

# Hawkins

Leaders in forensic investigation



## FIRE & EXPLOSION INVESTIGATION

Root cause analysis and expert witness services  
for fires & explosions.

[www.hawkins.biz](http://www.hawkins.biz)

Explosions | Fires In Buildings | Fire Modelling | Fire Stop & Spread  
Marine Fires | Post-Fire Contamination | Vehicle, Plant & Machinery Fires  
White Goods Appliance Fires

## Who we are

Hawkins was established in Cambridge in 1980 and specialises in forensic root cause analysis, expert witness services and engineering consultancy to the insurance, legal, risk management and commercial sectors.

With a recognised and growing global presence, Hawkins provides worldwide coverage from offices in Dubai, Hong Kong and Singapore, as well as key locations across the UK & Ireland.

## Our Approach

Hawkins is approachable, responsive and provides independent reporting you can rely upon.

Our team of expert forensic scientists and consulting engineers can advise, investigate, and assist at any stage of an incident, as well as provide ongoing support and guidance.

## What we do



### PRE-LOSS RISK MANAGEMENT

Guidance on design, installation, and regulations to ensure safety, compliance and risk reduction.



### FORENSIC INVESTIGATION

Scientific investigation into all aspects of an incident, from domestic claims to major complex losses, to determine causation.



### EXPERT WITNESS SERVICE

Independent and impartial technical advice to assist Counsel during all aspects of litigation.



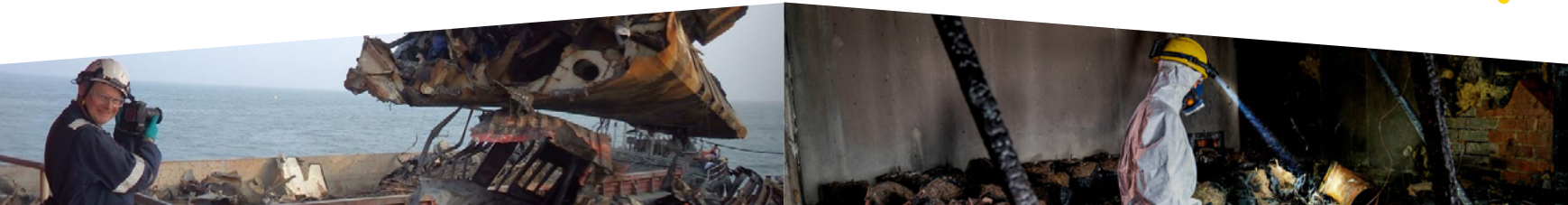
### POST-LOSS ADVICE

Consultancy advice to reduce and mitigate risks, and prevent similar events happening in the future.



### MAJOR & COMPLEX LOSS

Global resources and multidisciplinary teams, armed with the knowledge, equipment, and facilities to manage and investigate major and complex incidents.



# We Investigate...

## EXPLOSIONS

Whilst a fire can sometimes precede or follow an explosion, the techniques and skills required to undertake a full investigation are broader: a thorough survey of structural damage; mapping of the debris field to enable estimation of the amount of gas ignited; calculations of leakage, dispersion rates, and strength of structural elements; and in the case of explosions involving steam or flammable vapours, an understanding of thermodynamics.

## FIRES IN BUILDINGS

Even the smallest of fires can result in a claim for significant costs, partly due to the increasing cost of both materials and labour to repair or rebuild. Our qualified engineers and scientists are trained to evaluate the physical and any witness evidence to identify the most likely origin of the fire and from there establish the most likely cause. Cases we regularly investigate involve: hotworking, self-heating, smoking, unattended candles, fixed wiring, electrical distribution equipment, battery charging, and appliances.

## FIRE MODELLING

Fire and explosion models have long found use in risk analysis to help to understand the consequences of fire or explosion events. These modelling tools augment our investigative work. We use a variety of CFD packages dedicated to the understanding of explosions and fires. We use this software to calculate statistics such as the flow of gases through a simulated environment, and the heat transfer between the gasses and solid obstacles.

## FIRE STOP & SPREAD

Hawkins' experts can provide advice prior to a loss and investigate the potential impact of building defects or poor maintenance after a fire. Many fires we investigate result in fire spread to neighbouring premises or properties. Our qualified engineers and architects understand the likely original design intentions of the fire safety provisions, and how changes such as new building work, refurbishment, extension, or a change in use might impact the original strategy.



## MARINE FIRES

Our marine investigators are experienced with a variety of incidents, ranging from small accommodation fires, to major engine room fires, to cargo fires and explosions. We have dealt with several high-profile shipping and cargo investigations including: MSC Flaminia, Glory Trader, Diamond Highway, MOL Charisma and SSL Kolkata.

## POST-FIRE CONTAMINATION

When handling a claim for the cleaning of either buildings or contents after a fire, Hawkins can provide a Contamination Assessment Service. Contamination assessment should play a central role in the response to major losses involving both smoke and water damage to buildings, stock and contents. Hawkins' consultants will tell you with certainty which aspects of the cleaning are required as a direct result of the fire, or whether the contamination pre-dates the fire, and is therefore not covered by policy. Though most of Hawkins' contamination losses are either large scale or commercial, we have also investigated particularly complex domestic losses. Hawkins will discover the extent of the contamination, the type of contamination, whether cleaning or restoration is required, and the best method for doing so.

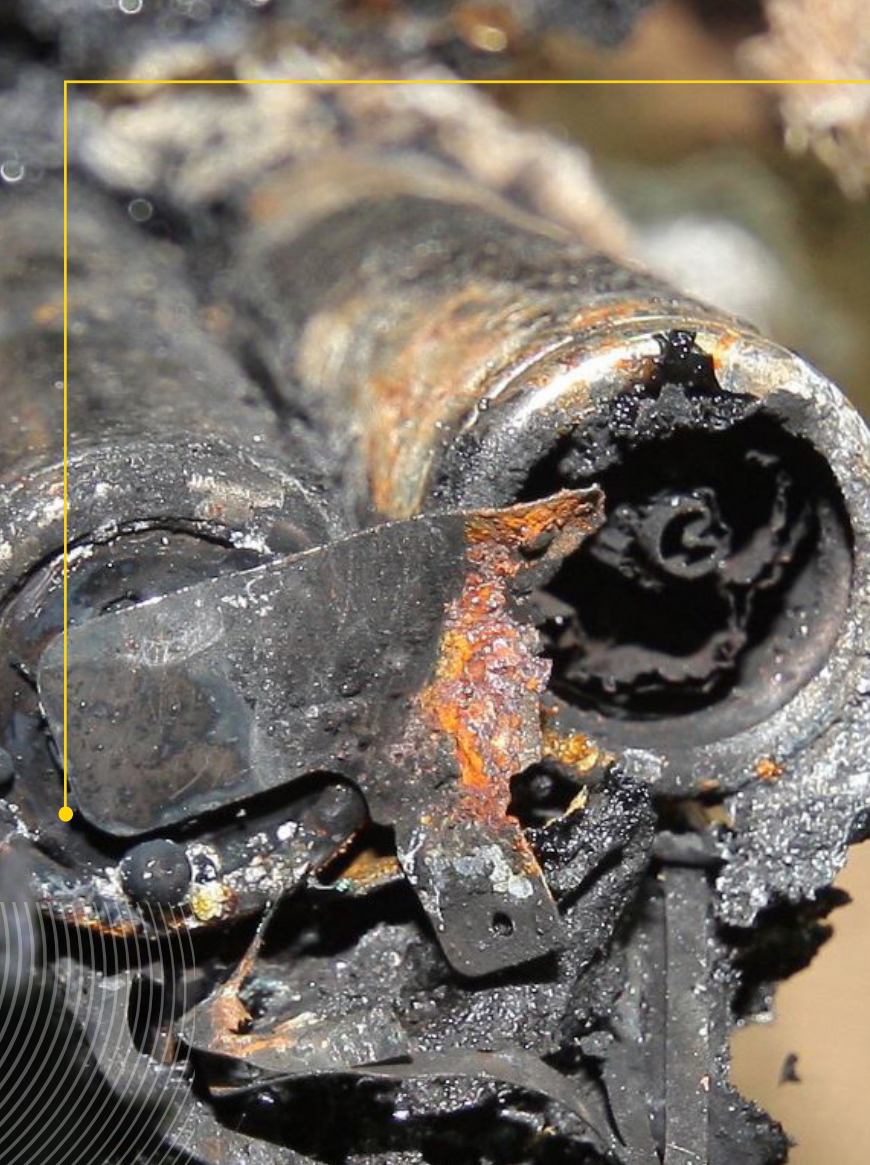
## VEHICLE, PLANT & MACHINERY FIRES

Vehicle, Plant and Machinery share common operational systems such as internal combustion engines, hydraulic, cooling and lubrication systems, as well as electronic control systems to ensure safe operation of them. Our experts keep fully apprised with the implementation of developing technologies (such as battery and hydrogen power) so that we are well prepared when they come to market. According to the Government statistics, there were over 17,500 vehicle fires in the UK in the financial year 2020/2021. The causes of these fires can vary from a manufacturer defect, fault induced by a third-party repair, poor maintenance or a deliberate act. Hawkins can provide an expert who is familiar with all aspects of such cases, and can offer clarity and answers to your questions.

## WHITE GOODS APPLIANCE FIRES

White goods include tumble dryers, refrigeration appliances (fridges, freezers and fridge-freezers), washing machines, dishwashers and dehumidifiers, and are often cited as being the cause of domestic fires. Each year, Hawkins is appointed to investigate hundreds of domestic fires involving white goods. We are typically appointed on behalf of domestic insurers or manufacturers' liability insurers.





## INSIGHT INTO LITHIUM ION BATTERY FIRES

Modern batteries vary enormously, both in their size and in the chemistry that powers them. All batteries comprise one or more cells, which are individual units that generate electricity. Lithium-ion battery cells are made by bringing together four components: a **positive electrode** (cathode), a **negative electrode** (anode), an **electrolyte**, and a **separator**.

Lithium ion batteries are exceptionally useful due to their high energy capacity in a lightweight/compact volume that can provide an almost constant output voltage regardless of the power required in the end application. However, the high energy density of lithium-ion cells, combined with the nature of their constituent materials, can often result in catastrophic failures. Catastrophic failure of cells can be initiated in a number of different ways such as thermal runaway or mechanical faults.

Other causes of catastrophic cell failure can result from mechanical faults in the cell leading to short-circuits that cause a rapid, localised build-up of heat. For example, the 2016 recall of some 2.5 million Samsung smartphone devices was issued because of two principal mechanical faults in the cell construction.

As lithium ion batteries have become more common, and the demand for production has increased, there are an increasing number of cells being manufactured that use lower quality materials and production practices, to provide a lower cost product. This presents a risk as poorer quality cells are more prone to failures, for example, the entrapment of foreign objects in the cell during manufacturing, which can lead to catastrophic failures during use.

# Hawkins' Expertise

## ACOUSTICS & AUDIOLOGY

Our experts assess and advise on acoustic design in the planning stages, and provide mitigation strategies post-construction in the event of a noise dispute.

## ARCHITECTURE

We investigate building defects to determine whether design or workmanship is the root cause. With experience in many sectors and across all RIBA stages from inception to occupation, we can provide advice tailored to your project.

## THE BUILT ENVIRONMENT

Our civil, structural, geotechnical and fire engineers provide expert investigation of defects and failures in the built environment, including water ingress, structural collapses, storm damage and personal injuries, especially on construction sites.

## CHEMISTRY & CHEMICAL ENGINEERING

Hawkins' team of highly qualified and experienced chemists and chemical engineers provide expert opinion on problems associated with chemical processes in a wide variety of industries, including: post incident investigation, goods handling, environmental concerns, hazardous substances and personal injury.

## CONTAMINATION

Our team of highly qualified and experienced chemists can investigate a wide range of contamination and spillage incidents.

## DIGITAL FORENSICS

Hawkins experts collect, authenticate and preserve original evidence. We discover the source of a digital event or attack, how it occurred, and what information may have been lost or compromised.

## ELECTRICAL

We investigate incidents including failures and injury involving most types of electrical equipment, from micro-electronics and domestic electrical appliances through to high voltage generation and distribution.

## ESCAPE OF WATER, GAS, OIL AND OTHER FLUIDS

We can provide system failure analyses for incidents involving all fluids and gases in industrial and domestic settings through onsite and laboratory investigations.

## FIRE & EXPLOSIONS

As a leader in forensic fire investigation, Hawkins has the necessary knowledge and experience to investigate the full scale of losses globally, and advise on recovery, liability and risk management.

## FIRE ENGINEERING

Hawkins has the necessary competencies to advise on fire engineering matters including compliance with fire safety legislation and guidance, investigation of fire spread and building fire safety design, construction and management.

## FRAUD

We compare physical evidence with witness accounts to establish if the evidence is commensurate with a suggested sequence of events or actions. This applies to both small and major losses.

## HYDROLOGY

Our expert hydrologists and engineers have years of experience identifying the cause(s) of complex flooding incidents.

## MARINE INCIDENTS

We assist on a wide range of incidents including agricultural cargoes, liquefaction, fires, explosions and chemical contamination.

## MATERIALS

From medical implants to satellites, our experts are on hand to establish the cause of failure of manufactured items.

## MECHANICAL

Losses often involve the failure of multi-component mechanical systems. We have the knowledge and experience to identify the cause, no matter how complex.

## PERSONAL INJURY

We provide independent and expert assistance with all types of personal injury, including specialised and complex areas like slips, trips and falls, and noise-induced hearing loss.

## PLANT PATHOLOGY

At Hawkins, plant pathology encompasses agricultural, horticultural, forestry, marine and contamination claims. Our experts are experienced in investigating the causes of plant diseases, crop failures and spoilage of fresh produce and agricultural cargoes.

## POWER & ENERGY

We investigate all aspects of this field including: electric shock, gas leaks, power failure, over-voltage, equipment failure and poor design and maintenance.

## PROCESSES

Our engineers help identify the cause of a problem and advise on liability and future prevention.

## PRODUCT LIABILITY

We are experts in the field of product liability and often deal directly with UK Trading Standards offices or similar statutory bodies.

## RAILWAYS

We have investigated incidents including derailments, unintended runaways and accidents at level crossings.

## ROAD TRAFFIC COLLISIONS

Our investigators identify all contributory factors and analyse issues such as vehicle speed, visibility, human factors, CCTV, road positioning, weather, vehicular faults and damage assessments.

## VEHICLE, PLANT & MACHINERY

We investigate fires and failures involving all types of vehicles and plant. We routinely review designs and maintenance practices to provide recommendations to our clients.



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