



Hybrid alerting system: quick, transparent, and digital

Reference report on the Mettmann District, Germany

In the Mettmann district, the Mettmann District Control Center is responsible for dispatching firefighting and rescue services in ten cities. The district has now changed its alerting infrastructure over to digital technology. Kay-Jörg

Swissphone's Express-Alarm, a patented multicast technique for digital alerting, helps deliver further time savings by shortening the time between alarm transmission and signaling on message receivers. It pairs multiple addresses for groups of emergency responders with an alerting text. This reduces the amount of data considerably, making it possible in practice to send alerts within a few seconds.



«We now have one of the most advanced digital alerting networks, and it will remain technically up-to-date for many years to come.»

Kay-Jörg Kawi, Fire Chief and Digital Radio Officer for the Mettmann district

Kawi, the Fire Chief and Digital Radio Officer for the Mettmann district, describes the infrastructure as follows: «The Mettmann District Control Center is connected to 27 wireless base stations that cover the entire district. We deploy approximately 2,000 radio pagers in the field. Multimaster technology is used to send alerts. We are able to control six master stations, which in turn control the remaining slave stations, at the same time. In this way messages are broadcast simultaneously throughout the district. Two transmissions, instead of three or four as in the past, are enough to cover the entire district. This saves time – and lives as well in some cases.»

A digital system with hybrid alerting

The digital system offers still more advantages. To name an example, all emergency responders can be notified via hybrid alerts. This is how it works: If emergency responders cannot be reached via the district's POCSAG network, the system automatically transmits the alert via

The Mettmann district in figures

Mettmann is Germany's most densely populated district. Approximately 500,000 people live and work in the 407 km² region between the cities of Düsseldorf and Essen.

GSM/GPRS. This is practical especially in major urban centers. Kai-Jörg Kawi: «Many emergency responders from our affiliated organizations live in the district, but they work in the surrounding cities such as Duisburg, Dusseldorf, and Wuppertal. We are also able to send them alerts there via the GSM network.»

Responses allow for quick follow-up alerts

Fire departments in cities in the district are already using hybrid pagers, such as RES.Q by Swissphone, in some cases. This not only allows for GSM messages to be received, but it also allows for those receiving the alert to respond. This is particularly important when considering the qualifications of emergency responders, such as team leaders or personnel with special training, which are absolutely required for the operation at hand. If they report that they are not able to respond fast enough on the ground, the control center can immediately send out a follow-up alert.

Who is deployed as emergency responders?

The same applies to the volunteer emergency responders. They can report if they are coming immediately, at a later time, or not at all. Thus, the director of operations can learn early on in the operation how many responders are available in each of the units as well as their job or task (e.g., carrying breathing gear or operating machinery). This information can be displayed, if the district fire department so desires, on a monitor in the station house or in the locker room. The Swissphone alerting system also provides an availability monitoring functionality: Staff can use their pagers to sign off. This allows the fire chief to be proactive. As an example of this, volunteer emergency responders do not receive alerts if they are not signed on in the system as being available for service.

Encrypted transmission

Employees feel that being better informed is a clear advantage. Kai-Jörg Kawi: «With analog pagers, a voice message would follow an alarm signal. Today, we send texts. That means the emergency responders have all the key information in advance and can check it again later on if they need to.» At the same time, DiCal-IDEA encryption, configured to Swissphone specifications, is used to increase data security. Kawi also confirmed: «It is close to impossible for others to eavesdrop on calls or intercept sensitive data.»

The new network has numerous fallback levels. This means the network controller as well as some of the master base stations feature a redundant structure. If the Mettmann District Control Center is out of service, the control center of the municipal fire department in neighboring Leverkusen can operate the entire network for the Mettmann district. There are two related worst-case scenarios involving events that are highly unlikely to ever occur. If the systems in the Mettmann District Control Center are still operational but staff in Mettmann cannot access them, then the alert is triggered from Leverkusen via a direct access line to the central systems at the Mettmann District Control Center. If the central systems cannot be reached, then the Leverkusen municipal fire department is able to send an alert over the Mettmann district network via a base station. Although this approach takes longer, it ensures that the alert is sent reliably throughout the entire existing network in the district.

Fully-developed emergency power concept

The district is well prepared in the event that the alerting system loses power. Six of the seven master stations are connected to an emergency power supply unit. The seventh station is equipped with a powerful battery that gives it at least 24 hours of electricity. Each of the slave stations features an external power supply that is not connected to the grid and can be powered by this in an emergency.

In the eyes of the officials in charge, working together with Swissphone during the planning and implementation phases proved easy. Kai-Jörg Kawi: «We are one of the first control centers to use a hybrid alerting system.» The result: «We now have one of the most advanced digital alerting networks, and it will remain technically up-to-date for many years to come.»

Components of the Swissphone solution

Hardware

- RES.Q with hybrid (Option)

Network

- Multimaster technology



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