

# Representative Projects and Experience:

## Petrochemical, Chemical, and Energy Projects

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### Preparation of Plans and Programs

- Fracture control plans
  - Tension leg platforms
  - One thousand foot fixed platform
  - Alaskan Natural Gas Transmission System (ANGTS)
- Fatigue monitoring program for one thousand foot offshore platform
- Develop acceptance criteria for weld quality
- Develop real-time radiography/corrosion monitoring program for oil gathering lines
- Life extension program plan for liquefied natural gas (LNG) facilities
- 6000 psi natural gas pipeline: formal risk analysis and fracture control plan
- Review mechanical integrity program for plastics manufacturer
- Refinery risk-based mechanical integrity program development and implementation
- Chemical plants mechanical integrity program development
- Chemical Control Programs
  - Chemical risk assessment and prevention program (CHEMRAP)
  - Chemical risk management and prevention program (RMPP)

### Failure Analyses

- Buried gas pipeline
- Geothermal well casing
- Compressed natural gas flexible hose
- Oil pipeline bridge
- Oil storage tank
- Stainless steel intercoolers on ethylene oxide unit
- Gas storage cylinder
- Pump impeller
- Fired heater tube
- Roof brick failure in crude furnace
- Support brick failure in butane isomerization reactor

### Tolerable Flaw and Fracture Mechanics Analyses

- Tolerable flaw analysis of stacked reactor
- Tolerable flaw analysis of acoustic emission/proof test
- Joint industry projects on tubular joints
  - Fracture mechanics design methodology development
  - Review of fracture mechanics applications to tubular joints
- Analysis of cracking on reactor of fluid catalytic cracking unit

### Analyses and Evaluations

- Weld defect analyses of reformers, piping, oxidizer vessels, towers, nozzles, etc.
- Integrity analyses of gas transport equipment
- Stress analysis of reactor downcomer
- Flare tip remaining useful life evaluation
- Analysis of fabrication defects in catalyst air ring
- Fatigue life evaluation of offshore platform
- System evaluation of autorefrigeration effects
- Material investigation of geothermal well instruments
- Evaluation of monitoring instrumentation to detect trace levels of natural gas
- Condition assessment — isoprene storage spheres
- Availability analyses for plastics intermediate plant

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## Field and Laboratory Projects

- Fitness-for-service of amine absorbers and regenerators
- Stress analysis of Thermoform® Catalytic Cracking reactor seal leg
- Borescopic examinations of heaters, separators, steam drums, gas turbines, reactor internals, distillation column internals, etc.
- Evaluation of hydrogen sulfide reactor corrosion coupons
- Image enhancement of radiographs
  - Elbow erosion/corrosion
  - Offshore pipeline girth weld defects
  - Oil cooler corrosion damage
  - Wall thinning of reactor vessel
- Failure analyses of chemical plant boiler tubes
- Cofiring of gas and coal in a boiler
- Radiograph review
- Evaluate systems to digitally store/retrieve radiographic images

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## Environmentally-Assisted Cracking

- Stress corrosion cracking analysis of scrubbers, process piping, and elbows
- Stress corrosion cracking under insulation
- Stress corrosion cracking of compressed natural gas storage cylinders
- Butane storage tank analysis of hydrogen-induced and sulfide stress corrosion cracking

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## Fires, Explosions, and Catastrophic Failures

- Chemical plant fire
- Compressor station fire
- Drilling rig fires
- Gas furnace explosion
- Refinery fires
- Offshore platform damage and collapse
- Accident reconstruction
- Glass furnace explosion
- Ethylene plant explosion
- Fertilizer plant explosion

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## Design and Design Reviews

- Design reviews of storage tanks, walkway structures, and pipelines
- Design of natural gas drying and sweetening system
- Design of catalyst support grid for high temperature service
- Design of life extension system for boiler component in synthetic fuel service
- Skim tanks for North Slope service
- Slides and guides for Alyeska Pipeline

## Additional Information

For more information or to find the APTECH office nearest you, please contact us in our corporate headquarters:

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