

# FIRE-CRYER® Multi-Message Voice Sounders

The Fire-Cryer® family of Voice Enhanced Sounders, with their unique ability to broadcast 4 messages using just two wires, are now having a major impact on the design and installation of fire alarm and evacuation systems. Viv Jones, Managing Director of VimpeX Ltd, outlines the advantages voice sounders have over traditional alarms and details a number of applications where they are being used.

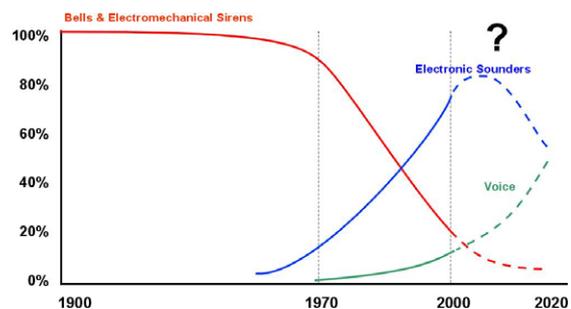


## The history of Fire Alarms

Following the invention in 1860 of the electric bell, it continued to be used for over 100 years as the prime method of raising the alarm. Whilst electro-mechanical sirens were also available they tended to be used only when high noise levels needed to be overcome or where the frequency of the ambient noise masked the bell tone.

Relatively few changes were made to the bell during the 20<sup>th</sup> century, although the position of the striker (hammer) was moved from the outside to the inside of the gong and it became known as the under-dome bell.

It was just over 25 years ago, following the introduction of the first range of electronic sounders that the use of bells began to decline. Unfortunately, with the introduction of electronic sounders, we are faced with an inordinate number of different tones. With the many other sound signals heard daily it is no wonder if one is confused on hearing any specific alarm. *Arguably the bell provided a global common tone!*

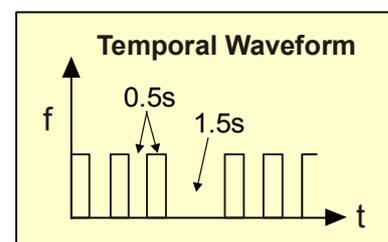


UK Market Trend for Audible Alarms

## Common alarm signal – if only!

There is no common fire warning signal in the world or even Europe let alone the UK. The Americans, to give them their due, attempted to persuade us to adopt a common temporal sound but the European fire industry did not agree to it.

The advantage of the temporal signal, or at least the theory, is that any tone - electronic or bell - could be used and if pulsed in accordance to the specified pattern would be instantly recognisable.



'What was wrong with the humble Fire Alarm Bell?' In some market sectors it is still used and considered to be immediately recognisable as the Fire Signal. In fact in some European countries it is still the favoured signal - with good reason. Modern fire bells draw minimal current and offer a very distinctive sound with a broad frequency spectrum. However, short of a national, European and then International agreement, we have to accept that no common fire evacuation signal is going to exist. *This, of course, has a number of effects not least cost!* An agreement on a common signal would result in dramatically reduced costs (see sidebar 1), followed by the single greatest benefit of all - **less confusion on hearing an alarm.**

Without a common signal, confusion is certain to continue hence the need for a clear unambiguous voice message.

Of course, the Public Address equipment suppliers have long been interested in supplying their products as the answer to aid evacuation and installations to the British Standard BS 5839 Part 8 will undoubtedly ensure that occupants of a building will be left in no doubt what they are expected to do in the event of an alarm. However these systems are costly although they do offer the additional benefits of background music, paging and live messaging through a fireman's microphone if required.

The multi-message Fire-Cryer<sup>®</sup>, however, can provide all the essentials required for evacuation at a fraction of the cost of a centralised system and can even use the sounder circuits where an upgrade of an existing system is desired. Whilst initially the Fire-Cryer<sup>®</sup> was destined for very small (one-out-all-out) installations it might be beneficial to the readers if we review the various types of installations incorporating the Fire-Cryer<sup>®</sup>.

### **The first installation and the smallest**

A disco at the end of a pier in southern England had a straightforward fire alarm system using bells for the alarm. Just before Christmas 1998 the local Fire Officer decided that they required voice evacuation. The shock of the potential extra cost for the owner was tempered by the knowledge that he would be licensed to allow extra paying customers through the door. The owner contacted his Fire Alarm maintenance company who fortunately had seen an article on the Fire-Cryer<sup>®</sup> in the August 1998 issue of Fire Safety Engineering magazine. Within 48 hours they had been supplied with the required number of voice sounders to replace the existing bells.

The same wiring was utilised and the owner was able to meet the licensing authority's requirements in time for the profitable festivities particularly over the New Year. The cost of the upgrade was quickly recovered by extra revenue.

*The existing system was upgraded by firstly interposing an interface unit on the sounder circuit. The bells were then removed and the Fire-Cryers connected to the in-situ wiring. Finally the end-of-line resistor was reconnected thus maintaining standard line monitoring.*

### **Arndale Centre**

The managing agents and the County Fire Brigade of a well-known Arndale Centre concluded that whilst they had a central evacuation system operating throughout the centre, the individual units had a variety of tenant's alarms. It was felt that an alarm operating within a shop unit, which may have been a bell or electronic sounder, could cause confusion. It was also felt vital to ensure shoppers could be evacuated from an individual shop unit to the mall before the central voice system drove other shoppers along the malls possibly hindering the evacuation of those within the alarmed shop.



How often have you been in shopping centres where you see two sounders almost side by side - one the unit alarm, the other the site alarm? Confusion surely!

The Arndale management decided that an early voice message alerting customers within a shop unit with a clearly understood message was the ideal way to avoid confusion and possible panic. Since 1999 whenever a shop becomes vacant the new tenants are requested to upgrade with Fire-Cryers<sup>®</sup>.

*To meet these project requirements it was essential that the Fire-Cryer<sup>®</sup> could operate satisfactorily with all types of control panel encountered in the Centre. The many installations within the centre are providing significant improvements in safety at a fraction of the cost of installing a dedicated system in each unit.*

## Gunwharf Quays

It was believed that the preceding project was a special case - not so! The design team of a major shopping and entertainment centre – Gunwharf Quays in Portsmouth - specified from the outset that Fire-Cryer® multi-message voice sounders should be used for the individual shops. Again it was important that compatibility of the tenant's alarms with the central system was ensured.

*The main fire alarm contractor provided a common interface with an integral message switching unit thus enabling the use of multi-messages. Many hundreds of Fire-Cryers® are installed and they work side by side with an advanced full voice evacuation system.*

## Imperial College

A Fire Consultant, visiting Fire-Expo 1998, recognised that the Fire-Cryer® could solve a major problem.

Imperial college London has a multitude of buildings many completely separated from each other. It was decided that during the installation of new fire systems the opportunity was there to meet the demand of the licensing authorities to implement voice evacuation in places of public entertainment.



Imperial College, London.  
Photograph: Jan Chlebik

Initially the Fire-Cryer® was installed in the Students' bar, followed by upper and lower common rooms and then one of the great halls. The likelihood is that thousands of Fire-Cryers® will ultimately be installed both in new systems and others in upgrades throughout this historic college.

*The students quickly put the Fire-Cryer® to use. In the early hours there was an alarm – albeit an unwanted one! The Fire-Cryer performed as designed and evacuation was completed in record time. A simple, clear, unambiguous voice message works.*

## London Underground

No one in the Fire industry can doubt the commitment over the past decade of London Underground to improve its Fire Alarm systems. They have not only introduced leading-edge detection systems but have probably the greatest challenge in evacuation terms. Whilst below ground they have found the need for fully integrated centralised systems, in their above-ground responsibilities they have found that voice enhanced sounders meet their criteria.

Acknowledging their need to alert and warn passengers as soon as possible, they also have the responsibility to avoid panic. The use of coded messages, as a pre-alarm to staff to take up positions and investigate an alarm immediately without initially alerting passengers, was a pre-requisite of the first installation of Fire-Cryers® for London Underground. It was also vital that the instruction to passengers to evacuate the station was given within a pre-determined time unless the initial alarm was found as false or malicious and the alarm muted.



A pre-alarm is issued by a coded voice message and a time-out routine is commenced. On completion of the time-out an evacuation message is broadcast. In the event of a genuine alarm the timeout may be overridden with the evacuation instruction immediately broadcast

or, subject to the responsible person resetting the fire panel prior to the time-out period, the alarm can be muted.

### **Identity Crisis!**

References to the many types of installation, including Schools, Hospitals, Air Traffic Control Centres and Multi Screen Cinema complexes, convince us that the Fire-Cryer® multi-message voice sounders are establishing a broader base than initially envisaged.

Neither a conventional sounder nor a centralised voice evacuation system, it might be thought to have an identity crisis. To the users and installers, however, there is no doubt that it provides a cost-effective solution to a real need. Staff in an office or workers in a factory might reasonably be expected to recognise the fire signal through regular fire drills. But, can the public in strange premises under pressure be expected to identify the fire signal amongst all the other alarms in our workplaces?

In the absence of a common tone, is the voice alarm concept too simple to accept? For fear of repeating the obvious, without a common fire evacuation signal the demand for voice sounders is inevitable. And, of course, foreign language versions are available!

### **The Fire-Cryer Family**

The Multi-Message Fire Cryer® range offers an effective one-to-one replacement of traditional bells or electronic sounders. Working on just two wires, up to 4 messages can be controlled from the fire alarm control panel or the Voice Message Controller Unit. The family consists of:

#### *Fire Cryer®*

The standard unit provides an attention-seeking alarm signal at 100dBA with the voice content approximately 3dBA lower. Average current consumption is 20mA.



#### *Mini-Fire Cryer®*

Producing 90dBA in an all-round sound pattern the Mini offers a mounting platform for most detectors or may be used as a stand-alone bedroom/local voice sounder.



#### *Midi-Fire Cryer®*

A maximum sound level of 110dbA is produced and the cast aluminium housing makes it eminently suitable for industrial applications.



#### *Maxi-Fire Cryer®*

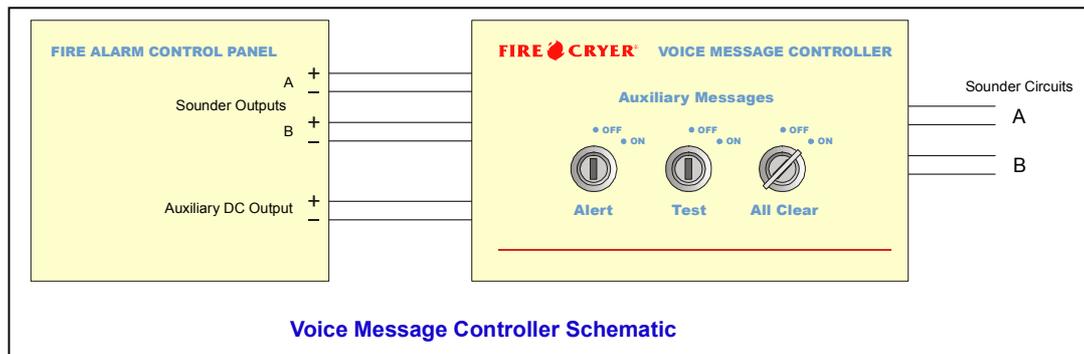
The Maxi offers 118dBA at just 180mA 24Vdc for applications in vast open indoor or outdoor areas or where high background noise levels exist. It is housed in a marine specification housing ensuring IP65.



The Fire-Cryer® and/or any combination of the members of the Fire-Cryer family may be connected to a common circuit thus offering unique flexibility for system designers.

## Voice Message Controller - VMC

Recognising that installation companies are looking to carry out their installation or upgrade with speed and to limit any on-site bespoke activity, the multi-message switching unit was introduced. The VMC allows the full benefits of the Fire Cryer® to be utilised, easily. It is simply connected - [see schematic](#). The only additional cable, other than the sounder circuit is an auxiliary 24 Vdc supply from the fire alarm control panel.



### Operation

In the event of an alarm the default (usually the evacuation message) signal is broadcast. This message will consist of firstly an attention-seeking tone followed by a short, clear unambiguous message such as "Fire! Fire! Please leave the building". This will be repeated continuously until, as with normal systems, the fire panel is reset. This, however, is where the familiarity with normal systems ends.

With the VMC you have the benefit of broadcasting an additional 3 messages and, making no apologies for repeating myself, I wish to emphasise that no additional sounder circuit wiring is required for these extra auxiliary messages ([see sidebar 2](#)). The VMC, on operation of one of the message key switches will transmit, using its patented protocol, a series of pulses along the sounder circuits. It may now be clear why an auxiliary 24V supply is necessary, as without the sounder circuits being 'in alarm' they have no power, other than that required for monitoring purposes.

These pulses have two functions - one is to ensure 100% synchronisation and the other is to excite the individual processors in the Fire Cryers® to broadcast the selected message. This message however will be immediately overridden by the default evacuation message in the event of an alarm being activated.

## Sidebar 1

### **Cost of Unwanted Alarms**

*Unwanted alarms are recognised as costly by the government in their role as paymaster to the Fire Brigades. They can also be costly to the Entertainment, Hotel, Travel and Retail industries.*

*But can the Fire-Cryer<sup>®</sup> help to reduce these costs? Indirectly, the answer is yes! Whilst we have no way of eliminating the unwanted alarm, the Fire-Cryer<sup>®</sup> can certainly mitigate the cost associated with evacuation.*

*Should the alarm or alert be found to be unwanted, by ensuring one of the messages available is an all clear or this is a fire test or return to normal activities, etc. could be used to quickly inform occupants of the building. In other words the Multi-Message Fire-Cryer<sup>®</sup> can be used to great effect not just for evacuation but also by informative messages that can avoid a great loss of time due to uncertainty.*

## Sidebar 2

### **Dynamic Multi-Messaging**

*Multi-message Fire-Cryer voice-enhanced sounders, through the Voice Message Controller, offer the ability to select a message from up to four programmed into the sounder; the MkII, to be launched later this year, will offer up to 16. At present, our library consists of over 100 different messages*

*The first message, or default message, is normally the evacuation message, the 24V supply being derived from the standard sounder circuits after an alarm has been initiated. The advantage with the multi-message Fire-Cryer over single-message devices is that it provides a real opportunity to communicate. Whilst still utilising the standard sounder wiring by imposing a data stream on a 24V auxiliary supply fed to the sounder circuit, it is possible to offer additional messages.*

*Obvious benefits result. If, for example, messages such as 'THIS IS A FIRE TEST, NO ACTION REQUIRED' or 'ALL CLEAR. ALL CLEAR. NO FURTHER ACTION REQUIRED' were transmitted an immense improvement over conventional sounders is undeniable.*

*Earlier in this article we touched on the problem of nuisance alarms or, dare we say, false alarms – still unfortunately far too prevalent. Of course, the Fire-Cryer can do little or nothing to reduce these but can assist in the post false alarm period. With the multi-message Fire-Cryer it is simple to reverse reactions precipitated by a false alarm by switching to either of the above two messages – or indeed any other appropriate message.*

*Sadly, in this age of terrorist activity, some customers have specified messages suitable as bomb alert. Others require a fully coded message to alert and prepare staff prior to full evacuation. The operation by key switch control of auxiliary messages is quite separate from the initiating circuits. However, in the event of a genuine alarm, the evacuation (default) message will immediately override any auxiliary announcement.*

*All this is achieved on just two wires - the same two wires that are used for conventional sounder circuits thus offering a retro-fit up-grade to existing systems.*