captives
Re-Insurance
Risk Managers
Self-Insured's
Excess Carriers
Regional Claim Offices
Special Claims Departments
Independent Energy Adjusters

Governmental & Institutional

Federal Agencies
Military Services
Municipalities
State Agencies
Research Institutes
Universities

Applying forensic engineering sciences to the investigation of major accidents, failures, fires, and explosions worldwide.

Five Engineering Groups

APTECH Engineering Services, Inc. is an internationally recognized consulting firm dedicated to the prediction, prevention, investigation, and analysis of design, material, and operational failures. Since our founding in 1979, we have performed more than 4,000 engineering projects worldwide. The firm is made up of five main engineering groups:

1. The **Forensic Engineering Group** provides to the insurance, legal, and industrial communities objective technical investigations, analysis, and testifying on issues surrounding major accidents, failures, fires, and explosions throughout the United States and abroad.
2. The **Power Generation Group** is dedicated to finding timely and cost-effective solutions to successfully address startup, operation, and maintenance problems in hundreds of power plants of all types.
3. The **Nuclear Generation Group** supports the nuclear industry in solving materials and welding issues including technical services for boiling and pressurized water reactors.
4. The **Petrochemical Services Group** provides support to the petrochemical industry nationally and internationally with a range of services including risk based inspection software, mechanical integrity compliance, and reliability and risk analysis.
5. The **Industry Engineering Group** provides failure analysis and mechanical integrity evaluations for the construction, aviation, marine, and transportation



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industries.

The APTECH Approach

APTECH offers a multidisciplinary team of experienced forensic engineers which provides objective investigation and analysis surrounding complex failures, major fires, and explosions. These incidents are always high exposure events involving fatalities, large property damage, and financial losses which often lead to disputed claims and civil lawsuits. To ensure that the investigation process works productively, APTECH provides the following:

- **Client Interface** — Identify the nature of the incident. Determine what relevant expertise you need and the anticipated tasks and efforts required.
- **Incidence Response** — Provide rapid response when and where you need us, worldwide.
- **Site Inspection** — Inspect the site, document, identify, photograph, and preserve evidence. Begin root cause analysis of incident.
- **Evidence Control and Storage** — Maintain strict chain of custody throughout the investigation, analysis, testing, storage, and disposal.
- **Progress Reports** — Keep you informed of technical, schedule, and financial information.
- **Verbal Reports** — Provide verbal report to you with all of the findings and conclusions.
- **Final Written Report** — If required, we submit to you a comprehensive written report with clear conclusions.
- **Expert Testimony** — Our forensic engineers are prepared to participate in the litigation process including deposition, mediation, arbitration, and trial. We also assist in the development of admissible trial exhibits which communicate complex technical concepts in understandable visual presentations.



Forensic Engineering Experts

Forensic Capabilities — Engineering Analysis, Laboratory & Field Testing Services

APTECH's capabilities include expertise in metallurgical, mechanical, electrical, chemical, civil, and environmental engineering along with materials science expertise. The result is a thorough investigation

- Explosion Cause and Origin
- Fire Cause & Origin
- Metallurgical & Corrosion Analysis
- Heat Transfer & Fluid Analysis
- Accident Reconstruction
- Fracture Mechanics
- Finite Element Analysis
- Fracture Mechanics
- Weld Quality Analysis
- Code Compliance
- Operational Analysis
- Construction Delay Evaluation
- Hazardous Material Analysis
- Computer Modeling & Testing
- Product Liability Evaluation
- Forensic Photography
- Material Failure Analysis
- Chemical & Thermal Analysis
- Fire Dynamics
- Extent of Damage Determination
- Dynamic & Vibration Analysis
- Process System Design Analysis
- Fluid Mechanics
- Scanning Electron Microscopy
- Stability Analysis
- Design Verification
- Stress Analysis
- Repair Cost Evaluation



completed in the shortest possible time.



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APTECH's Engineering Experience

The breadth of experience of APTECH experts is illustrated by this partial list of structures, equipment, and

Fires & Explosions

Petrochemical Plants
Terminals/Bulk Plants
Plastic/Rubber Plants
Natural Gas Processing
Chemical Plants
Oil & Gas Production
Pipelines
Industrial Piping Systems
Storage Tanks
Reactors
Process Drums
Pumps & Compressors
LP-Gas
Liquid Natural Gas
Marine Vessel
Volatile Fluids
Combustible Materials
Flammability of Materials
Electrical
Flame & Smoke Spread
Grain Elevators
High-Rise Buildings
Gas, Coal-Fired Boilers
Gas & Steam Turbines
Process & Pressure Vessels
Industrial Furnaces

Mechanical Failures

Boilers
Cranes & Derricks
Earth Moving Equipment
Gas Regulators & Valves
Hydraulic Equipment
Machinery
Metallurgy
Nuclear Reactor Systems
Pressure Vessels
Spacecraft
Turbines: Gas & Steam
Ship Cargo Handling
Mechanical Systems
Construction Equipment
Mining
Oil Field Equipment
Piping
Utilities
Towers
Cables/Aerial Devices
Boiler
Hydraulic Systems
Medical Equipment
Welding
Gears
Machine Guarding

Transportation Accidents

Brake & Suspension
Engine Fires
Train Collisions & Derailment
Gas & Liquids Pipelines
Aircraft & Aerospace
Marine
Helicopters
Freight Vehicles
Railroad
Buses
Motorcycles
Off Road Vehicles
Trailer Rig

Construction Failures

Offshore Platforms
Structural Collapses
Highway
Bridges
Cranes & Derricks
Retaining Walls
Steel
Excavating & Bracing
Foundations
Erosion
Pipelines

**Chemical - Electrical - Mechanical - Process - Geotechnical - Metallurgical -
Civil/Structural - Materials - Welding - Safety - Environmental - Marine -
Trial Testimony - Field Testing - Risk Analysis**



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components we have investigated:

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APTECH staff engineers are nationally and internationally recognized experts in their fields and have the proper credentials to serve as expert witnesses in depositions and trials. They have an average of over 25 years of experience in their technical specialties and are assigned only to cases for which they possess the requisite expertise.

- Geoffrey R. Egan, Ph.D. — Engineering mechanics, metallurgy, and welding.
- Kimble J. Clark, Ph.D. — Heat transfer, fluid mechanics, combustion, complex fires, & explosions.
- Richard J. Schreiber, P.E. — Boiler, mechanical failures, fire, explosions, & combustion emissions.
- Eric V. Sullivan, P.E. — Metallurgy, welding, failure analysis, and fire and explosion investigation.
- Philip B. Lindsay, P.E. — Metallurgy, corrosion engineering, and water contamination.
- Clayton Q. Lee, P.E. — Heat transfer, fluid mechanics, and finite element computer modeling.
- Michael T. Cronin, P.E. — Stress analysis, design evaluation, engineering mechanics, and FEA.
- Rodney L. Dail — Metallurgy, welding, mechanical testing, and nondestructive examination.
- Thomas D. Burnett — Power plant equipment, boiler explosions in utility and industrial plants.
- G. Paul Grimsrud - Power generation economics, statistics, and policy decision-making.
- Jeffrey L. Grover, P.E. - Structural, welding failures, blast effects, and building code compliance.
- Stephen M. Kohan, Ph.D. - Refinery processes, catalysis, plant testing, and fluid mechanics.
- Steven A. Lefton - Fossil, nuclear utility power generation, construction, and operations.
- T. Steven Torbov - Combustion, fuel science, and burner and boiler design.

For detailed resumes on staff experts, log onto www.aptecheng.com



APTECH also maintains and frequently uses an extensive database of highly qualified consultants in a wide range of specialized technical areas.

Forensic Engineering Experts

Legal

Bartlet, Beck, Herman, Palenchar & Scott
Bullivant Houser Bailey, PC
Burnham & Brown
Clausen Miller, LLP
Cozen & O'Connor
Cremer, Kopon, Shaughnessy & Spina
Cunningham Law Firm
Davis, McFarland & Carroll, PC
Dillingham and Murphy
Hassard, Bonnington, LLP
Hill, Farrer & Burrill, LLP
Imai, Tadlock, Keeny & Cordery, LLP
Kaufman & Logan, LLP
Kirkpatrick & Lockhart, LLP
Knapp, Petersen & Clarke
Lowenstein Sandler, PC
Lynch & Blum, PC
Mayer, Brown, Rowe & Mad, LLP
McConnell Valdes
McDermott, Will & Emory
Miller & Brown, LLP
Montedonico, Hamilton, and Altman
Montoya, Murphy & Garcia, LLP
Nixon Peabody
Robins, Kaplan, Miller & Ciresi
Sedgwick, Detert, Moran & Arnold
Steinheimer Riggio Haydel & Mordaunt
Strimatter, Kessler, Whelan, Withey, & Coluccio
Thelen, Reid & Priest, LLP
Watt, Tieder, Hoffar & Fitzgerald, LLP
Weston, Benschhoff, Rochefort, Rubalcava, MacCuish, LLP
Wilson, Elser, Moskowitz, Edelman
Wulfsberg, Reese, Colvig & Firstman
Zelle, Hofmann, Voelbel & Mason

Insurance & Adjusting

Aetna Life & Casualty Company
Allstate Insurance Company
American Sentinel Insurance
Arkwright Insurance Company
Chubb Group of Insurance Companies
CIGNA Insurance
CNA Insurance
Continental Insurance
Crawford—THG
Factory Mutual
Fireman's Fund Insurance Company
GAB Robins North America, Inc.
Global Claims Services Corporation
Industrial Risk Insurers
Insurance Company of North America
Kemper Insurance Companies
Liberty Mutual Insurance Company
McLarens Young International
Northbrook Property & Casualty Insurance
Reliance National Insurance Company
St. Paul Travelers
Western Pioneer Insurance Company
Zenith National Insurance Company

Partial Listing of APTECH Clients





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Industrial

Aerospace Corporation
ALCOA
Allied Signal, Inc.
American Oilfield Divers, Inc.
Amoco Oil Company
Apple Computer Corporation
Bechtel Power Corporation
Gulf States Utilities Company
Applied Materials
ARCO Chemical Company
BP Exploration, Inc.
Celeron Pipeline
Champion International Corporation
Chevron USA
CITGO Petroleum
Dow Chemical
Exxon Company USA
FMC Corporation
Gulf Chemical & Metallurgical Corporation
Hoechst-Celanese Corporation
Intel Corporation
Marathon Oil Company
National Semiconductor
Occidental Chemical Corporation
Oman Oil Company
OxyChem
PetroCanada
Shell Oil Company
Union Oil Company
United States Steel Corporation

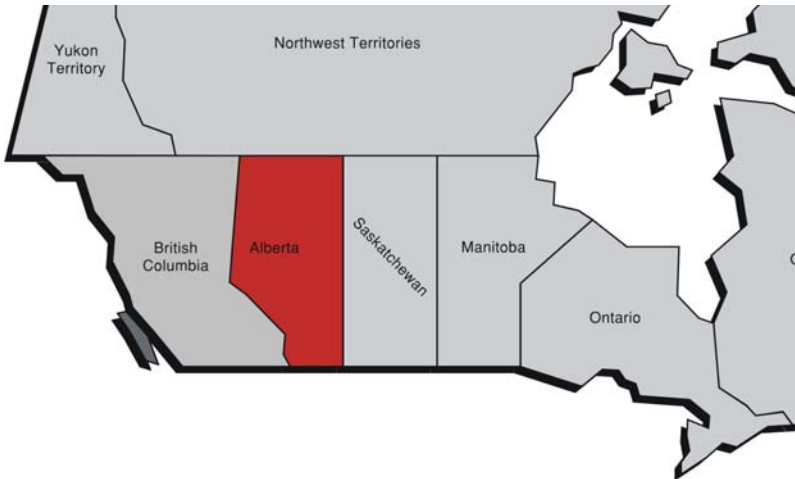


Government

Argonne National Laboratory
Edision Welding Institute
Electric Power Research Institute
U.S. Navy and DOD
U.S. Department of Energy
University of California at Los Angeles
Welding Research Council

Forensic Engineering Experts

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