

A decorative graphic consisting of three blue circles of varying sizes and two thin blue lines. One line starts from the top left and passes through the top-left edge of the largest circle. The other line starts from the top right and passes through the top-right edge of the largest circle. The circles are arranged in a roughly triangular pattern, with the largest one at the top, a medium one in the middle, and a large one at the bottom right.

The Usage of Electronic Security Equipment (Electronic Security Surveillance)

The usage of electronic security equipment (Electronic Security Surveillance) is important in the concept of physical security in a particular government ministry. However, there are also disadvantages in Electronic Security Surveillance.

By: Mohamad Sofandi Bin Bujang

Introduction

Defense-in-depth is a means to an all encompassing, multi-layered approach to security. The overall Defense-in-depth's approach to security is using a number of layers for implementing security at a facility that comprise of:

People

Physical security

Electronic systems (technology)

Procedure

Even with the Defense-in-depth as a strategy for implementing security perfectly, 100%, security cannot be achieved. The reason for the layered or Defense-in-depth approach is compromised is mainly because of human weakness. People will do things un-intentionally or intentionally that will undermine the security in place.

The electronic systems are they used as a tool to assist the people in ensuring that the overall security system is used as it is intended. The electronic systems will also be able to generate an audit log such as forensic video, operator's actions, user's movement, etc that can be retrieved later in future for investigative purposes.

Electronic Security Surveillance

The Closed Circuit Television (CCTV) means that the system is a closed system and is intended for the use by a facility to monitor their premises. The Electronic Security Surveillance (ESS) is a system that comprises of the CCTV camera, monitor, recorder and connectivity that connects the camera to ultimately the monitor in the control room.

In the contemporary environment, it is common to find that ESS is deployed as part of the facility's security system. Primarily the ESS is used because the system offers security personnel or facility owners 24 hours round the clock operations. This means that the system is no longer susceptible to any downtime due to changing of shifts. The system provide coverage and recording of the entire facility through out its operation period.

ESS is also used as a form of deterrence, mainly to create a psychologically deterrence barrier for potential perpetrators. The ESS field device or the CCTV cameras can be placed to make a bold warning by using the traditional body cameras. The cameras will be placed in a location where they are visible to the public. Alternatively, CCTV cameras may also be placed in discrete locations to capture images for abnormal behavior or unwanted conditions such as in ATM machines and perimeter area.

However the reason, ESS is mainly used to provide security personnel a form of visual detection at various remote locations. Its function is to provide the personnel with extended capabilities in terms of coverage. ESS is also aimed to increase the range of perception using motorized cameras with Pan/Tilt/Zoom (PTZ) capabilities. PTZ allow the security personnel to "chase" or "track" a suspect over a wide area discretely as compare with deploying security personnel on site to shadow the suspect.

Apart from providing security personnel with visual detection and extending coverage of the facility, the ESS provides useful video footages that can be stored and archived. The video footages are used to assist in forensic investigations and to improve any procedures that will minimize the possible of an unwanted event from reoccurring.

Finally, with the implementation of ESS, the security personnel will be able to perform their duties efficiently, as the number of security personnel can be

reduced in the response room and be deployed to perform more routine patrol tours or security checks at essential entrances of the facility. However, the ESS is not intended to replace the security personnel.

Disadvantages

The ESS is a commonly used surveillance system in most facilities and is proven to be useful in the facility's overall security system, but the ESS also exhibits certain disadvantages. The following are the disadvantages of the ESS:

Purpose of ESS – Many a times, the ESS installed in a facility is implemented without the consideration of its purpose. The purpose of the ESS may vary from to deter possible perpetrators, or to detect activities of a protected or restricted area, to improve security personnel's accessibility to remote areas of the facility, or to identify a particular individual. The purpose have to be clearly defined as it is not possible for a single ESS device to be able to serve all the purpose mentioned above. Therefore, in order to serve the multiple purposes, the facility requires a compilation of ESS to fit each purpose.

Environment – As mentioned above, the ESS field device installed must be able to suit the environment in which it operates in. For example, the ESS device's requirement for internal area differs from the requirements of a device that is monitoring external area. If the proper considerations are not given when selecting the ESS device, the ESS will provide unreliable visual detection.

Field of view – The security personnel must determine whether the area that is under surveillance is a large area or a small area. Small area provide requires a less field of view and yields better recognition as compared to ESS devices covering a large area. ESS devices covering a large area provide security personnel with a wider coverage range but less depth recognition ability. ESS

devices covering large areas are only used for activity detection, but not for facial or vehicle detailed recognition.

Lighting environment – The common myth about the ESS device is that they are deemed to be able to provide excellent visual detection of the area through the 24 hour working period. However, this is actually not true. The ESS device image quality is dependent on the lightning environment in which it monitors. Security personnel must select the appropriate ESS device to match the ever changing lightning levels through out the 24 hours period. The location of the ESS device is also important as too much lighting can cause glare and render the ESS video images unreliable or unusable.

Technology updates – With the convergence of digital systems, the ESS are currently evolving at a very rapid rate. The current development in technology the ESS systems' life cycle has been reduced significantly, where components are not longer available or deemed too costly to manufacture after a short period of 3 to 5 years. Security personnel must balance between the purpose of the ESS system, cost of design or implementation and the emerging technologies.

Matching the systems – As mentioned above, there is no single ESS system that is able to accommodate the different purposes of deter, detect, determine, accessibility and identification. Therefore, the security personnel is required to match the ESS system (from the field device, transmission, recording to the displays in the control room) to the different purposes or risk having a final product where the facility will have multiple smaller ESS system that cannot be synergized. This lowers security personnel's effectiveness in operating the ESS system and defeats the original objective of using the ESS system to improve the overall security of the facility.

Operator proficiency – With the numerous variables such as different type of cameras, lens, transmission media, recorders and technology, the security personnel must have the proficiency in operating the ESS. The security personnel must be trained to operate, configure and maintain the system. The security personnel are also required to keep abreast on the availability of new technology continuously.

Cost feasibility – After determining the different purposes, environment, matching technology and operator's proficiency, the final consideration is the cost of the implementing and maintaining the system. For example, we know that newer technology is more expensive to procure but it will have a longer life cycle. This is also similar to the area of coverage, whereby the larger the area the more equipment is required in order to provide an effective security system. Careful consideration is required to balance between people, electronic security, policy and procedure in order to yield a comprehensive and yet effective ESS.

Summary

As environment and technology become more complex, more vulnerabilities are introduced that allow for compromises to take place. Many facilities have implemented security guards, electronic security surveillance systems, intrusion detection system, access control systems and requirements for employees to maintain a higher level of awareness of security risks.

The ESS system consistently highlighted as the primary security system because it provides operators with visual detection. Therefore, with visual images of the facility, it gives the operators a closer sense of proximity with the environment. However, the ESS is only a sub-component of the overall security system that is implemented to create an effective Defense-in-depth for the facility.

Similarly with other electronic security systems, the ESS is a technology tool that is used to assist the people in enforcing the security policy and procedures. It extends the visibility reach of the operators through to the remote areas of the facility, as well as provides storage of video footages for security personnel to review during forensic investigations. However, as a technological tool, it is not impervious to faults and has its own weaknesses.

These weaknesses can be mitigated through a joint holistic planning process such as determining the purposes of the ESS system between both security personnel as well as the management. Other initiatives to mitigate the weaknesses included continuous training of security personnel's proficiency in operating, configuring and maintaining the ESS. The organization must also keep themselves abreast on the continuous updated on the emerging technology trends.