



MOBOTIX

Case Study

Network Video: How To Get Straight From A To B

Dense Network

The city of Kaiserslautern is committed to serving its citizens well. This is also reflected in the wide network of public transportation the city operates: 13 day bus and six night bus lines as well as approximately 450 bus stops throughout the city make sure that the 105,000 inhabitants of the German metropolis can get conveniently from A to B. It is no wonder, therefore, that around 13 million passengers use the services of the TWK



Verkehrs-AG each year. This traffic company is a division of the "Technische Werke Kaiserslautern GmbH" (TWK), a modern utilities company that provides the city with power, district heating, water and public transportation.

100 Years On Wheels

In the summer of 2005, the public transportation system in Kaiserslautern will be celebrating its 100th anniversary. After visiting an industrial exhibition in Kaiserslautern in 1905, Christian Fuchs, a hired coachman, decided to buy a horse-drawn omnibus from Munich. He used it to start a lucrative business of transporting exhibition visitors

from the train station to the exhibition and back again for 10 pfennigs per passenger and trip. Since then, the means for public transportation in Kaiserslautern have changed dramatically: first, there was the horse omnibus, then trams (1916 – 1935), after that, omnibuses (until 1954), then trolley buses (1955 – 1985) and finally, the modern low-floor buses that have been used since 1986.

Today, there are 58 vehicles in total, including 27 kneel buses, serving the citizens of Kaiserslautern. 115 drivers operate the vehicles and everything is coordinated by seven traffic managers. Another 36 employees work in administration at the Westphalian Public Transportation Services (WNS – Westphälische Nahverkehrs-Service GmbH), a subsidiary of TWK Verkehrs-AG that services the buses.

Smooth And Efficient

The TWK Verkehrs-AG uses MOBOTIX network cameras to ensure that bus traffic always runs smoothly and efficiently.

Security Vision Systems





Central office of the Verkehrs-AG: Optimum overview of the current traffic conditions at the central bus stops at the town hall "Rathaus" (top left) and "Schillerplatz" (top far right). The images on the lower left are original camera images.



Most Modern Cameras For Optimum Traffic Flow

Good Connections

Kaiserslautern has a star-shaped public transportation network. All the bus lines begin and end in the city center at the "Rathaus" and "Schillerplatz" bus stops, which are only a few meters apart. As a result, these central bus stops are the main transfer point for the passengers. In the TWK Verkehrs-AG control center, which is only about two kilometers away, the traffic managers are not only responsible for making sure that all the buses are up and running on schedule, but they also have to ensure

that each and every passenger makes the connection to the next bus.

"Of course, that is not possible unless the traffic managers on duty have a direct view of the current situation," commented Boris Flesch, division manager at TWK Verkehrs-AG and managing director of the WNS. All Kaiserslautern buses now have numbers on their roofs, so that they can be identified and recorded by the cameras mounted on the lampposts. Thanks to the

transmission of the images, the traffic managers have all the information they need about the current situation at any given time. If one bus is late, for example, the bus driver of the connecting line can be radioed and asked to wait for the passengers wanting to connect.

New System

This system originally used analog cameras. "But that technology was really not optimal," recalled the division manager. "The cameras often didn't work properly because of line problems. The data volume was too high, the frame rate too low, the quality less than satisfactory, and we had to deal with these problems because they hindered the work of the traffic managers."

From Kaiserslautern For Kaiserslautern

No wonder, then, that the company began to think about upgrading their camera system. And finally, five MOBOTIX cameras were installed at the central bus stops. As far as Boris Flesch is concerned, the reason for this decision was more than obvious: "As a community, we are, of course, first interested in supporting the business in our own city. That's why we wanted to find out whether or not a Kaiserslautern-based company would be able to solve our problem."



A factory tour at MOBOTIX revealed that due to their technical qualities, versatility and convenient features, these cameras would be the ideal solution to the problems that the traffic company had.

Problem-Free Conversion

“Converting the system went off without any problems,” reported Thorsten Moßmann, who, as an employee of K-net Telekommunikation GmbH, was responsible for the realization of the project. K-net is a 70%-owned subsidiary of the Technische Werke Kaiserslautern and also serves the community as a network provider.

“We were able to use the copper wiring that was already installed for digital transmission,” explained Moßmann. “All we had to do was to remove the old cameras and the analog-digital converters and connect the new cameras. The image signals now all come to a central switch and are then forwarded via the fiberglass cable using municipal ethernet to the traffic management center. That’s where the file server is that stores the image data.”

Security For 11 Friends

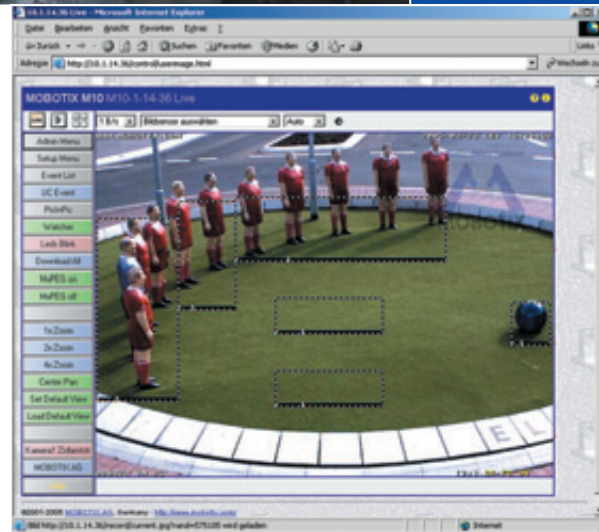
Two other cameras keep a watchful eye on the “11-Friends” monument at the Fritz-Walter Stadium as well as on another sculpture in front of the TWK office. They have been installed to prevent vandalism and, should it occur, to help identify the culprits. These cameras use

event-control and the other recording functions provided by MOBOTIX technology. “We don’t want to use these cameras to monitor people in general; all we want to do is to protect our property,” explained Boris Flesch.

Now that the system has been in operation for more than 12 months, it is natural to ask if the investment was worth it. “Thanks to the MOBOTIX cameras, our employees in the control center have a very good, reliable overview of the current situation at both main bus stops,” answered the managing director. “As a result, we are much better able to effectively control bus traffic and to make sure that everything runs smoothly. These cameras have helped us to accomplish exactly what we wanted to accomplish.”

Other Applications

Thanks to the success of the installation and the concept of easy operation for the solution, the top managers at the TWK Verkehrs-AG have already begun to think about other applications. “At Schillerplatz, we need an extra camera,” said Boris Flesch. “And I can also well imagine using this technology to survey the main work yard.”





MOBOTIX Technology – Cost Savings in Every Aspect

High Resolution For Sharp Images

All MOBOTIX cameras are high-resolution cameras with integrated image storage and 960 lines (1280x960 pixels) resolution. The **stored image** thus contains 12 time more detail for creating zoomed sections of the image than regular cameras with 240 or 288 lines (CIF, 2CIF). This is why one single MOBOTIX camera with a 90° wide-angle lens is sufficient to monitor an entire room and yet provides more detailed images than traditional technology. The MOBOTIX Day/Night cameras feature zero maintenance with one color and one B/W image sensor.

Intelligent Storage Technology Uses Fewer DVRs

The new, decentralized storage technology pioneered by MOBOTIX reduces the number of recorders that store the smooth high-resolution video by up to 90%. 40 cameras store smooth video streams including audio on a single PC, each managing its own ring buffer and database. Intelligent search features provide swift access to the stored events. There is no software required for storing and managing video, eliminating license fees and the need for expensive software. Event-controlled recording and automatic increase of frame rates upon detecting movements drastically reduce the storage requirements.

Low Power Consumption Means Enormous Savings

Since MOBOTIX cameras are anti-fogging, do not require heating and only use 3 Watts each, power can be injected into the network cabling using standard PoE products, year round. This drastically reduces the amount of cables and the power requirements for backup power.

Integrated Telephone Features

All MOBOTIX IT and Secure models feature bidirectional audio support. The built-in microphone and loudspeaker are used for live audio transmissions and storage purposes. Voice messages with PIN confirmation and call forwarding via IP or ISDN telephony have been integrated as well. Using the switch outputs, you can switch lights or open doors from the phone or from the computer.

Robust and Well-Protected

The fiberglass-reinforced housing is shockproof and the SecureFlex mount protects the network cabling as it completely conceals the cables (M12/D12 models). Weatherproof (IP65) from -30° to +60°C (-22° to +140°F).

High Return on Investment

Since the number of cameras and storage capacity are freely scalable and any kind of data connection can be used (ISDN, DSL, Ethernet, Wireless, GSM, copper, optical), MOBOTIX means high ROI, even years after installing.

State-Of-The-Art Technology

Developed and manufactured in Kaiserslautern, Germany, MOBOTIX produces image-storing weatherproof high-resolution cameras, including lens and wall/ceiling mount for as little as 598 EUR excl. VAT. To date, more than 100,000 cameras have been sold worldwide.



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