THIELSCH ENGINEERING

Experienced Project Engineers
Well Equipped Laboratories

Incident Management Services

www.thielsch.com

- Accident Investigation
- Evidence Control & Impound
- Forensic Engineering & Failure Analysis
- Expert Witness Testimony
- Component Damage Assessment
- Coordination with Insurance Companies & Legal Parties
- Equipment / Plant Rebuild or Repair

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OSHA / CHEMICAL SAFETY BOARD

- Develop post catastrophe safety plan with company for OSHA & Chemical Safety Board
- Incident investigation / process hazard analysis to ensure safety of ongoing operations
- Develop Dismantle / Demolition Procedure

CSB OSHA®

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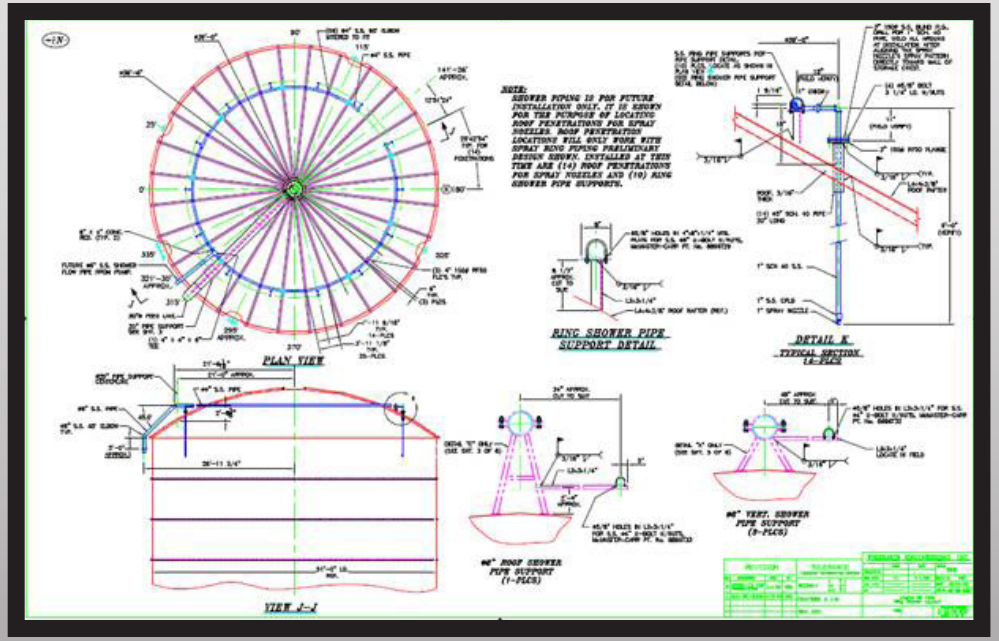
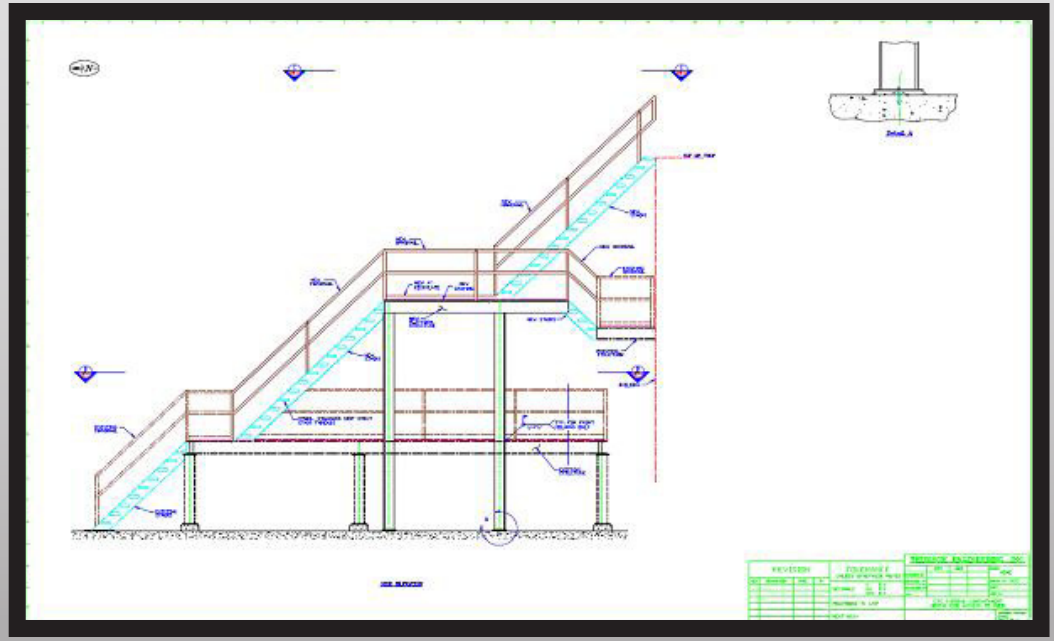
Reconstruction

- Engineering and Design Services
- Develop Request For Quotation (RFQ) Packages
- Institute Design Modifications to Prevent Similar Failures
- Evaluate & Select Qualified Bidders
- Project Management and Design Through Construction, Start-up, and Commissioning





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Damage Assessment

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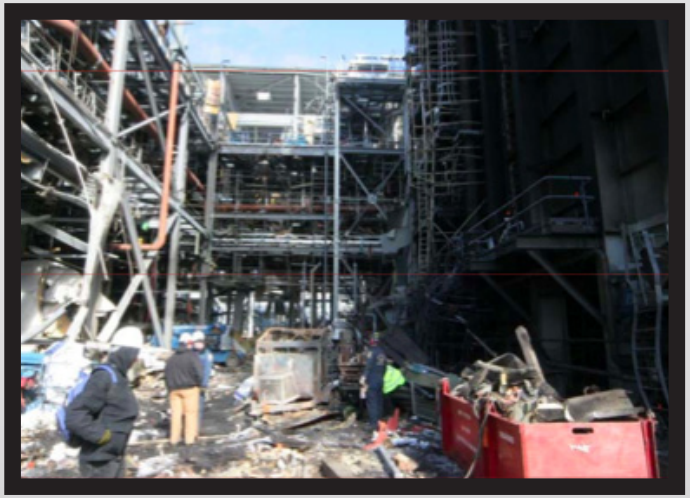
February 2010
Power Plant • Gas Line Explosion

During a scheduled gas line blow procedure, a massive explosion occurred between the two newly constructed HRSG units. The blast wave lifted the HRSGs off their foundations severely distorting the primary frame columns and in some instances, shearing them completely.

Thielsch Engineering personnel were contracted by the EPC owner to perform the accident investigation and subsequently the damage assessment. Thielsch Engineering developed the blast wave map and heat profile map of the entire plant site. This was instrumental in determining which components and systems had been subjected to damage and which ones had not. This provided useful global evidence in convincing the components' OEM to maintain or to uphold their warranties on the equipment within this new plant.

Over the course of the twelve-month reconstruction, Thielsch Engineering provided engineered repair procedures to restore the damaged HRSG, the high-energy piping, and tank components; as well as project management of the repair process.



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July 2008
Tank Explosion • Midwest

During a maintenance function atop a 75 ft. High-Density Stock Tank used in the manufacturing of recycled cardboard, an explosion occurred. This explosion tore off 25% of the domed roof, which resulted in three fatalities.

Thielsch Engineering personnel assisted the plant by providing initial accident investigation, drafting a safety plan for OSHA representatives, developing and supervising demolition, and collecting evidence.

Thielsch Engineering also conducted the accident reconstruction study, developed the design modification for the reconstructed tank, developed and evaluated the proposals for the selected construction firm and performed final field inspections.

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November 2008
Fertilizer Tank Collapse

A 1.2 M Gallon Above Ground Storage Tank, used in the storage of liquid fertilizer, catastrophically collapsed in November of 2008.

This resulted in a tidal wave of fertilizer product 10-feet. high that breached the surrounding earthen berm and entered a residential neighborhood as well as the Chesapeake Bay.

Thielsch Engineering was retained to conduct the failure analysis of the tank shell as well as develop and implement an inspection protocol for adjacent Above Ground Storage Tanks. The metallurgical failure analysis conducted in our laboratory determined that a recent design modification to the tank attributed to the failure.

Thielsch Engineering subsequently re-engineered the safe fill heights for the remaining modified tanks and received approvals from the local authorities for continued operations.

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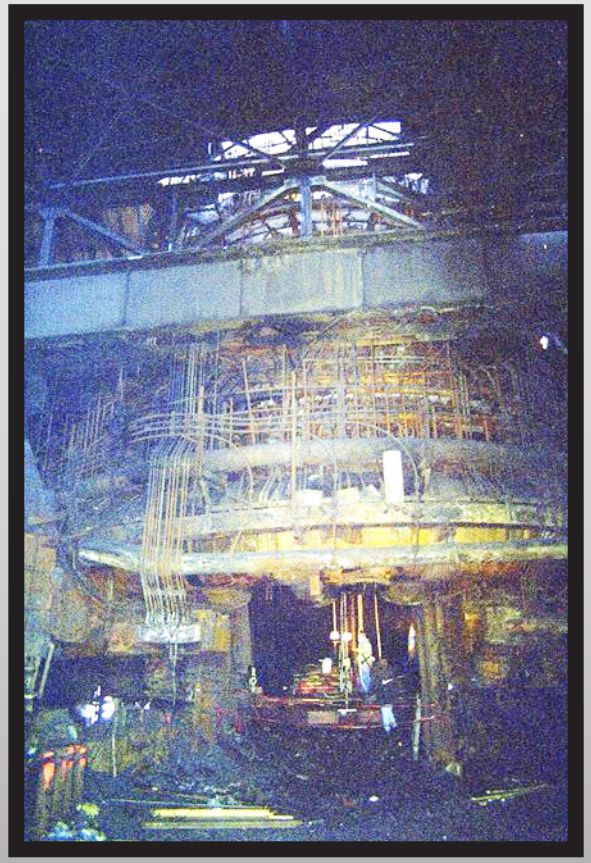
January 2003
Blast Furnace Explosion • Midwest

A Blast Furnace in the Midwest experienced two incidents that damaged the unit. The first incident occurred in the summer of 2003 and involved an explosion and fire in the Blast Furnace. Thielsch Engineering was contracted to determine the cause of this explosion. Our team of experts conducted in-depth site investigations and damage assessment of the Blast Furnace and Off-Gas piping systems, which were both subjected to the explosion and fire. This investigation included metallurgical analysis and a thorough review of the events leading to the explosion.

The second incident occurred in the winter of 2003 due to a loss of cooling water to several circuits. Minor repairs were made and the unit was placed back in service in an effort to meet production schedules. Both incidents severely damaged the furnace and its auxiliary equipment.

Thielsch Engineering was also contracted by the client to participate in the inspection program with the OEM, to develop a scope of work and establish the estimated cost for the reconstruction of “in kind” Blast Furnace.



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Incident Management Services Case Histories

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February 2000 • Collapsed Heat Recovery Steam Generator in Combined Cycle Electric Power

A Heat Recovery Steam Generator (HRSG) was under construction when the low pressure section collapsed. Thielsch Engineering was requested to participate in an investigation to determine the cause. The structure was approximately 60 ft. tall and 32 ft. X 25 ft. in area. It consisted of three moment frames constructed of steel wide flange columns and horizontal beams.

The erection procedure required that temporary bracing be installed, 3 each on each side of the structure, prior to the installation of the harp bundles. This temporary bracing could then be removed after installation of the harps and casing. The harps had been installed, but the casing panels had not when 3 east side braces and 1 west brace were removed. The collapse occurred while the second west brace was being removed

Subsequent testing showed that the anchor bolts, which had failed during the collapse, were in compliance with the chemical composition requirements of the applicable specifications. Charpy V-notch impact tests performed on the bolts indicated a sharp reduction in toughness in three of the bolts between 70°F and 0°F. One bolt was much higher in toughness than the others. Weather data indicated that the temperature during the incident was between 29°F and 19°F.

The initiating cause was determined to be noncompliance with the general erection procedure.

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Incident Management Services Case Histories

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July 2000 • Truck Accident Causing Jet Fuel Fire Under Highway Bridge

A tanker truck carrying jet fuel tipped over beneath a highway overpass, causing jet fuel to escape from the truck. The jet fuel subsequently ignited and caused a fire that engulfed the bridge.

Thielsch Engineering was contracted to investigate the incident to determine the extent of damage to the bridge, including the steel beams, concrete deck and the abutments of the bridge.

In the course of performing the condition assessments, various examinations and tests were performed. Nondestructive techniques used included visual, wet fluorescent magnetic particle and radiographic examinations, as well as hardness determinations and replication sampling.

Core samples were also removed from the concrete bridge deck and abutments.

The results of the testing and examinations showed that the tensile strength, hardness values, and microstructure of the steel beams were acceptable. The compressive strength of the concrete cores still exceeded the design requirements.

To return the bridge to normal service, aside from cleaning and painting, the only repair required was to a cracked fillet weld between a diaphragm support plate.

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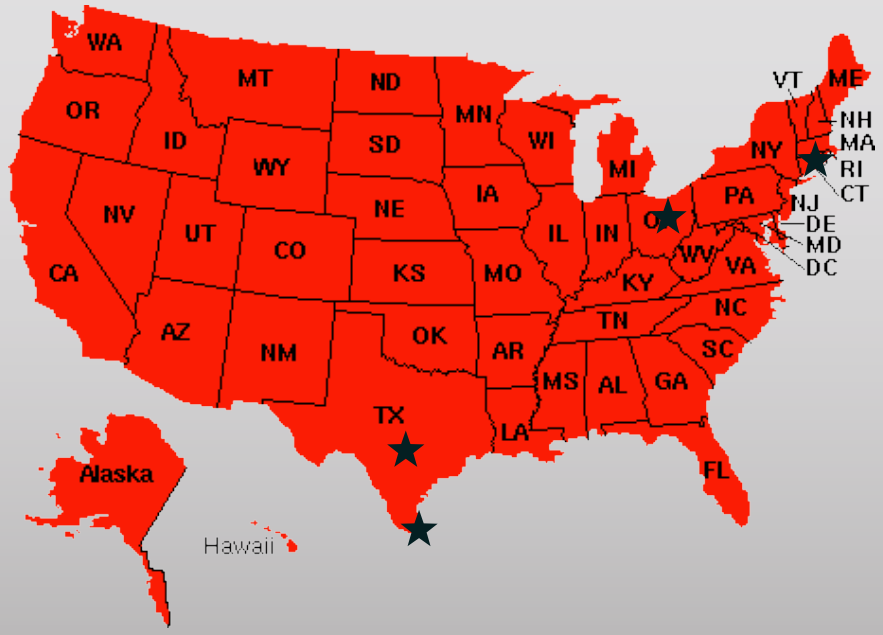
Thielsch Engineering Locations Throughout The United States



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