The key to the effective performance of AFAs is the correct design, installation, commissioning, acceptance and maintenance process. If the protocols detailed in BS 5839 are followed, a false alarm issue is unlikely to occur. This is the only way to deal with the cause of false alarms which will lead to a restoration of confidence in this life safety provision.

Until this is achieved, management must deal with the symptoms of false alarms. Primarily, this will be to ensure the safety of the occupants of premises protected by AFA systems but also to prevent false alarms being transmitted to the F&RS. On-site is where the most accurate information can be gained to ascertain the cause of the alarm actuation; where the risk to residents can be assessed and safety procedures implemented, including alerting the F&RS to a confirmed fire at the earliest opportunity, via the 999 system.
Why reduce false alarms?

In the year 2009/2010 East Sussex Fire & Rescue Service responded on blue lights to 12,607 incidents. Of those, 35% (4,399) were False Alarms from Automatic Fire Alarm Systems.

Impact of false alarms on ESFRS

- Diverting essential services from real fires and rescues (putting lives at risk).
- Unnecessary risk to crew whilst responding (vehicle accidents).
- Disruption to crew’s training, arson reduction and community safety/ fire safety activities.
- Demoralising to personnel (not another false alarm!).
- Cost of attendance to the Fire & Rescue Service.
- Wear and tear on vehicles.

Impact on the Community

- Disruption of business (unnecessary downtime costs whilst building is evacuated, loss of business, disruption).
- Unnecessary risk to public from responding fire engines.
- Complacency “oh it’s just another false alarm” – reduces effectiveness of management plans and safety of staff.
- Cost to business of Retained fire fighters being released for duty.
- Impact on the environment of unnecessary appliance movements.
- Cost of attendance to Tax payers – Council Tax.
Typical Causes

The following typical causes of false alarms can usually be avoided by improved awareness and by taking simple actions:

General – Including Human Error

- Cooking fumes
- Steam
- Aerosol sprays
- Dust and cereal thrips/insects in detectors
- Smoking near detector
- Controlled processes that produce smoke or flame
- Water ingress
- Contractors involved with “hot work”
- Electromagnetic interference
- Mechanical Damage/Disruption
- Cosmetic Smoke
- Incense / joss sticks

Environmental

- Electrical storms
- High humidity
- Substantial fluctuation in temperature
- Pressure surges on water mains serving automatic sprinkler systems
- External smoke or fumes
- High air velocities

Technical

- Detector or alarm system equipment faults
- Testing or maintenance of fire alarm system without warning Alarm Receiving Centre
Actions that can be taken

Cooking fumes

Cooking fumes are one of the major causes of false alarms, especially in Houses of Multiple Occupation (HMO) and Sheltered Housing Schemes. Doors should not be propped open that can allow cooking fumes from kitchen areas to activate smoke detectors in adjacent areas.

Actions:
- Close doors or fit automatic or spring loaded door closers.
- Fit an Extractor fan (cooker hood or wall/window mounted) and ensure it is being maintained.
- Review Detector type and positioning - consider Carbon Monoxide (CO), Heat, or Multi-Sensor.
- Fit Cooker/Electricity Timer Switch. These can be fitted in premises that consistently suffer from false alarms due to cooking fumes. They can switch the electricity/gas off after a period of time if a safeguard button is not pressed. Alternatively, consider motion sensors that switch the electricity/gas off if the kitchen has been empty for a period of time.
- Food Trolleys in Hospitals - a method of reducing false alarms from food trolleys is to mark out safe areas to leave the trolleys, away from detectors.
- Toasters - to remove toasters that do not have timers or a pop-up facility and remove crumbs regularly.
- **Review Management procedures - what should happen when alarm activates. Wherever possible, ensure a safe investigation of the cause to avoid summoning the Fire Service to a confirmed false alarm.**

Steam

Smoke detectors can be activated by steam. Ensure that steam from ovens, showers and bathrooms etc. cannot reach smoke detectors in adjacent areas.

Actions:
- Close doors or fit automatic or spring loaded door closers.
- Fit an Extractor Fan and ensure it is being maintained.
- Review Detector type and positioning - carbon monoxide (CO), heat, or multi-sensor.
- **Review Management procedures - what should happen when alarm activates. Wherever possible, ensure a safe investigation of the cause to avoid summoning the Fire Service to a confirmed false alarm.**
Aerosol sprays

Cleaning staff in particular should be made aware that aerosol sprays used near smoke detectors can cause false alarms. Use aerosols with care, away from smoke detectors.

Actions:

- Education of occupants.
- **Review Management procedures – what should happen when alarm activates. Wherever possible, ensure a safe investigation of the cause to avoid summoning the Fire & Rescue Service to a confirmed false alarm.**

Cooking fumes, steam and aerosol sprays account for the majority of false alarms. In many cases someone would be aware of the cause of the actuation and whether it is false. These are easily resolvable with common sense management procedures.

Dust and insects in detectors

Dust that collects in a smoke detector head could be removed by a quarterly vacuum cleaning, however, a maintenance contractor should still thoroughly service all detectors at relevant intervals.

Actions:

- Manage any work that might produce dust in a room/area protected by a smoke detector – see ‘Engineers/Contractors on site’ below
- Insect Repellent strips could be fitted onto the detector.
- A regular maintenance and cleaning regime to remove dust and insects in the vicinity of detectors.
- **Review Management procedures - what should happen when alarm activates. Wherever possible, ensure a safe investigation of the cause to avoid summoning the Fire & Rescue Service to a confirmed false alarm.**

Smoking near detectors

Smoking near detectors can trigger the fire alarm.

Actions:

- Education of occupants.
- Review Detector type and positioning.
- **Review Management procedures - what should happen when alarm activates. Wherever possible, ensure a safe investigation of the cause to avoid summoning the Fire & Rescue Service to a confirmed false alarm.**
**Water ingress**

Smoke detectors should be protected against water entering the base from the ceiling.

Actions:

- Weaknesses found as a result of heavy rainstorms or leaks should be corrected.
- **Review Management procedures - what should happen when alarm activates. Wherever possible, ensure a safe investigation of the cause to avoid summoning the Fire & Rescue Service to a confirmed false alarm.**

**External fumes**

External fumes, e.g. from bonfires, can cause false alarms if fumes enter the building via open windows or the air conditioning unit, especially during the summer months or seasonal celebrations, e.g. Guy Fawkes Night, Diwali.

Actions:

- Communicate with neighbours to identify incidents that could cause false alarms. This would increase awareness of potential false alarms.
- Closing of windows in these cases would avoid the false activation of smoke detectors in the building.
- **Review Management procedures - what should happen when alarm activates. Wherever possible, ensure a safe investigation of the cause to avoid summoning the Fire & Rescue Service to a confirmed false alarm.**

**Test without Prior Warning**

The Fire & Rescue Service are called by an Alarm Receiving Centre, as the Management have not pre-warned them of the test.

Actions:

- Encourage the Call Centre to take the Engineer’s mobile phone number when s/he tells them s/he is testing/working on the system.
- **Review Management procedures – what should happen when alarm activates. Wherever possible, ensure a safe investigation of the cause to avoid summoning the Fire & Rescue Service to a confirmed false alarm.**
Engineers/Contractors on site

When Engineers/Contractors are on site there is an increased risk that the fire alarm may be actuated accidentally. This may be due to the creation of dust, affecting smoke detectors, or working close to the alarm system, where “hot work” involving cutting, welding or if electrical interference is created. Also Engineers working on the system should ensure that the system will not create false alarms.

Actions:

• Ensure the Contractors have and operate a Hot Working Permit system.
• Educate the Contractors on false alarm reduction and actions they should take. Engineers should be reminded to ensure all actions are taken to reduce false alarms.
• Consider fining the contractor if he sets off a fire alarm due to negligence.
• Cover the detectors or isolate the zone and warn staff of the temporary change in the fire alarm situation.
• Clean covers before removal from detectors.
• Ensure at the end of the work that the covers are removed and the system returns to its normal state.
• Review Management procedures - what should happen when alarm activates. Wherever possible, ensure a safe investigation of the cause to avoid summoning the Fire & Rescue Service to a confirmed false alarm.

Environmental

Environmental conditions, e.g. adverse weather conditions particularly electrical storms, can cause a fire alarm system to malfunction and produce false alarms.

Actions:

• Consider taking remotely monitored automatic fire alarm systems off-line during this period if a responsible person is present, a 999 call could be made direct to the fire service if an emergency.
• Review Management procedures - what should happen when alarm activates. Wherever possible, ensure a safe investigation of the cause to avoid summoning the Fire & Rescue Service to a confirmed false alarm.
Technical faults

Ensure that following an occurrence of a false alarm, the cause is investigated and recorded. Prevent re-occurrence and improve reliability by taking necessary remedial action, involving the alarm maintainer as necessary.

Actions:

- The Chief Fire Officers Association and relevant Trade Associations encourage the use of a third party accredited Maintenance Company. Use of these maintenance companies could be considered.
- Ensure Maintenance is in compliance with the relevant British Standard.
- Ensure an engineer is mobilised to resolve any problems and interim actions are in place to prevent a repeat activations due to system faults.
- Ensure the problems are resolved as soon as possible to prevent the Fire & Rescue Service mobilising to the same problem. Procedures to cover this time period.
- Review Management procedures - what should happen when alarm activates. Wherever possible, ensure a safe investigation of the cause to avoid summoning the Fire & Rescue Service to a confirmed false alarm.

Incorrect positioning or type of detector

In certain situations the positioning of smoke detectors can cause false alarms. Also consideration for use of a different type of Detector might reduce the likelihood of false alarms

Actions:

- Review positioning of detectors.
- Consider the use of an alternative fire detector
- A heat detector would reduce the majority of false alarms, however they do not react as quickly as a smoke detectors and therefore, do not offer as much protection. The use of heat detection requires special consideration to ensure that the premises Risk Assessment accounts for this reduction in protection. In a property with a sleeping risk, it is generally accepted that the person in the room of origin would be at a greater risk as heat detectors usually actuate later than smoke detectors. However a heat detector will activate the automatic fire alarm system which will alert the rest of the premises.
- Another option would be to consider a stand-alone, hard wired smoke detector as an addition to the heat detector, thus still allowing for the protection of the person in the room and allowing for false alarm identification without the full alarm system being actuated. A system of maintenance (for the automatic and stand-alone fire alarm) must also be provided.
- Carbon Monoxide (CO) Detectors - could be used in conjunction with the approved fire alarm system where there are persistent false alarms caused by cooking fumes. CO detectors should be supplementary to the approved detection system and positioned in higher risk areas.
- Ionisation chamber smoke detector where shower steam has caused persistent false alarms.
- New technology, such as multi sensor detectors offer greater flexibility in terms of sensitivity and identification. The use of newer technologies, such as hybrid detectors should be considered to offer suitable protection while reducing the occurrence of false alarms.
There is a general misunderstanding that the fire safety arrangements in a premises are only of concern just prior to the Fire & Rescue Service doing an audit. The Regulatory Reform (Fire Safety Order) 2005 puts the emphasis on the management/owners to manage this everyday.

Actions:

• Encourage better ownership and management. It is no longer acceptable to call the Fire & Rescue Service just because and as soon as an alarm actuates. A review of the premises Risk Assessment and Procedures to (where possible) identify obvious false alarms prior to calling the fire service could be considered. Actions are subject to the premises Risk Assessment.

• The key to the effective performance of AFAs is the correct design, installation, commissioning, acceptance and maintenance process. If the protocols detailed in BS 5839 are followed, a false alarm issue is unlikely to occur.

• The ideal place to prevent false alarms being transmitted to the Fire & Rescue Service is on-site. This is where the most accurate information can be gained to ascertain the cause of the alarm actuation and from where the F&RS can be alerted to a confirmed fire at the earliest opportunity, via the 999 system.

• The use of a time buffer or predetermined delay which may differentiate between night and day would allow for the identification of obvious false alarms, is to be encouraged, subject to the premises Risk Assessment. It is no longer acceptable for premises to call the Fire & Rescue Service (whether by 999 or by Alarm Receiving Centre (ARC) just because the alarm has actuated without trying to implement management procedures (where possible) to identify false alarms.

Conclusion:
A large proportion of the causes listed above could easily be identified as false alarms by persons on the premises and hence not require a call to the Fire & Rescue Service. This approach has proven successful where it has been implemented.

ESFRS Policy can be summarised as:
“Do not call the Fire & Rescue Service if an actuation is a confirmed false alarm, if any doubts or signs of fire then call us immediately”.

Therefore, dependant upon the Fire Risk Assessment for the premises, false alarm identification prior to calling the Fire & Rescue Service should be considered. This approach would need to be incorporated into the training premises program.
Better Practice examples

All premises that have a false alarm should seek and act on professional advice. A false alarm may be an indication that there is something wrong with the detector; either the type or positioning, or there is an education issue with the person who caused the alarm. False alarms should be dealt with in accordance with BS5839-1: 2002 section 3 Limitation of false alarms.

Time period delay at fire alarm panel of up to 3 minutes

• To allow staff to confirm an obvious false alarm (this is not to be a thorough investigation but to identify obvious false alarms such as detailed in ‘Typical Causes’ above).
• If a false alarm is confirmed, the fire service should not be called but the incident should be recorded in the premises Fire Log book.
• If the staff cannot readily identify the reason for the actuation, the fire service should be called and informed of the inconclusive result of the investigation. The Fire & Rescue Service may then send fewer appliances than they would to a confirmed fire.
• If signs of fire are identified at the premises then the fire and rescue service should be called immediately.
• If the premises uses an ARC, it may be possible to hold the signal at the panel for a pre-determined time period, to allow an investigation. Where premises are unoccupied during certain hours, the panel must be able to accommodate these changes, to allow a direct link to the Fire & Rescue Service when the building is empty. N.B. It is not the Fire & Rescue Service’s responsibility to cover for premises that have removed staff due to cost saving.

Alarm Receiving Centre Call Back

• Because we are receiving so many false alarms, ESFRS will be asking Alarm Receiving Centers to phone a premises indicating an alarm, to discover if it is a false alarm, and if so, not to put the call through to us. The premises investigation should have identified the causation of the alarm. If there are doubts as to the actuation or signs of fire, a 999 call should be made to ensure early mobilisation of the Fire & Rescue Service. At a Sheltered Housing Scheme it is essential that the call back system (speaker) is positioned in a place that can still be heard if the alarm actuates.

• Any procedure must be Risk Assessed and take account of the residents ability to identify the dangers of fire and any relevant disabilities. The Risk Assessment should provide for the safety of residents from fire, for as long as reasonably practicable and not rely on either an early or large attendance by the Fire & Rescue Service.

Reconfigure the AFA System

• Consider the reconfiguration of the AFA system, e.g., requiring the activation of a second adjacent detector before the system goes into full alarm mode.

Management of premises

• Management of the premises (including staff), to compensate for human errors and actions is essential to reduce the occurrence of false alarms.

Taking the Automatic Fire Alarm System offline

• Consider taking the AFA System off-line during fully occupied and active hours. E.g., if staff are on duty or when a particular working practice is occurring, (if contractors or engineers are working on the system). This allows checking and identification of false alarms by staff. If an organisation is removing staff and then has an increase in false alarms and hence calls to the Fire & Rescue Service then the premises would be expected to review their management procedures. It is essential that the management procedures account for the system being off line and that it is switched online when required.
Sheltered Housing

- Smoke detectors provided for life safety are prone to false alarms within the confines of a flat. Newer, hybrid detectors can overcome most of the causes of false alarms but scheme owners may wish to consider fitting an additional combined smoke detector with a built in alarm, which is not connected to the fire alarm system, and place this nearer the source of whatever is causing the false alarms. The stand-alone detector can then act as an early warning to the occupant(s) who will be able to take measures to prevent the full fire alarm system operating. The stand-alone detector should be mains powered with battery back up.

- Speech Call Unit - The practice of hard wiring detectors to the Speech Call Unit as a means of providing an automatic alarm signal is common in Sheltered Housing. This is remotely monitored by an Alarm Receiving Centre. This arrangement allows a call back to the premises to identify the cause of the actuation. This however does not always reduce false alarms and is dependant on the residents’ situation. Many callbacks may not be heard as the alarm is too loud. Other residents may be hard of hearing and might not hear the call unit. However, where speech can be established with a responsible person, a confirmed false alarm can be easily identified and no call made to the Fire & Rescue Service.

Many Sheltered Housing providers/Management Organisations are removing members of staff and wardens to save money and unfortunately, this usually results in an increased number of false alarms. It must be stated the Fire & Rescue Service should not be considered as a free resource to cover a reduction in premises staffing. Not only is this inappropriate but is probably an indicator that the management of the premises are not fulfilling its legal duties under the Fire Safety Order.

Others

- False Alarm Repeat Activation - Until a system that has had a false alarm problem has been satisfactorily resolved by a responsible or competent person, an option exists to take the premises off line and any fire reported by a 999 call.

- Education - Education of premises staff, occupants and related visitors. It is essential that all persons are made aware of what actions to take if an alarm actuates and that they have been given adequate guidance on reducing false alarms.

- Raising Public Awareness - To provide advice and guidance on false alarm prevention and explain our policy. Work in partnership with all organisations such as Local Authorities, and the major institutions such as National Health Service and Universities.

Further Advice

The ESFRS web site provides further guidance, including links to:


Conclusion

- Staff & residents at premises that manage their false alarms are safer.
- Trained staff feel happier because they become part of the solution of preventing False Alarms, which are the bane of their lives.
- Management is easier because staff take responsibility for fire safety.
- It is cheaper and more efficient - time lost or work interrupted by fire alarms will be minimal or non-existent.