



Falex Litigation Technical Investigations Chemical Process Equipment Corrosion Failure Case Study

Falex Litigation Technical Investigations conducts investigations for insurers, litigators, and intellectual property attorneys, which involve testing of materials and lubricants to determine materials or wear failure analysis or conformance to patent claims.

Heating equipment used in a chemical process failed. Scientific investigation of this failure had been conducted by the conventional, single-expert approach. Metallurgists were hired by each of the parties, and they all agreed that corrosion existed and caused failure of the heater. They disagreed on the complex issue of who was responsible for the selected material that corroded, and who was responsible for design of the system. One attorney approached us rather late in the case about this design responsibility issue, but we contributed far more.

This case is an excellent example of the problem with the conventional, single-expert approach to investigations, not identifying all potential issues at the outset and analyzing their potential contribution to the incident. Instead, this was seen as a metallurgical issue because of the corrosion that was observed so metallurgical experts were hired and by default this made the problem an investigation of metallurgy. The real problem was something entirely different, but the conventional approach lacked the insight needed to identify the key issues and went down the wrong road as often happens. Going down the wrong road, if not discovered, produces ambiguous results that are not compelling. If going down the wrong road is discovered, the insight still does not exist to find the right road and costs skyrocket. Both of these delirious outcomes happen in litigation technical investigations, adding time and costs; huge costs if you lose because of them.

Upon being hired by one of the parties in this case, we applied our multidisciplinary project management approach, and we conducted broad and comprehensive information gathering and analysis of what could have contributed to the corrosion. We collected the information that was known about the behavior of the metal in several other chemical processes where similar conditions would exist and were able to conclude that the material should have performed properly and not corroded in the application. This was a fundamentally valuable insight that none of the other experts involved since the beginning of the case had uncovered. We also collected the information that was known about the nature of conditions in the chemical process in which the equipment failure had occurred, and concluded that the type of corrosion that occurred should not have happened under these conditions. Now we had two different technical issues that both indicated that the failure should not have occurred for the metal that was used in the equipment, so why did it occur?



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Together, these insights provided the information the attorney who hired us needed to pursue a strategy that had been unrecognized to this point, and ask for further documents and information about the way in which this specific chemical process was operated. The other side produced materials that showed the process was, in fact, operated with conditions that would not have been expected and that would cause corrosion. This line of inquiry also showed why another facility, operated by the same operator, and using the conditions that would have been expected, did not experience corrosion with similar equipment. This took the supplier of the equipment from a difficult position of basing a defense on not being responsible for the selection of the material to a far more compelling defense based on the equipment being used in a way that was never specified for its use. A very favorable settlement resulted in a case that was headed to trial. This settlement would have been achieved prior to full-blown discovery if our comprehensive, multi-disciplinary approach had been used early in the case. The example provided by this case is typical of many cases we have seen.

More detail on the technical methods and tests we use can be found in:

- *Electrochemical Corrosion Testing Methodology*
- *Electrochemical Corrosion Test Methods*
- *Corrosion Mechanism Case Study*
- *Corrosion Rate Case Study*

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Falex Litigation Technical Investigations was formed to provide litigators, insurers, and corporate counsel with expert witness consulting and scientific investigations that are informed by core competencies in the physical sciences, materials performance, and tribology - the science of friction, wear, and lubrication - to provide better outcomes at lower cost with intellectual property disputes, product failures, process incidents, accident investigations, and Consumer Product Safety Commission recalls and issues.