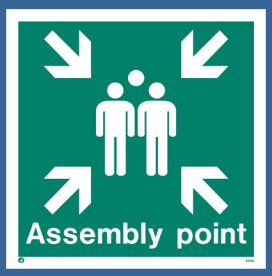

Reducing
Automatic Fire Alarm Signals

Gwasanaeth Tân ac Achub De Cymru
South Wales Fire and Rescue Service

GWASANAETH TÂN AC ACHUB
Canolbarth a Gorllewin Cymru
Mid and West Wales
FIRE AND RESCUE SERVICE

Gwasanaeth Tân ac Achub
Fire and Rescue Service

SUPPORTING YOU TO PROTECT YOUR BUSINESS

Contents

Introduction

The purpose of this guidance note is to highlight better practice, to offer both technical and procedural advice to those affected by unwanted signals from automatic fire alarm systems and to provide basic support to Responsible Persons and Competent Persons.

Basic Statistics

Welsh Fire and Rescue Services - 2016/17:

- Number of False Alarms generated by Automatic Fire Alarm (AFA) Systems totalled **10,060** incidents, which equates to **27%** of all incidents attended by the three Fire and Rescue Services (FRSs).

- False alarms cost Welsh Fire and Rescue Services £3 million and the Welsh economy £29 million per year.

A large majority of false alarms were accountable to human error or action and hence there is an awareness of the cause of the actuation. By using common sense and basic checking these could have been identified prior to the FRS being called. Therefore, correct management procedures based on the premises' Fire Risk Assessment and correct maintenance is important. The guidance within these sections is gathered from external sources following communication with related stakeholders.

Why reduce false alarms

Impact of false alarms

- Unnecessary risk to crew and public whilst responding (i.e. road traffic collisions and related accidents)
- Disruption to arson reduction, business support and community safety activities (e.g. education, domestic smoke alarm fitting, etc.)
- Disruption to the training of operational personnel
- Demoralising to operational personnel
- Increased cost to the FRS (e.g. fuel, wear and tear on vehicles, other mobilising costs, etc.)

Impact on Businesses

- Disruption of business (e.g. downtime, time wasted, loss of business and theft)
- Cost to businesses where Retained Duty System firefighters are released to respond to the incident
- Erodes user's confidence in the value and reliability of AFA Systems and discourage people from taking these systems seriously. This may result in a slow response in the event of a real fire or even no response at all.
- False alarms unnecessarily transmitted to Fire Alarm Monitoring Organisations (FAMOs) impacts on their resources (i.e. whilst dealing with false alarm alerts, operators are unable to deal with real emergencies). A FAMO could be an Alarm Receiving Centre (ARC), Telecare Service Provider (TSP), etc.

Impact on the Community

- Diverting essential services from real emergencies, thus putting lives and property at risk
- Unnecessary risk to the public whilst responding (i.e. road traffic collisions)
- Impact on the environment due to unnecessary fire appliance movements (i.e. noise, air and traffic pollution)
- Drain on public finances

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, thrips, insects, etc. in detectors
- Smoking near detectors
- Controlled processes that produce smoke or flame
- Water ingress
- Contractors involved with “hot work”
- Electromagnetic interference
- Mechanical Damage/Disruption

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

- AFA System equipment faults
- Testing or maintenance of the AFA System without warning the FAMO
- Incorrect or poorly sited devices (e.g. smoke detectors, heat detectors, manual call points, etc.)


FIRE
BREAK GLASS
PRESS HERE

Actions that can be taken

Review Management procedures:

- What should happen when alarm activates?
- Safe identification/investigation prior to calling the FRS.

New Build or Building Refurbishment

False activations can be avoided at the design stage of an alarm system. Consideration should be given to the type of detector which is most suitable for the purpose which the room is used. For example, it may be completely impractical to use smoke detection in an area where large quantities of dust or fumes are produced; similarly a heat detector may be of little use in applications where there may be sudden and rapid increases in temperature. Therefore, there is a need for business managers and alarm engineers to understand the likely conditions which may occur in specific areas of a building to eliminate unwanted AFA System activations.

Cooking fumes

Cooking fumes are one of the major causes of false alarms, especially in Houses of Multiple Occupation (HMOs) and Sheltered Housing Schemes. Doors should not be held open. This 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 and ensure it is being maintained
- Review Detector type and positioning – Smoke, Carbon Monoxide (CO), Heat or Multi-Sensor. Consult with interested parties such as landlords, FRSs, Environmental Health Departments
- Fit Cooker/Electricity 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. Others use 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 the pop up facility.

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 – Smoke, Carbon Monoxide (CO), Heat or Multi-Sensor

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

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:

- Insect repellent could be sprayed (but not into or near smoke detectors)
- 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

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.


Fire
Normal
Enable
Enable Controls
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CHQ-DRC (SCI)
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External fumes

External fumes (e.g. from grass, heath, rubbish fire, etc.) can cause false alarms if fumes enter the building via open windows or the air conditioning unit, especially during the summer months.

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

Test without Prior Warning

Where AFA System testing is conducted and the business has not pre-warned the FAMO.

Actions:

- Improve communication procedures with the FAMO

Engineers/Contractors on site

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

Actions:

- Ensure the Engineers/Contractors have and operate a Hot Working Permit system
- Educate the Engineers/Contractors on false alarm reduction and actions they should take
- Consider a fining system during the contract stage. If a contractor sets off a fire alarm due to negligence this could lead to a financial penalty
- Cover the detectors or isolate the zone and warn staff of the temporary change in the AFA System 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.

Environmental

Environmental conditions (e.g. adverse weather conditions particularly electrical storms, etc.) can cause an AFA System to malfunction and produce false alarms.

Actions:

- Consider taking remotely-monitored AFA Systems off-line during this period if a responsible person is present; a 999 call could be made direct to the FRS in an emergency

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 AFA System maintenance company where necessary.

Actions:

- The Chief Fire Officers Association (CFOA) 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 (i.e. BS5839)
- Ensure an engineer is mobilised to resolve any problems and interim actions are in place to prevent a repeat activations due to a system faults
- Ensure the problems are resolved as soon as possible to prevent the FRS being mobilised as a result of the same problem
- In the case of a defective AFA system, procedures should be introduced to cover this time period (e.g. fire wardens and 999 calls to the FRS, etc.)

Incorrect type of or positioning of Device

It is well known that the incorrect type or positioning of a device can cause false alarms. 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 devices in collaboration with AFA System Installer
- Consider the use of an alternative type of devices
- A heat detector would reduce the majority of false alarms, however, they do not react as quickly as a smoke detector hence does not offer as much protection. The use of heat detection requires special consideration to ensure that the premises Fire 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 risk as heat detectors actuate

later than other types of detector. However, it would still actuate the AFA System and alert the rest of the premises. An alternative option, other than use different type of detection, is to consider a stand alone hard-wired smoke detector as an addition to the heat detector that is attached to the AFA System, thus still allowing for the protection of the person in the room and allowing for false alarm identification without the full AFA System being actuated. If the heat detector actuates then the full AFA System would be activated. A system of maintenance (for the automatic and stand alone fire alarm system) must also be provided

- Carbon Monoxide (CO) Detectors could be used in conjunction with the approved AFA System where there are of persistent false alarms caused by cooking fumes. CO detectors should be supplementary to the approved AFA System and positioned in higher risk areas

- Where steam from shower has caused persistent false alarms, replace the Optical type smoke detector (if fitted) with an Ionisation type device

- 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. In deciding the type of detector to be installed, consideration needs to be given to the activities carried out in that area in order to ensure that the system is capable of activation as well as minimising the risk of false alarms

Poor Management

There is a general misunderstanding that the fire safety arrangements in a premises are only of concern just prior to the FRS doing an audit. The Regulatory Reform (Fire Safety Order) 2005 now puts the emphasis on the management/owners to manage these arrangements every day.

Action:

- Encourage better ownership and management. It is no longer acceptable to call the FRS just because and as soon as an alarm actuates. Consider a review of the premises' Fire Risk Assessment and procedures to identify obvious false alarms prior to calling the FRS (where possible). Note, these actions are subject to the premises' Fire Risk Assessment

Management Procedures

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 FRS. This approach has proven successful where it has been implemented.

Therefore, dependent upon the premises' Fire Risk Assessment, false alarm identification prior to calling the FRS should be considered. This approach would need to be incorporated into the premises' training program.

If the premises are connected to a FAMO (e.g. Alarm Receiving Centre, etc.) the possibility of a call back to confirm the cause of the activation prior to a call to the FRS could be considered.

Other Better Practice examples – Also see previous Actions

- All premises that have a false alarm should seek professional advice from Competent Persons

If a premises is considering implementing a time delay or "investigation phase" prior to calling the FRS, the following points will assist when considering this:

- If the alarm actuates, the staff check to confirm an obvious false alarm (this is not to be a thorough investigation but to identify obvious false alarms such as the causes mentioned previously).

- If a false alarm is identified the incident should then be recorded in the premises Fire Safety Log Book.

- Every automatic fire alarm should be backed up with a 999 call to the FRS to confirm whether it is a false alarm or a real fire.

- Premises using a FAMO (e.g. ARC, TSP, etc.) should be aware of the CFOA Code of Practice "Best practice for summoning a fire response via Fire Alarm Monitoring Organisations" available via the following link http://www.cfoa.org.uk/10863.

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 AFA 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 FRS then the premises would be expected to review their management procedures. It is essential that the management procedures account for the system being offline and that it is switched online when required

Glossary

AFA Automatic Fire Alarm: An automatic fire detection and fire alarm system.

ARC Alarm Receiving Centre: A continuously manned remote centre to which information concerning the status of one or more AFA systems is reported.

Call Back A type of filtering process undertaken by FAMOs to prevent UFS. Where call back is in place, on receipt of a fire alarm signal, a FAMO will call the premises' contact, waiting for a maximum of 30 seconds for an answer (unless a longer period is otherwise justified under a Fire Risk Assessment). If the phone is answered at any time within the 30 seconds, the call filtering process commences. If the phone is not answered within the 30 seconds, the call back process ends and the signal is relayed to the FRS.

CFOA Chief Fire Officers Association

Competent Person Nominated by the Responsible Person, the Competent Person is a person with enough training, experience, knowledge or other qualities to enable them properly to assist in undertaking the preventative and protective measures.

False Alarm A fire alarm signal resulting from a cause or causes other than a fire, in which a system has responded, either as designed or as the technology can be reasonably expected to respond to any of the following:

- A fire-like phenomenon or environmental influence (e.g. smoke from a nearby bonfire, dust or insects, processes that can render certain types of devices unstable, etc.).
- Accidental damage.
- Inappropriate human action (e.g. operation of an AFA System for test or maintenance purposes without prior warning to building occupants and/or an ARC).
- Equipment false alarms, in which the fire alarm has resulted from a fault in the system.

FAMO Fire Alarm Monitoring Organisation: A combined term which includes all remote fire alarm monitoring organisations (e.g. ARC, TSP, etc.).

Filtering Steps taken to limit a false alarm being transmitted to the FRS as an UFS and action taken by the FRS to determine if an emergency response is necessary. Filtering can be done through:

- Measures introduced on site.
- FAMOs.
- FRS.

FRS	Fire and Rescue Service
Responsible Person	This is defined in the Regulatory Reform (Fire Safety) Order 2005 and determines the "responsible person" as: ▪ In relation to a workplace, the employer, if the workplace is to any extent under his/her control ▪ In relation to any premises not falling into the above: - the person who has control of the premises (as occupier or otherwise) in connection with the carry on by him of a trade, business or other undertaking (for profit or not). - the owner, where the person in control of the premises does not have control in connection with the carrying on by that person of trade, business or other undertaking.
TSP	Telecare Service Provider: These were formerly known as Social Alarm Providers (SAP). It is a service that enables people, especially older and more vulnerable individuals, to live independently in their own home. It can be as simple as the basic community alarm service, able to respond in an emergency and provide regular contact by telephone. It can include detectors or monitors such as motion or falls and fire and gas that trigger a warning to a response centre staffed 24 hours a day, 365 days a year.
UFS	Unwanted Fire Signal: This is a false alarm from an AFA System that has been passed through to the FRS.