



APPLICATION STORY



FLIR thermal imaging cameras help secure the perimeter at BASF

In 1865, Friedrich Engelhorn founded the initially small scale chemical company 'Badische Anilin- & Soda-Fabrik AG'. The company grew over the years into the world's leading chemical company nowadays known under the name 'the BASF Group' with a portfolio ranging from oil and gas to chemicals, plastics, performance product and agricultural products. With over 200 chemical production plants, several hundred laboratories, technical centers, workshops and offices, the BASF headquarters in Ludwigshafen, Germany, is the largest integrated industrial complex in Europe, covering an area of over 10 square kilometers. With large amounts of potentially dangerous chemicals coming and going and numerous highly classified chemical processes going on it goes without say that perimeter security is a big issue.

FLIR SR-Series fixed mounted thermal imaging security camera.



Potential intruders show up clearly on the high contrast thermal images produced by the FLIR SR-Series thermal imaging cameras.

The difficult task of protecting the entire perimeter of the complex is the responsibility of Klaus Altmeyer, Head of Technical Security at BASF Ludwigshafen. "We take the perimeter protection very seriously, so we want to make sure that we use the best detection tools modern technology has to offer. That is why we have incorporated thermal imaging cameras in our perimeter protection program."

length and it borders several different types of terrain. On one hand there is the river Rhine, on the other side there are motorways and another part of the perimeter borders the city. To defend such a diverse perimeter we need to employ a wide variety of detection tools, such as ground sensors, fence sensors, motion detectors and such. But in some



The red line represents the diverse perimeter of the BASF plant in Ludwigshafen.



areas many of these tools are simply not satisfactory. They might produce too many unwanted alarms, due to vibrations caused by heavy traffic, for instance, or the layout might not leave enough room for them to be installed, or environmental factors make their use impractical. We therefore needed a long range detection tool to provide improved perimeter security."

At first Altmeyer investigated the use of visual light CCTV cameras, combined with advanced video analytics software. "But in my experience automatic video detection does not work in outside conditions, at least not to the high standards we have here at BASF. In bad lighting conditions the video footage from CCTV cameras simply do not provide enough contrast for automatic intruder detection. Then I learned that FLIR Systems was marketing a new product: thermal imaging cameras for perimeter security. I made contact with Bertrand Völckers from FLIR Systems and he demonstrated this new product. I immediately realized that this was exactly the type of sensor I was looking for."



FLIR SR-Series thermal imaging cameras have been placed at strategic locations along the area's perimeter.

CCTV cameras rely on color contrast and are therefore dependent on the presence of enough light to generate high contrast footage. Thermal imaging cameras record infrared radiation, which is emitted by all objects as a function of their temperature. The temperature difference between a human body and its surroundings allow thermal imaging cameras to provide high contrast images that the video analysis software can use to accurately detect intruders regardless of lighting conditions.

Extensive tests

To make sure that a system based on thermal imaging detection tools would



Klaus Altmeyer, Head of Technical Security at BASF Ludwigshafen

function perfectly Altmeyer performed extensive tests before purchasing the first cameras. "After we were certain it would work we bought a couple of dozens of FLIR thermal imaging cameras to secure the river bank. This was back in 2007. The thermal imaging cameras proved to be a very good solution. After seeing the success of the thermal imaging cameras at this location we decided to expand the use of thermal imaging cameras."

Depending on the requirements of a particular location with regard to field of view the FLIR SR-324 or SR-334 was used. If the advanced video analytics software detects movement on the thermal footage these cameras produce, CCTV cameras on a pan and tilt platform are automatically pointed at the location of the intrusion, to give the guards in the control room the best possible view of the situation. "During the daytime we can use those CCTV cameras to identify the subject. If the alarm is triggered during the night, we send out walking patrols with dogs to investigate."

Easy installation and low maintenance

Installing the FLIR thermal imaging cameras was relatively easy and the system requires little to no maintenance, according to Altmeyer. "We already had masts in place for the CCTV cameras, so all we had to do was to affix the thermal imaging camera, plug in the power cable and the fiber optics cable that transports the thermal video footage to the central control room. No additional infrastructure was required. We've been using these thermal imaging cameras from FLIR Systems for years now, operating 24/7, and not once did we have a technical problem. No maintenance was needed until now."



The BASF control room is the hub of the security network, where all footage from CCTV and thermal imaging cameras is analyzed.

"The unwanted alarm rate is also very low", Altmeyer explains. "Thermal imaging cameras rely on thermal contrast instead of color contrast, so the video analysis software can very accurately distinguish between an actual intruder and flying birds or shimmering water, for instance. The only unwanted alarms we had in all these years were actually welcomed by the guards. When specialists of our environmental department come to take water samples at the river bank then the alarm goes off. But this is actually a good thing, the control room guards assure me, for this confirms that the system really works."

Mobile thermal imaging

The success with the FLIR SR-Series fixed mounted thermal imaging cameras has also lead to the purchase of mobile hand held thermal imaging cameras of the FLIR HS-Series. "We have bought two of these cameras for the guards to take with them when they investigate an alarm at night. The guards can use the thermal imaging camera to see whether there really is an intruder and where that intruder is, allowing them to prepare for the encounter. This not only helps with the early detection of intruders, but also enhances employee safety."

"I am very happy with the overall performance of the FLIR Systems thermal imaging cameras", concludes Altmeyer. "I am convinced that thermal imaging might also be a solution for the security issues that some other BASF sites are facing."



CCTV camera



FLIR SR-series camera

For more information about thermal imaging cameras or about this application, please contact:

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