Predictive monitoring of critical infrastructures of network operators, municipal utilities and suppliers

In order to avoid disruptions and achieve the often mandatory and necessary basic IT protection for **municipal utilities and suppliers**, critical infrastructures must meet high IT security requirements. The German Federal Office for Information Security (BSI) has presented a concept for the certification of **information security management systems (ISMS)**. **ISO 27001 certification** provides documented proof of the general operation of an ISMS. With this certification, organizations can actively protect themselves against IT failures and the resulting consequential damage such as delivery failures, repair costs, loss of image, claims for damages, etc. In addition, the certificate issued by an independent body documents that sufficient IT security is guaranteed.

Stadtwerke Werl GmbH

Stadtwerke Werl has been supplying the citizens of Werl with energy and water for over 150 years. With this work, the municipal utilities make a decisive contribution to the quality of life of the citizens. The history of Stadtwerke began at a time when electricity, gas and water were not yet a matter of course. Every day, around 60 employees ensure that the citizens of Werl can now take these goods for granted. In this context, the municipal utilities see themselves as

neighbors of the residents. Yesterday, today and in the future.

> The fact that you can monitor several top parameters at the same time with the MultiSensor-TI from Kentix is a great advantage. Previously, several components were necessary for this. One MultiSensor is now sufficient for reliable environmental monitoring incl. Early fire detection. In addition, the integrated KentixONE software enables centralized and simple management and integration into existing monitoring systems. For this we use SNMP and use our existing Paessler PRTG to monitor the alarms.
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> *Arno Reichert, IT Management*

Requirements

For Arno Reichert, the focus was on preparing for ISMS certification in accordance with ISO 27001. Complete access documentation with logging was required in order to track who had access to critical areas and when. In addition, server and technology rooms with sensitive IT infrastructure should be protected and monitored against undesirable environmental conditions, unauthorized access and fire.

The Kentix system solution

Various Kentix SmartAccess locking components are used for permanent and

seamless documentation of access to multiple doors. Thanks to the Kentix system topology, every locking point is online 24/7. All processes at the doors are logged immediately and access authorizations can be granted or revoked in real time. The door status (open/closed) also always remains in the view of those responsible. In the server and technical rooms, Kentix SmartMonitoring MultiSensors monitor hazards such as temperature, humidity, dew point, early fire detection (CO gas), movement, air quality, sabotage, etc. The Kentix AlarmManager PRO serves as a reporting and management center. It combines the individual sensor readings from the MultiSensors in a central management dashboard and makes them available to the Paessler PRTG monitoring system.

COM-IN Telekommunikations GmbH

Stadtwerke Ingolstadt decided to enter the telecommunications market in 1998. COM-IN Telekommunikations GmbH was founded in 1998 together with three high-performance Ingolstadt companies with a majority shareholding by Stadtwerke. The aim was to build a modern communications network based on fiber optics. In 2009, the shareholders decided to build a nationwide fiber optic network in Ingolstadt within ten years. More than 50 % of all buildings are now developed. The increasing demand for high bandwidths for data, TV and voice confirms the “Vision Glass”.

With the Kentix MultiSensors, we have full transparency 24/7 about

> what is going on in our distributed infrastructures and can take appropriate measures in good time if necessary. Another important argument in favor of Kentix is the simple installation in the distributed locations thanks to the PoE connection and the modern integration into our network and existing systems by using current open IP standards.
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> *Tilo Gretzschel, Organisation & Infrastruktur*

Requirements

As a KRITIS-classified organization, COM-IN is obliged under the IT-Grundschutz Act to protect its critical infrastructures in accordance with ISO 27001. In addition to numerous measures, the physical protection of decentralized infrastructures must also be taken into account, as system failures result from physical risks in over 50% of cases. To safeguard against these risks at more than 30 locations in COM-IN's supply area, a solution with as little complexity and as few components as possible was required. This is the only way to ensure high system availability and keep installation and maintenance costs to a minimum. In addition, all measured values should be easy to connect centrally and fed to third-party systems for further processing. An alarm for hazards was also to be set up via various reporting channels.

The Kentix system solution

COM-IN protects the physical hazards (undesired environmental conditions, unauthorized access, fire, water ingress, power failure, etc.) of its decentralized infrastructures (POPs) with just one component, the Kentix MultiSensor. Apart from a PoE connection, no other infrastructure is required at the locations to operate the MultiSensors. The Kentix AlamManager in the control center summarizes the data of all MultiSensors from the decentralized locations, reports them in the event of an alarm by e-mail, SMS or push message on the Kentix app to those responsible, or makes all data available to third-party systems via SNMP. With a minimum of hardware, this creates a highly efficient monitoring system for a complete decentralized fibre optic infrastructure for an entire economic region.

AZV Saalemündung

The towns of Barby, Calbe, Nienburg and the municipality of Bördeland belong to the association. The wastewater association is responsible for disposing of all

wastewater and rainwater in the association’s area without causing any damage. A process control system controls and monitors all key processes at the wastewater treatment plant. Responsibility for the optimal transportation and cleaning of wastewater is currently shared by 18 employees in the Technology department. In total, the AZV “Saalemündung” team consists of 31 dedicated employees.

> We opted for Kentix because it enables us to anticipate potential risks much better. It is possible to track in real time who has entered which area and when. The overall advantage of the integrated Kentix system is that it creates a transparent, central management system and gives us better management of alarms and access authorizations. In addition, we can use time profiles to set opening hours and manage our visitor traffic accordingly.
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> *Axel Stegemann, IT system administrator*

Requirements

As part of the modernization of the security system of the Saalemündung wastewater association’s property, which includes an alarm and fire alarm system, environmental monitoring and access control were also to be implemented across several parts of the building. The aim was to better identify upcoming risks and to be able to counter increasing legal requirements in advance. The components of the existing intruder alarm system were to be integrated into the new system. When designing the system, Mr. Stegemann attached particular importance to the fact that all administrative tasks can be carried out in a central system, access documentation is carried out in real time and alarms are sent to the responsible persons via various reporting channels.

The Kentix system solution

Critical infrastructures in all parts of the building were protected against undesirable environmental conditions, unauthorized access and fire with Kentix MultiSensors. An alarm manager at a central location summarizes all the information from the sensors and reports critically defined conditions to the responsible persons via SMS, e-mail and push notification via the Kentix app. Existing sensors (mainly motion sensors) were connected to the system via a

network-compatible I/O module so that these sensors are also connected to the AlarmManager as a result. All critical doors were secured with various SmartAccess components, which can be centrally managed by the KentixONE. The system’s permanent online function offers real-time management and access documentation.

HEWA GmbH Hersbruck

HEWA GmbH Hersbrucker Energie-und Wasserversorgung supplies around 12,800 citizens with electricity, gas, water and heat around the clock. To this end, HEWA GmbH operates and maintains high-performance and secure supply networks in its supply area. HEWA is a competent and efficient partner in the development and implementation of individual supply concepts. In line with the principle of “Outstanding service at competitive prices”, around 35 HEWA employees work every day to provide the town of Hersbruck with a high-quality and reliable supply.

> A very easy-to-manage system with an excellent price-performance ratio
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> *Norbert Raum, Telecontrol engineering department*

Requirements

In accordance with the requirements of Technical Safety Management (TSM) and the ISO/IEC 27001 and ISO/IEC 27019 standards, distributed server and equipment rooms, water and transformer stations, heating centers and transfer stations should be monitored for fire risk, temperature and humidity. An intruder alarm was also required.

The Kentix system solution

The desired parameters of fire, temperature and humidity as well as warning of unauthorized access can be monitored with just one sensor, the Kentix MultiSensor.

A total of 38 Kentix MultiSensor-LAN-RF were used to monitor 23 alarm zones in 3 buildings. The Kentix AlarmManager-PRO combines the measured values of the individual MultiSensors in a central management dashboard. The 23 alarm zones

are each armed/disarmed with a KeyPad touch. In the next planned step, HEWA would also like to use the SmartAccess locking system, which can be managed centrally in real time.

Stadt und Stadtwerke Mayen

Mayen is a large town in the district of Mayen-Koblenz in the Vulkaneifel region.

> The automatic fever scanners are successfully used in various areas of our city to monitor the temperature of employees and visitors. The devices provide very reliable measurement results and can be operated independently. No additional operating personnel are required here, which was also one of our main requirements for the system for reasons of infection protection. The measurement process is intuitive and self-explanatory, so that users of all backgrounds and languages can take a temperature measurement independently
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> *Klaus Künzer, Deputy Chairman Administration Management*

Requirements

Due to the acute viral situation, Mayor Wolfgang Treis has instructed fever measurement in the city of Mayen as part of effective corona prevention. The focus was on protecting residents and employees, which is why the fever

measurement had to be self-sufficient and no additional person was required for the measurement process. The requirements were corona prevention in the form of a self-sufficient and intuitive fever measurement with reliable measurement results.

The Kentix system solution

The innovative SmartXcan fever scanner is already being used several thousand times in over 40 countries to check incoming goods. This not only helps to identify people infected with coronavirus, but also to reduce the spread of influenza (“real flu”) in the fall and winter. In Mayen, 18 SmartXcans are being used successfully in a total of 5 elementary school, 4 daycare centers, the youth center and the city administration (passport registration, registry office, postal voting office, etc.) as well as in the Mayen municipal utilities.

Design example

77% of all companies suffer system failures every year, of which around 50% are due to physical hazards. Therefore, all rooms with critical infrastructures should be monitored for all important physical hazards such as excess temperature, excessive humidity, unauthorized access, fire and more in order to achieve ISMS conformity in accordance with ISO 27001. The implementation is to be realized by means of an integral, user-friendly system with manageable installation and investment costs.

To cover these requirements, a Kentix AlarmManager-PRO, MultiSensor-TI and a leakage sensor are used for the main site. This means that all major risks can already be reliably covered. The AlarmManager takes over the evaluation of all sensor data for the main and secondary locations, all alarms via SNMP, e-mail, push message and redundantly via SMS using an integrated SIM card.

The MultiSensor-TI creates a highly reliable 4-factor early fire detection system. In addition to monitoring CO gases (No. 1 fire gas), air quality and temperature changes, critical areas, such as UPS, are monitored for their maximum surface temperature using the thermal sensor. A leakage sensor is connected to the MultiSensor-TI, which reliably detects water ingress or leaks. Existing sensors such as door contacts, motion and fire detectors are integrated into the system via a network-compatible I/O module so that they are also connected to the AlarmManager as a result.

Kentix SmartAccess components for access and access control document seamless 24/7 access and entry. As every locking point is always online, it is easy to manage user authorizations from a central location at any time. In addition, the status of each door is known at all times.

A MultiSensor-TI and a leakage sensor connected to it are used to protect against all major hazards in the secondary locations. The Kentix SmartAccess system is also used here as a wireless system. It can be easily installed in existing doors and seamlessly integrated into the overall system. All devices are powered by PoE and supplied to the overall system via a virtual network.

The system is monitored and administered via a web interface, the KentixONE, which is provided with the devices and does not require any server or client software. The Kentix All-in-One system also remains freely scalable and can be expanded at any time. The open interfaces (including REST-API, web hooks, SNMP, etc.) ensure simple, modern integration of the Kentix system into third-party systems. License-free software and updates keep investment costs at a low level in the long term.