Buyer's Guide: Voice Evacuation Systems (PA/VA)

1. Overview

A Voice Evacuation System (PA/VA) is a life safety communication system designed to deliver clear, intelligible voice messages during emergencies such as fire, smoke, or other life-threatening situations.

Unlike traditional sirens or bells, voice systems provide specific instructions — reducing confusion, panic, and improving evacuation efficiency.

Modern PA/VA systems also serve dual functions:

- ✓ Daily use: Background music and public address.
- ✓ Emergency use: Priority voice alarm and evacuation control.

2. Purpose and Function

Primary Roles

- ✓ Broadcast automated evacuation messages during fire or emergency events.
- ✓ Deliver real-time live instructions from control centres or fire command posts.
- ✓ Support zonal paging, alert, and evacuation sequences.
- ✓ Integrate with fire alarm control panels (FACP), BMS, or security systems.

System Types

- ✓ Standalone voice alarm systems (for small facilities).
- ✓ Integrated PA/VA systems (for large or complex buildings).

- ✓ Networked and IP-based systems (for multi-building campuses).

3. Key Buyer Questions

Technical Questions

1. What standards or certifications does the system comply with (e.g. BS EN 54-16, BS EN 54-24, UL 2572)?
2. Is the system scalable and modular for future expansion?
3. How many zones and loudspeakers can the system support?
4. Does the system allow live paging, pre-recorded messages, and manual overrides?
5. What is the intelligibility performance (STI rating)?
6. Are redundant amplifiers, power supplies, and network paths available for failover?
7. Can it integrate with fire detection, security, and BMS systems?
8. What speaker types (ceiling, wall, horn, line array) are certified for voice alarm use?
9. Are the amplifiers and control units EN54-certified (especially EN 54-16)?
10. How are system monitoring, fault reporting, and logging handled?

Operational & Maintenance Questions

1. Is remote monitoring or diagnostics supported?
2. What are the training requirements for staff?
3. How often must maintenance and testing be carried out?
4. What support and warranty terms are included?

5. Is there local technical service availability?

4. Benefits

Category	Benefit
Life Safety	Clear, calm voice instructions improve evacuation times and reduce panic.
Compliance	Meets modern fire safety codes (replacing outdated sounder-only alarms).
Multi-Use Functionality	Doubles as a public address and background music system.
Flexibility	Can zone messages for different areas or situations.
Integration	Connects to fire alarm, BMS, CCTV, and access control systems.
Automation	Can automatically switch from PA mode to emergency mode during fire events.

5. Negatives / Challenges

Issue	Impact
Higher Cost	More expensive than simple bell or siren systems.
Complex Design	Requires expert acoustic design and system integration.
Maintenance Requirement	Must be regularly tested to remain compliant.
Potential Misuse	Staff must be trained to avoid accidental announcements during emergencies.
Acoustic Limitations	Poor building acoustics can reduce message intelligibility if not properly engineered.

6. Compliance & Standards

European Standards

- BS EN 54-16 – Voice Alarm Control and Indicating Equipment
- BS EN 54-24 – Loudspeakers for Fire Detection and Fire Alarm Systems
- BS 5839-8 – Code of Practice for Voice Alarm Systems
- BS 9999 / Approved Document B – Building fire safety design and management

7. Best Practices

1. Engage early with a qualified designer to ensure acoustic coverage and zoning match the fire strategy.
2. Perform a Speech Transmission Index (STI) analysis during design — minimum 0.5 STI recommended for clarity.
3. Use certified loudspeakers and amplifiers only (EN54-compliant).
4. Ensure automatic priority switching from background music to alarm mode.
5. Integrate with the fire alarm control panel for real-time event triggering.
6. Include redundant amplifiers and dual power supplies in critical systems.
7. Keep manual paging microphones at strategic locations (security room, reception, fire command centre).
8. Implement regular monthly testing of live messages and automatic functions.

9. Train staff on manual announcement procedures and system resets.
10. Maintain records of all tests, faults, and maintenance actions for compliance audits.

8. Helpful Tips

- Tip 1: Choose systems that allow custom pre-recorded multilingual messages for diverse facilities.
- Tip 2: Verify that background noise levels (e.g., HVAC or machinery) don't reduce intelligibility — use sound modelling tools.
- Tip 3: Select network-based PA/VA systems for large or multi-site buildings — simplifies expansion and monitoring.
- Tip 4: Ensure battery backup for at least 24 hours standby and 30 minutes alarm operation (per BS EN 54-4).
- Tip 5: Use regular maintenance contracts with approved service providers.
- Tip 6: For aesthetic spaces (malls, offices), choose architecturally matched loudspeakers that remain compliant.
- Tip 7: Always commission and acoustically test the system before handover — do not rely solely on paper design.

9. Summary Comparison

Feature	Requirement	Notes
Fire Alarm Interface	Mandatory	Triggers automatic evacuation messages
Certification	BS EN 54-16 / 24	Must be third-party certified
Power Backup	24h standby + 30m alarm	As per standards
Speech Intelligibility	≥ 0.5 STI	Measured at design stage
Redundancy	Recommended	Dual amplifiers and power lines
Maintenance	Monthly visual + annual test	Logged per BS 5839-8

10. Conclusion

A Voice Evacuation System (PA/VA) is no longer optional — it's a core life safety requirement for modern buildings, ensuring clear communication, compliance, and public confidence during emergencies.

When purchasing, prioritize:

- Compliance with EN/UL standards,
- Acoustic design validation,
- Integration capability, and
- Certified installation and maintenance providers.

The right PA/VA system is a long-term safety investment — enhancing evacuation efficiency, regulatory compliance, and the overall safety profile of your facility.