

Dialogue with an engineer

Lessons to be learnt, mistakes to avoid

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In a previous article, Paul Thorneycroft gave readers tips for selecting an engineer. So what do you do when you have found him or her? This article gives a taste of the variety of subject matter and approach needed by the forensic engineer with tips on how to get the best out of your expert.

Don't jump to conclusions

Many failures occur at welds and it is tempting to blame the welder. This happened in the case of a failure of a bellows unit which led to a multi-million pound claim for consequential losses. However, the cause was not the weld alone, but the effect of the long-term operating conditions and environment. Just before the failure there was also a small explosion, causing an instantaneous overload. In addition, if maintenance and inspection had been carried out on this critical item, the growing cracks would have been identified before the catastrophic failure. The causes therefore included a faulty specification which omitted some of the operating conditions; and contributory negligence in not inspecting the component.



Look beyond the obvious

One case involved oil leakage into a stream. A demolition company removed half the bund from a disused heavy fuel oil tank before thinking to check whether the tank was empty. On discovering a residue of oil in the tank they called in specialist tank cleaners. The latter chose to clean the tank by dissolving the heavy fuel oil in kerosene. About two days after the kerosene had been added, pollution of a nearby stream was noticed and the Regulator was alerted.

It transpired that there was a cut in a pipe which ran from the tank at low level. Once the kerosene had dissolved the tarry heavy fuel oil blocking the pipe, the kerosene / oil mixture had poured out of the cut. The Regulator maintained that the oil leaked out where the bund wall had been removed and that the fault lay with the demolition contractor. However, a video survey of the drains on the site demonstrated that the drains on that side of the bund were clean. The leak path was from the other side of the bund which was clearly not water tight. Even if the bund wall had not been demolished the leak would not have been prevented.

Consider all the possibilities

It is very difficult to write a watertight specification and many disputes arise because the contractor has built something different from what the client thought he wanted. Nevertheless, a poorly written specification is not the only reason for a plant or piece of equipment not performing correctly. It could also be faulty manufacture, incorrect maintenance and set-up or poor operation.

Chain of causation and balance of probabilities

In a further pollution incident it was necessary not only to show that the emissions to air were harmful, but that they reached the site where cattle died and were the cause of death. In this case the full chain of causation was not demonstrated to the satisfaction of the judge. In other cases such as a personal injury claim, we were able to show that a whole series of events would have needed to occur for the Claimant's case to be made. In that case the verdict was that on the balance of probabilities this series of events was unlikely.

What kind of expert do you need?

In some cases, a knowledge of general engineering principles is sufficient. A motorcyclist in collision with a car was thrown off and dislodged the coping stone on a wall. Calculation of the trajectory showed the minimum speed that he must have been travelling when he left his bike. No expert knowledge of road traffic accidents was required in this case.



Photographs?

Photographs are of enormous help to demonstrate a point and as an aide memoire. However, by the use of different filters or manipulation of digital images a rusted surface can appear clean or vice versa. If photographs are to be used as evidence then consider employing a forensic photographer.

Experts can help at all stages of a case – see the list on the right.

A final tip - ensure that your engineer has imagination and an open mind and that your client keeps the evidence.

When do you need an expert?

Immediately if there is physical evidence to inspect/ preserve

To identify issues/ assist with pleadings

Interpret and assess evidence including from witnesses to fact

Briefing Notes

Formal report

Meeting of experts

Advice during ADR

What information and instructions does an expert need?

Enough information to fully understand the case

Clear instructions as to what should be considered

Report format

Additional issues – engineer will discuss with solicitor before proceeding

Preparation for the hearing

