We make everyday life safer
Voice Alarm Introduction
The EN 54 Fire detection and fire alarm systems is a mandatory standard that specifies requirements and laboratory test for every component of fire detection and fire alarm system and it allows the free movement of construction products between countries of the European Union market.

It was developed and approved by European Committee for Standardization (CEN, French: Comité Européen de Normalisation).

This standard is widely recognized around the world for several countries outside of European Union. It is recognized in Middle East, Latin American countries, Brazil, African and Asian countries and several islands in the Pacific Ocean.
Why do we need Voice Evacuation?

13% of people react in a timely manner to **BELLS**

45% of people react to **TEXT information**

75% of people react in a timely manner to **VOICE messages**

Voice Evacuation Introduction

The primary reason for using a Voice Alarm System is to reduce the time taken for those at risk to recognize that an emergency exists.

Research has proven that in an emergency people will react without confusion or panic if they receive a clear, intelligible voice message.

Bells and sounders only give a warning without indication of nature of the emergency – notifications of this type are much less effective.

Automatic, phased evacuation using clear voice announcements (pre-recorded messages) ensures that occupants are evacuated in fast and safe way.

Voice evacuation is effective in preventing the outbreak of panic.
Voice Evacuation Introduction

Bells and sounders only give a warning without indication of nature of the emergency – notifications of this type are much less effective.
## Area for Voice Alarm implementations

<table>
<thead>
<tr>
<th>Public Buildings</th>
<th>Offices / Schools / Universities / Shopping Malls / Railway Stations / Airports / Hospitals / Conference Centres / Parking areas (garages) / etc...</th>
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<tbody>
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<td>Hotels / Living accommodation</td>
<td>Hotels / Motels / Dormitories / Apartment Buildings / Old Peoples’ Home (HMO)</td>
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<td>Industrial</td>
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</table>
Voice Evacuation Introduction

- A building is ‘divided’ into separate areas – **ZONES**.

- Zones can be broadcasted individually with different messages, several at once or as an ‘all call’.

- During an emergency people are instructed how to behave and safely leave the building.

- Evacuation control is either via pre-recorded messages stored in the system memory and/or via emergency fire microphone.

- The system is fully monitored, all faults are reported.
As of 1st April 2011 Public Address Systems used for Voice Evacuation and directly connected to Fire Alarm systems need to be tested and approved to the applicable EN standard

**Part 16** Voice alarm control and indicating equipment – VACIE

- The standard specifies requirements, methods of test and performance criteria for voice alarm control and indicating equipment for use in fire alarm systems installed in buildings.
- EN 54-16 cover emergency alarm systems connected with Fire Detection System. It does not cover non-fire applications where Voice Evacuation System is not connected to fire indicating and control equipment. It may however be used for such systems.
- EN 54-16 certification is only granted when a complete system setup is tested and approved, including the 19” rack in which the system is fitted.

**Part 24** Components of voice alarm systems – Loudspeakers

- Voice alarm loudspeakers as components of a voice alarm system provide intelligible warning to people in a building.
- Voice alarm loudspeakers need to achieve a minimum acoustical performance to be suitable for use in fire alarm systems.
- The standard gives common requirements for the construction and robustness of voice alarm loudspeakers as well as their performance under climatic and mechanical conditions.

**Part 4** Power supply equipment

- The EN 54-4 power supply equipment may have its own cabinet, or may be housed with other equipment of the fire detection and Voice Alarm system, such as the control and indicating equipment EN 54-16.
- There shall be at least two power sources for the power supply of a fire detection and voice alarm system; the main power source and the standby power source. At least one standby power source shall be a rechargeable battery. The power supply equipment shall include charging equipment to charge the battery and maintain it in a fully charged state.
- Each power source, on its own, shall be capable of operating those parts of the fire detection and voice alarm system for which it is intended.
EN 54 Certification Procedure

/ Manufacturers must prove via an approved certification body that their products comply with the harmonized standards and therefore may carry a CE marking mentioning EN 54-16, EN 54-24 or EN 54-4.

/ Product approval procedure to use CE marking according to CPR include environmental, safety and functionality tests as specified in the standards requirements.

/ Certification body frequently audits production process at the manufacturers’ facility(ies) to ensure Factory Production Control.

/ Bodies that test, audit and certify have to be accredited by European accreditation bodies. This is to ensure that product testing and certification follow international standards.
/  **Short circuit or any interruption** in a transmission path to a power supply

/  **The power supply faults** as specified in EN 54-4

/  **An indication at least common to any earth fault or less then 50 kΩ** which is capable of affecting a mandatory functions

/  **Any short circuit or interruption**, at least common to all transmission path between parts of the VACIE, loudspeakers, any fire alarm devices

/  **Failure of any power amplifiers**

/  **Faults in VA Zones**
   »  One fault indicator per VA zone

/  **Fault in the connection to the fire detection system**
   »  A separate indicator must be provided
EN 54-16 Voice alarm control and indicating equipment

OPTIONAL FUNCTIONS

/ Redundant power amplifier
/ Emergency fireman microphone
/ Audible warning
/ Phased evacuation
/ Delay to entering the voice alarm condition
/ Manual silencing of the voice alarm condition
/ Manual reset of the voice alarm condition
/ Output to fire alarm devices
/ Voice alarm condition output
/ Disabled condition
/ Voice alarm manual control
/ Indication of faults related to the transmission path to the CIE
/ Indication of fault related to voice alarm zones
/ Interface to external control device
EN 54-24 / Fire Alarm Loudspeakers

- **EN 54 part 24** which regulates loudspeakers for Voice Alarm systems.

- **Loudspeakers** in a life safety sound system are **vital to convey emergency evacuation instructions to the public**. EN 54-24 certification ensures the **speaker circuit integrity** will be maintained in the event of a fire, and that **audibility and intelligibility** of the loudspeakers meets the required standard.

- **EN 54-24** gives **common requirements for the construction and loudspeakers performance** under climatic and mechanical conditions. It does not take into account the acoustical surroundings.

- All of EN 54-24 speakers are **rigorously tested** by a third party before being certified as fit for purpose

- As additional/optional requirement for EN 54-24 speakers have additional **thermal fuse & ceramic terminal block** to prevent short circuit in case of fire.
A Standard Fire Alarm System
Centralised Fire Alarm and Voice Evacuation System
Decentralised Voice Evacuation

Usually offered on site wired installations where a number of buildings need to be covered.
A voice alarm system has various inputs, which must be prioritised. This ensures the most important input (i.e. fireman microphone) overrides any other input signal.

Typical priorities are as follows:

1. Fire microphone 1 (all call)
2. Fire microphone 2 (zone select)
3. Evacuation message
4. Alert message
5. Background music
6. Spot announcer (advert injection)
7. Paging microphone
8. Other emergency message
Phased Evacuation / High Rise Building

**EUROPE**

**3rd Floor, Staircase**
- **FIRE**
- **EVAC MSG**
- **ALERT MSG**

**Floor +4, +6**
- **ALERT MSG**
- **EVAC MSG**
Phased Evacuation / High Rise Building

**FIRE** – 3rd floor  
**EVAC MSG** – 5th floor, staircase, ground floor  
**ALERT MSG** – floor +4, +6  
After 3-5 minutes – **EVAC MSG** – all zones
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