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Alarm systems and their use in municipalities

Poplachové systémy a ich využívanie v obciach

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Abstract:

Currently, there is no literature in Slovakia that contains basic security and safety topics in municipalities. Mayors in municipalities are often in the role of security managers without real competencies. They have to solve security problems, but there is no institution to provide advice directly to municipalities. There is no methodology that contains possible solutions of problems in the field of security and safety in municipalities. Based on the studies realised at the Faculty of Security engineering, University of Zilina, govern the mayors of municipalities' security and safety in municipalities intuitively and unlawfully. Security in municipalities is diverse and interferes with many areas.

Keywords: *alarm, municipalities, systems, access control, transmission*

Abstrakt:

Poplachové systémy sú definované ako elektrické inštalácie, ktoré reagujú na ručnú alebo automatickú detekciu prítomnosti nebezpečenstva. Do skupiny poplachových systémov, používaných v obciach a mestách patria: elektrický zabezpečovací a tiesňový poplachový systém, tiesňový poplachový systém, poplachový prenosový systém, systém kontroly vstupov, poplachový systém vplyvu prostredia, kamerový bezpečnostný systém, elektrická požiarna signalizácia. Použitie každého z týchto systémov upravujú európske technické normy. Tie musí systém spĺňať, musí byť podľa nich inštalovaný a prevádzkovaný. Je nemožné, aby všetci tí, ktorí v obciach systém používajú, ovládali uvedené technické normy, preto v tomto článku uvedieme aspoň základné aspekty, ktoré by mali zamestnanci obcí a miest zvládať z danej problematiky, nielen na používanie, ale aj na obstarávanie takýchto systémov.

Kľúčové slová: *poplachový systém, obce, systémy, prístupový systém, prenosový systém*

Introduction

Alarm systems such as the Intruder Alarm System (IAS), the Access Control System or the Closed Circuit Television System, notwithstanding any differences as to their technology, serve, besides other things, for detecting any unauthorised intrusion of the supervised premises. Alarm systems are used in municipalities. They are installed without the knowledge of municipal management about this issue. In the municipalities missing security planning and a risk management. Management of municipalities has no knowledge of technical parameters and options when purchasing alarm systems.

1. Alarm systems

This chapter is about practical application of intruder alarm systems and hold up alarm systems, access control systems, video surveillance systems and fire detector systems in municipalities.

1.1. Intruder alarm system and hold up alarm system

Intruder alarm system and hold up alarm system (I&HAS) is a combination of an intruder alarm system and hold up alarm system. In security practice, is a commonly used term house alarm. Intruder alarm system contains these components: mainboard with power supply and backup source, keyboard (can be a card reader), intrusion detectors (motion, glass break), siren (signaling device) and the transmission device (GSM communicator, telephone communicator, LAN communicator). Communication between the components may be by wire or wireless. Wireless systems are more appropriate to install in objects where the conductors cannot insert into the walls or they cannot be stored in plastic strips. Wire system are convenient for new buildings. They offer many possibilities to extend, the user does not need to replace the batteries in the sensors and they are more reliable.

By intruder alarm system and hold up alarm system is possible to divide the areas into zones, to create areas with permanent protection (warehouses) or protect zones while they are closed. In case of emergency employees of municipal office can use the hold up alarm system to call for emergency assistance (health problems, robbery).

For detection of attack in the protected area, we can use many types of motion space detectors (passive infrared detectors, microwave detectors, combined detectors and other). Detectors of glass breakage, magnetic contacts, and others are used to detect the attack on the building envelope. The motion in the perimeter can be detected by external motion detectors, which work on different principles. Intruder alarm systems and hold up alarm systems also can be used to monitor non-alarm factors such as temperature or flooded areas with water. They may also contain smoke detectors. Intruder alarm systems and hold up alarm systems are certified for one of four possible security grades depending on the capability of the intruder and the ability of the components to withstand the intruder and detect the attack.

For objects of municipal authorities is properly to choose security grade 2 or 3 with two alarm transmission paths at least. The form of signal transmission should be selected to ensure the reliability of signal and message transmission from alarm and non-alarm applications.

1.2. Access control systems

Modern electrical security systems offer features that also fall into the area of electronic access control systems. Access control system is a system, which contains all constructional and organizational measures relating to access control devices. Access control systems make it possible to decide who has access to the protected area, where the person can get an access and when it can be accessed. At the same time, they minimize the risk of entry of unauthorized persons into protected areas. They are also usable for checking and registering the entry of vehicles into parking spaces. Access control system allows control of entry into protected areas by assigning time filters (a person can enter the area only at permitted time intervals), or by access filters (a person can enter those areas where access rights have been granted to this person). Access control systems should be used to record employee attendance.

By using access control systems, it is necessary to solve the user identification and verification of his / her identity. The oldest and most used way is to enter authentication information from the keyboard (PIN, password). Security, in this case, depends on the password strength. A more secure way is to use an identifying element (token, access card) combined with a password. The most secure way to get authentication information (a person does not need to remember and to carry anything) is currently biometrics. [1] Biometrics is the use of unique physiological or behavioral characteristics of a particular individual to obtain authentication information. In the first group, these are characteristic such as fingerprints, hand geometry, lip print, retinal scan, vocal expression and so on. In the second group, the dynamics of pen writing on a mat (speed and pen pressure at various stages of signing) or dynamics of writing on the keyboard. The disadvantage of obtaining authentication information from biometrics use is the unreliability of some methods, because of that fact is necessary to select an appropriate biometric method for the selected environment.

In the municipal offices are applicable all authentication methods, for example, PIN code to unlock I&HAS when entering the municipal office, the identification card for access into restricted area and biometrics for control of access to databases and personal data records.

1.3. Video surveillance systems

Video surveillance systems are systems consisting of a camera device, a monitoring and an associated device for transmission and control purposes, which are used for surveillance of the protected area. It is necessary to understand, that monitoring area with cameras does not stop the intruder but they can serve to discourage from illegal activities.

The system works on the principle of image captured by cameras (digital cameras are mostly used), which is transmitted to recording and display devices. [2]

The video surveillance system functions also allow them to be used to detect movement in protected areas (video-projection). Common features of video surveillance system are:

- data storage (data backup, data duplication, post-incidence reproduction),

- archiving and data backup (image authentication, automatic backup planning, successful backup check),
- event log (alarm, voltage drop, export, print, camera function control, system configuration changes, system restart, etc.),
- ink monitoring (failure notification to the operator, opportunity to reconnection, session verification periodicity),
- sabotage detection (device disruption, signal loss, position change, deliberate blackout, swapping of any data, image contrast reduction),
- access based on access levels (system configuration, change of individual authorization codes, assignment and deletion of users and authorization codes, restoration of settings, system update, start/stop of the system but its elements),
- access to data (searching of live, stored or archived images and data, printing and storing image data, deleting images and data),
- access to system logs (browse, export, deleting protocols),
- access to system setup (configuration and setup, failover or sabotage),

data identification (location, image source, date and time). [3]

Choosing a video surveillance system is for municipalities a complex process, during which it is necessary to consider the local conditions. In the case of public procurement, it is advisable to consult with experts prior to the launch of a public contract. [4] It is advisable to find independent experts (for example from an academic environment) because most dealers and assembly companies prefer products from their own portfolio. In principle, the projection and installation of a video surveillance system should be done by professionals (operating under a license to operate a technical service).

1.4. Fire detector system

Fire detector system serves to preventive protection of objects from fire by optical and acoustical signals about the origin and location of the fire. Fire detector system indicates the origin of a fire automatically or through a person and information about the fire alert is used to inform a person performing the interference (Fire and Rescue Service) or to activate fire extinguishers (stable extinguishing equipment). At present, fire detectors, as well as gas leakage detectors, are standard components of intruder alarm systems. In municipalities are these systems are used sporadically. In municipalities, fire detector system needs to be considered in the construction of all new public buildings. The use of smoke detectors in combination with intruder alarm system should be the minimum standard for the reconstruction of buildings (the decree does not mean to have a fire detector system). [5]

All of these systems have their merits in municipalities and need to be carefully designed. Based on surveys conducted at a department between 30 municipalities and towns in the Zilina Region with a total of 231,395 inhabitants, only a third of municipalities report statistics of offenses and other security incidents. Two-thirds of municipalities but implement preventive activities in the area of protection of persons and property. Only in eight municipalities, the number of security incidents implemented by the security measures did not decrease, in 16 cases it decreased.

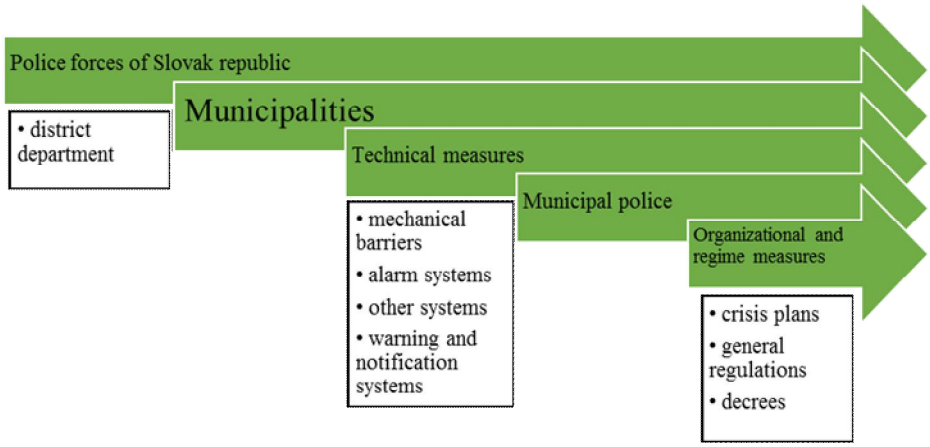

Fig. 1 Security system of municipalities

Conclusion

Investing of municipalities into alarm systems has its advantages and disadvantages. The difference is when municipalities build an alarm system in the municipality from their own resources or from foreign sources. Only a third of the municipalities in which we conducted the survey invest in these systems from their own resources. Every year the Ministry of the Interior launches a public tender for crime reduction projects. Municipalities through these tenders can receive funding for different types of systems and preventive activities. They often build up alarm systems without a clear target and do not use them actively.

Despite the various challenges associated with investment in alarm systems, we can conclude that the use of these systems in municipalities has the effect of reducing security incidents. Alarm systems may even allow the municipality to make funds from fines for offenses in various areas (transport, the environment, etc.).

At present, most municipal offices have a computer connected to the Internet. Almost all of the municipalities have they local computer networks, which makes it possible to use e-learning as a way, of educating the employees of municipalities in the security and safety area.

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[5] Vyhláška č. 726/2002 Z. z. Vyhláška Ministerstva vnútra Slovenskej republiky, ktorou sa ustanovujú vlastnosti elektrickej požiarnej signalizácie, podmienky jej prevádzkovania a zabezpečenia jej pravidelnej kontroly

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