ADVANTAGES AND CHARACTERISTICS OF THE ELECTRONIC SIREN SYSTEMS

For centuries sirens have been warning people of danger. In the middle of the 20th century electromechanical sirens like the E57 or the DS977 were used for this purpose. But they provide limited options of warning signals: one to alert the population of imminent danger, a second one to announce, that the danger is over, and sometimes an additional special signal used to alarm the fire brigade.

Since the sirens were used more and more as mass warning and notification systems for natural disasters and industrial accidents, wider options of alarm signals and more reliable features were necessary. The siren development was technically pioneered by Hörmann as a market leader in this field in the 1980s.

Figure 1: **An electro-mechanical siren – Type E57 made by Hörmann in the 1950s**

Electronic sirens offer the flexibility and performance to reliably warn and notify the population in case of disasters. They are differentiated from electromechanical sirens with many vital and important features. Electromechanical sirens are still in widespread use, but are gradually being replaced by electronic sirens and only electronic sirens are used in new projects.

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The most important feature of an electronic siren is the availability of batteries, ensuring announcement of siren alerts without mains power supply. The Batteries also ensure continuous monitoring function in stand-by mode as well provide high current required to operate the Class-D amplifiers during activation mode.

The picture below shows the components of an electronic siren made by Hörmann Warnsysteme, a German pioneer in the development and manufacturing of siren systems.

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Figure 2: Electronic Siren Control Panel

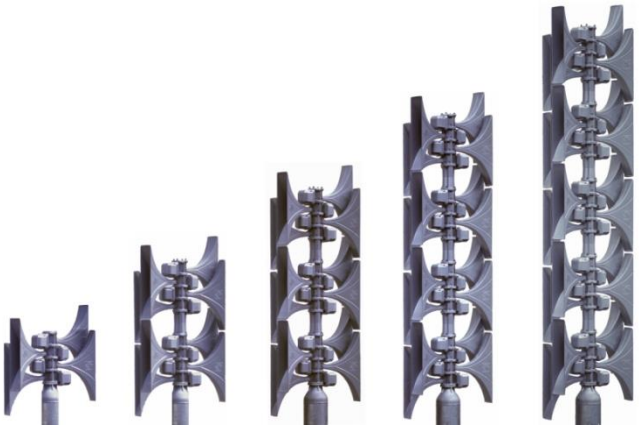

Figure 3: Electronic Siren Head Array

However, this is not the only advantage of electronic siren systems, further characteristics are:

- The ability to issue multiple signals with different warning tones. An electronic siren can be used to warn the public of different types of danger.
- The ability to broadcast recorded voice messages saved on the control panel memory to issue clear and brief instructions and therefore not only warn, but also inform the public.
- The ability to broadcast live audio messages via the microphone. Thus, it is correct to say that electronic siren systems are not only mass warning but also mass warning AND notification systems.
- The local control panel enables the user to test the status of the siren and all its components at any time. It also allows activating of the siren signals and messages and broadcasting live messages.
- Batteries are the key component of electronic sirens and one of their main advantages compared with pneumatic and electro mechanic sirens. Batteries improve the reliability of the siren system extremely. They charge with 230V. Electro-mechanical sirens need three-phase high-voltage current and have no batteries. A solar system can also be added to improve the reliability further or to use it as a single power source to charge the battery in areas without mains power supply.

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Figure 4: **Electronic siren with solar power**

- All electrical components of an electronic siren consume a very low level of energy. This is important in the event of a power failure. Therefore Batteries can keep the siren on standby for approximately one month.
- Several siren head mount options are available depending on the user's desired installation site specifications. It can be installed on a separate mast up to a height of 15 meters, or on a short mast on the roofs of buildings, or next to the wall of any building.
- The electronic siren can be controlled and monitored remotely by connecting it to control units with touch screens or simple buttons. The siren provides multiple communication interfaces between the siren and one or more control centers such as radio, GSM/GPRS, Ethernet, Fibre Optic, Satellite, and many others.
- A few or hundred of electronic sirens can be connected to the control center to ensure monitoring of their technical condition and safety around the clock 24/7. It is possible to activate alert tones or broadcast recorded and live messages from one center to one siren, to a group of sirens or to all sirens. In the figure shown below illustrates an example of an electronic siren system network.

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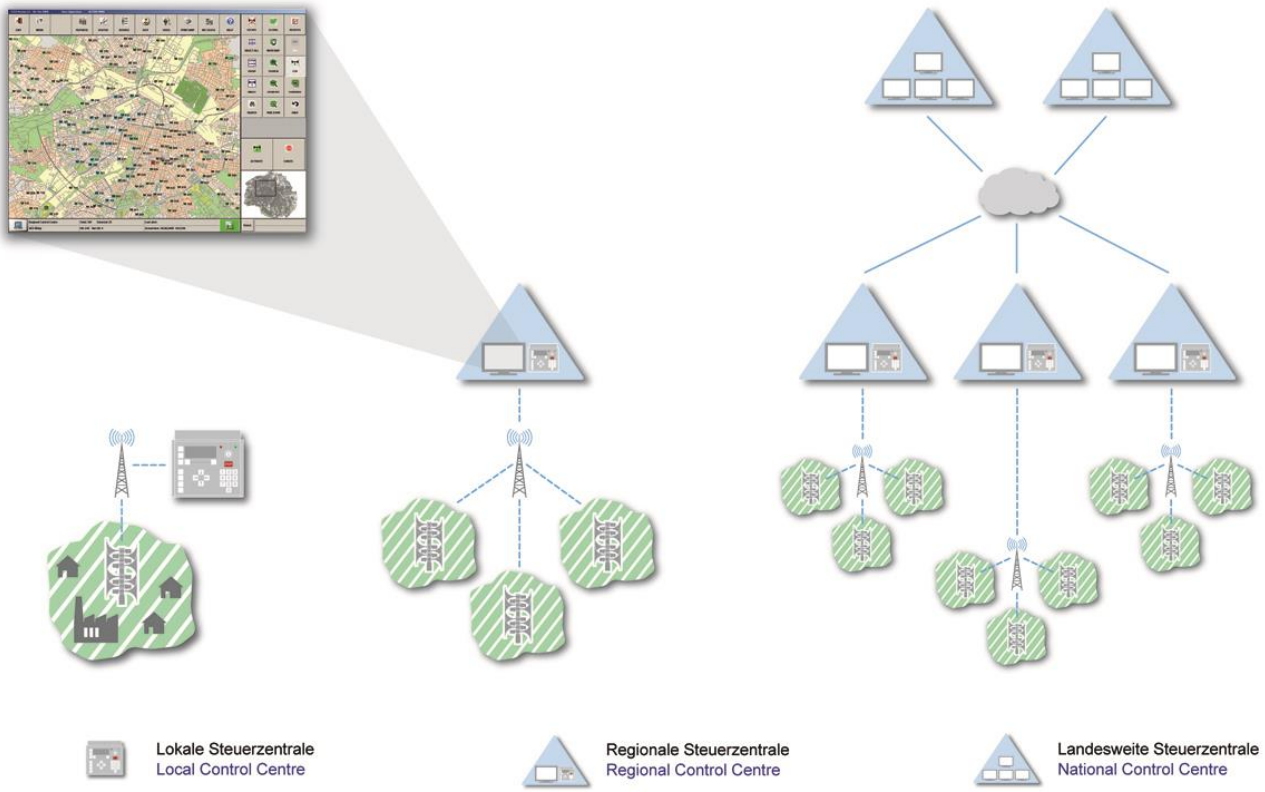

Figure 5: Electronic Sirens Network

In conclusion, the advantages provided by electronic siren systems made them suitable as mass warning and notification systems for various types of hazards and disasters. They are easy to monitor and to control remotely and they offer a high level of reliability through relying on various energy sources. Due to of their flexibility they can be customized to the needs of the respective application.

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