Park Broadcasting Solution

1、 Background of demand

As a densely populated area with concentrated production activities, the park has an urgent need for broadcasting and emergency response. In daily scenarios, management needs such as notification dissemination, production scheduling, and safety knowledge dissemination need to be achieved through broadcasting; In emergency situations such as fires, chemical leaks, and natural disasters, the broadcasting system needs to quickly activate warnings, clearly convey evacuation instructions, guide personnel to avoid danger, and link with the emergency system to ensure timely and accurate information and reduce accident losses.

The new broadcasting system adopts omnidirectional sound wave technology, covering the park in 360° without blind spots. The sound waves can penetrate the walls of the factory buildings and mechanical noise, ensuring clear listening in remote areas such as storage areas and outdoor work points, and achieving efficient communication of management notifications, production scheduling, and safety knowledge. In emergency situations, the system can quickly activate warnings, output high-intensity alarm sounds and voice guidance through

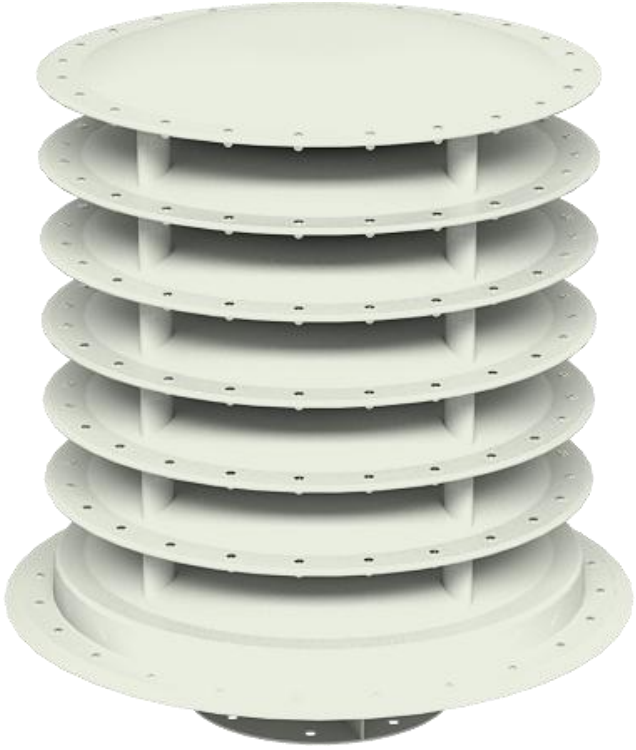
omnidirectional sound wave equipment, and link with emergency systems such as park monitoring and fire alarm to accurately locate the incident area and broadcast evacuation instructions in real time. Information transmission only takes a few seconds, greatly improving response efficiency. The system is fully sealed, waterproof and dustproof (IP56 level), and can operate stably in harsh weather. It is equipped with UPS backup power supply to ensure continuous power supply after power failure. Simultaneously supporting multiple audio input and remote control, integrating daily management, production scheduling, safety training, emergency warning and other functions, providing support for information transmission and security assurance in the park.

2、 Core equipment

Omnidirectional sound wave equipment

Omnidirectional sound wave equipment has the unique advantage of 360° wide coverage without dead corners, completely breaking the bottleneck of traditional horn directional limitations. The equipment is deployed on the top of office buildings or high points in the park. Whether it is open squares, roads, or complex factories and warehouses, the omnidirectional sound wave equipment can evenly spread sound

to every corner, ensuring that personnel at any position in the park can clearly receive broadcast information. The protection level of the equipment reaches IP56, which can resist rainstorm. The windproof noise filter screen ensures that the sound pressure level fluctuation in strong wind environment is ≤ ± 2dB, so that the equipment can still maintain stable operation in extreme weather such as typhoon and rainstorm, and become the core acoustic center for daily management and emergency command of the park.



The equipment has a peak sound pressure level of 145dB and a continuous sound pressure level of 140dB at a distance of 1 meter, which can maintain an effective sound pressure level of ≥ 75dB in a workshop environment with mechanical noise ≥

100dB. The speech intelligibility is over 92%, ensuring that production scheduling instructions and safety prompts are clearly conveyed through the roar of the machine tool. The device supports multi-mode audio input such as built-in alarm sound, microphone, wireless microphone, USB flash drive, etc. Daily production progress reports can be made through the wireless microphone, and in emergency situations, the built-in high-intensity alarm sound can be switched with one click, achieving full scene audio source adaptation from management notification to disaster warning.

The intelligent linkage design based on TCP/IP protocol enables devices to interface with the park monitoring system and fire alarm system in real time. When the monitoring screen recognizes a fire situation or the smoke detection system triggers an alarm, it automatically locates the incident area and broadcasts corresponding voice messages such as "fire alarm, please evacuate along the safe passage". The information transmission delay is ≤ 3 seconds, and a second level response loop of "monitoring warning command" is constructed.

The device supports flexible partition broadcasting and global broadcasting switching mechanisms to meet the diverse management needs of the park. In daily operations, information

can be accurately pushed according to functional areas: meeting notifications and policy interpretations are broadcasted in the office area, process instructions and equipment failure warnings are broadcasted in the production area, and canteen supply information is conveyed in the living area, achieving precise information coverage of "one zone, one policy". When sudden incidents such as chemical leaks or fires occur in the park, the system can instantly switch to the global broadcasting mode, synchronously outputting international standard alarm sounds and multilingual evacuation guidelines within a radius of 1400 meters, ensuring that all personnel in the park receive warnings within 10 seconds to fight for critical time for personnel evacuation and material transfer, and building a "sound defense line" for the safe operation of the park.

3、 Implementation of the plan

Equipment deployment

According to the layout of the park, equipment will be installed on high points such as office buildings and workshop rooftops. Based on the terrain, buildings, and functional zoning of the park, scientific planning will be carried out to ensure that there are no blind spots in the signals of all areas such as the office area and production workshop. Utilize the partition broadcasting function to push information in a targeted manner according to regional functions, such as conveying production instructions in the workshop, issuing notices and announcements in the office area, and pushing life service messages in the living area. Through wireless bridges or wired networks, achieve full coverage. Implement remote

control and fault monitoring using TCP/IP protocol. For ease of maintenance, it is required to reserve maintenance space, simplify equipment interfaces, facilitate daily inspections, troubleshooting, and equipment upgrades, and ensure efficient system operation.

Energy and Control

Power supply plan: Priority should be given to connecting to the park's power grid, equipped with UPS backup power supply, supporting continuous power supply for 4 hours after power failure to ensure emergency use.

Remote control: Connected to the park management platform through TCP/IP protocol, supporting remote control of terminals, computer on/off, volume adjustment, audio switching, and real-time monitoring of equipment status.

Audio mode application

Daily management: Regularly play production scheduling notifications, safety training voice, and support zone broadcasting (such as independent broadcasting in storage and production areas).

Emergency scenario: One click switching of high-intensity alarm sounds (such as fire buzzing)+voice guidance, linked monitoring system to locate the incident area, and automatic

broadcast of evacuation routes.

4、 Advantages of the plan

（1）Efficient coverage, no blind spots for prevention and control

Omnidirectional sound waves break through building obstruction, increasing the coverage area by three times compared to traditional directional speakers, eliminating warning blind spots in storage areas and corner areas.

（2）Strong anti-interference ability

The sound pressure level far exceeds the environmental noise, and clear voice can still be maintained in a workshop with mechanical roar (sound pressure level ≥ 75dB), ensuring effective communication of instructions.

（3） Multi functional integration

Integrating daily broadcasting, emergency warning, and linkage control, reducing duplicate equipment procurement and lowering management costs.

（4）High reliability

Industrial grade design, tested in environments such as salt spray and vibration, with an average time between failures of ≥ 50000 hours, suitable for 24-hour continuous operation in the park.