Fritz-Walter-Stadion, Kaiserslautern

MOBOTIX
C A S E   S T U D Y

Network Video:
Security And Safety For Football Fans

Welcome Guests

During the 2006 World Cup Championship in Germany, Kaiserslautern was one of the 12 World Cup cities to host the games. Fritz-Walter Stadium on the Betzenberg hilltop was the venue of four games in the preliminary rounds and one quarter-final. Kaiserslautern has 105,000 inhabitants, making it the smallest World Cup city in which a second stage (last 16) game has ever been played.

The football frenzy in Kaiserslautern was not only restricted to native Kaiserslautern football fans, but quickly infected the visiting football fans from around the world. The stadium, or the "Betze", as it is fondly called by the locals, was completely sold out for each of the World Cup games. Thousands of fans also crowded onto the Fan Mile and thronged the pubic-viewing locations in the city center.

Secure And Friendly Presence

A total of almost quarter of a million visitors were counted during the five games in the Kaiserslautern stadium. However, regardless of how enthusiastic people are about the games, it is important to realize that such large crowds also involve high security and safety risks, particularly when it is an international event with the entire world looking on. It's no wonder, then, that the police in Kaiserslautern were on highest alert. The police presence was highly visible everywhere in the city and in the stadium, without being intrusive.

A concept that worked: "There was no trouble during any of the World Cup games," summed up Chief Superintendent Uwe Giertzsch, who, as the head of Police Station I and the stadium section, is in charge of security at Fritz-Walter Stadium. "We had fewer problems during the World Cup games than we usually have during a regular German Football League game."

Cutting-Edge Video Surveillance

As part of a state-of-the-art video surveillance system, 77 MOBOTIX cameras helped to ensure the security and safety of the football fans during the World Cup.

Security Vision Systems
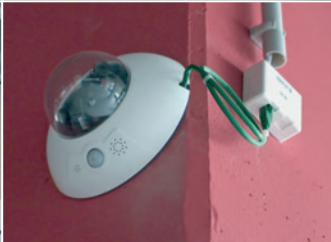
MOBOTIX AG

The control center was displayed using the MOBOTIX MxViewer software. A plan of the stadium was created graphically and color-coded to identify the seating sections by admission ticket. The dome cameras are equipped with two camera modules each with 960 lines and a total viewing radius of up to 180 degrees.

Low Costs, High Security

Keeping Track

"I knew from the beginning that video surveillance would be important," said Chief Superintendent Uwe Giertzsch, who was also involved in developing the security concept for the 2006 World Cup in Kaiserslautern. "As police, we wanted to be visible, but to avoid anything that may make people feel uncomfortable, not to mention threatened. Nevertheless, it was vital that we maintain an overview of the situation at all times. To do so, we needed highly-detailed images of the situation on location in order to be able to recognize possible disturbances early and make the right decisions quickly."

Based on the requirements of the security staff, GPC GmbH (www.it-gpc.de), an independent engineering office, drew up the documents for the tendering procedure. They included a sophisticated video surveillance system that would be able to provide images of a wide area as well as to zoom in to capture full-format images of specific individuals.

"We specified MOBOTIX cameras to monitor the entrance and other inside areas," said Claus Schmitt, Senior Consultant at GPC, "because our experience with this technology to date has been excellent in terms of costs, performance and quality. With respect to organization and economy, it is definately the most cost effective solution."

Cost Effective ...
... Thanks To Highly Detailed Images

One of the reasons that this technology is so attractively priced is the fact that MOBOTIX uses just one camera where other manufacturers need two. Consequently, only one camera was installed to monitor two turnstiles side by side. Despite this, the detail in the images is sharper because the images are recorded as mega pixel images containing twelve or six times as many pixels as the CIF standard (352 x 288) or 2CIF resolution (704 x 288), the technology that is generally used in stadiums. As a result, these cameras are also able to record images of individuals that are clear enough to serve as evidence at a later date, if necessary, which was one of the stipulations made by the police.

... Thanks To Economical Emergency Power Supply

There were also many other reasons why Kaiserslautern was, by implementing MOBOTIX, able to install the least expensive video surveillance system of all the World Cup stadiums. They include the reduced costs of installing the necessary cables using standard IT network technology components, even wireless is no problem, as well as the uncomplicated power supply.

MOBOTIX deliberately designed its cameras using no moving parts to guarantee that they are very robust and low maintenance. As a result, they require no heating in
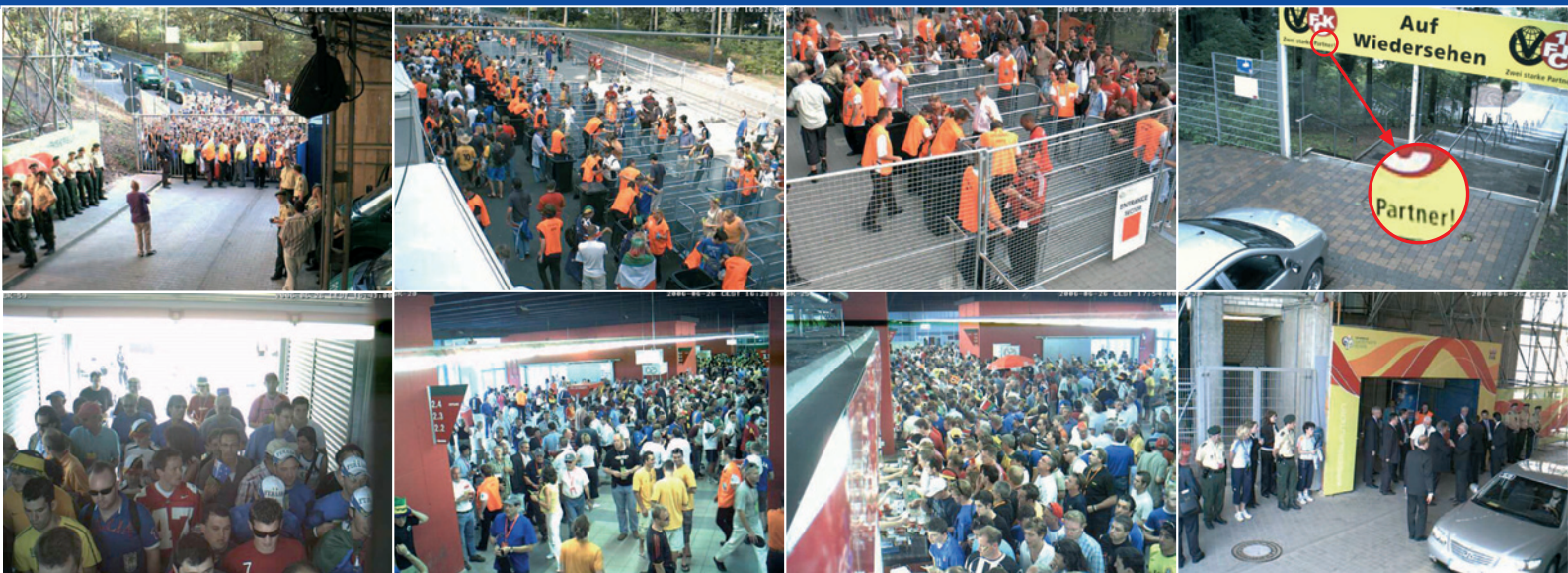
Original images from the stored MOBOTIX camera recordings in VGA format with 480 lines and 50% MxPEG quality

the winter – and consume very little power, i.e. under 3 watts, whereas other systems use between 7 and 10 and up to 25 watts in the winter. Providing an emergency power supply is easy and economical because a 240 V connection is not required.

... Thanks To Fewer Storage PCs

Thanks to the intelligence and processing power inside the camera, the number of storage PCs needed is low and using Linux as the operating system, there are no licence fees.

Complex Requirements…

"To provide better control for the monitoring of the entrance areas and the grandstands, it was also necessary to install swiveling and tilting analog pan-tilt-zoom solutions," Claus Schmitt added. Dome cameras were specified for the outside areas and high-resolution cameras made by TVI-Lederer for inside the stadium. These cameras are able to perform a frame-filling zoom-in on individuals on the other side of the stadium.

In the end, Siemens was awarded the contract for all the electrical work, while WVE GmbH (www.wve-kl.de), the service provider who also installed the state-of-the-art video traffic monitoring system in Kaiserslautern before the start of the World Cup, was commissioned to configure and activate the MOBOTIX cameras.

…Simple Integration

A 4-fold framegrabber card was used to digitize the analog camera images and integrate them into the MOBOTIX network. The control protocol of the Siemens dome cameras was also programmed into the MOBOTIX server software so that the control commands could be transmitted via the network. In addition, all the MOBOTIX camera images were stored with 2 fps (VGA) – 16 fps would also have been technically possible – and the dome images with 12 fps (VGA) on different servers for

five hours.
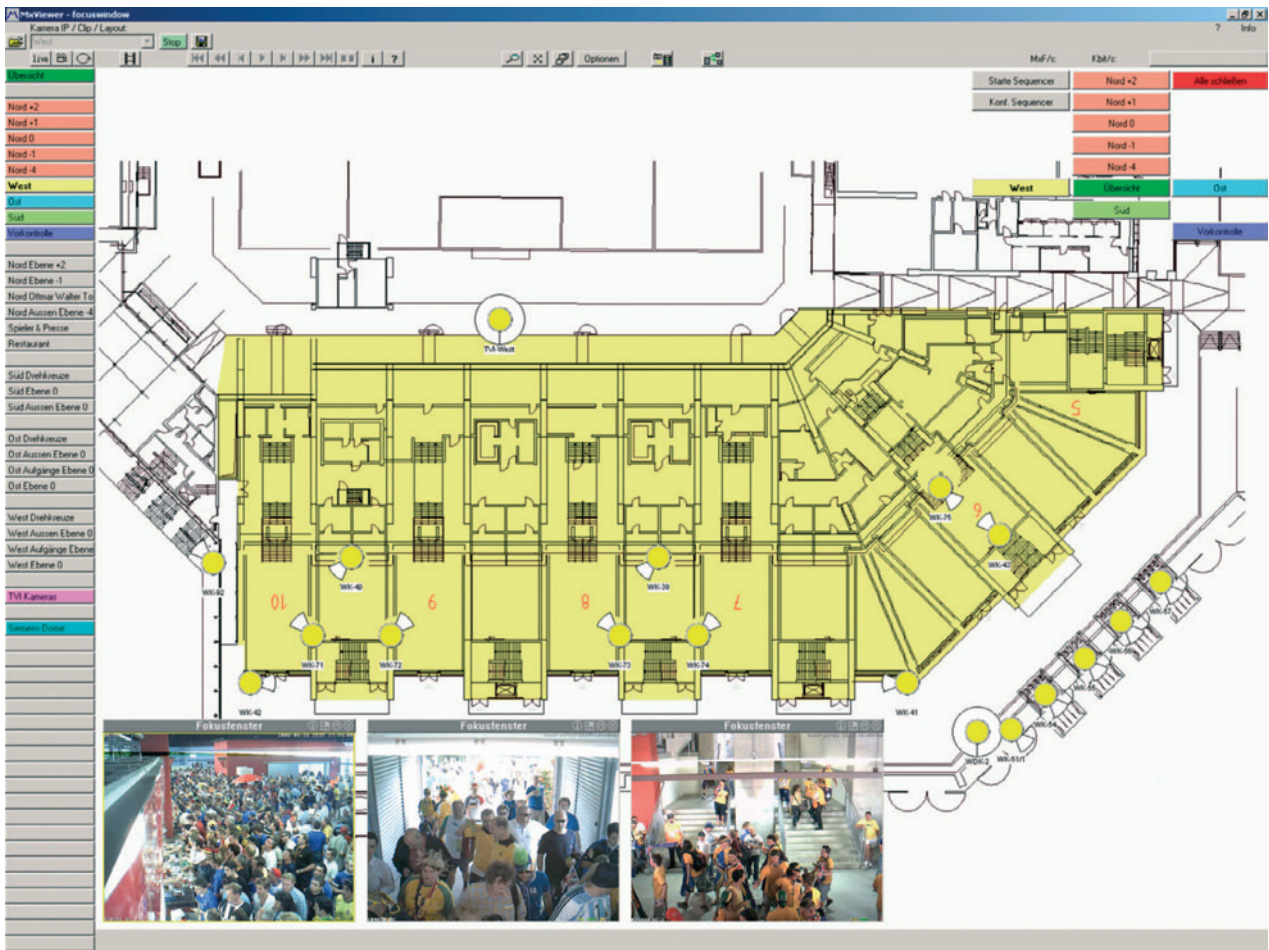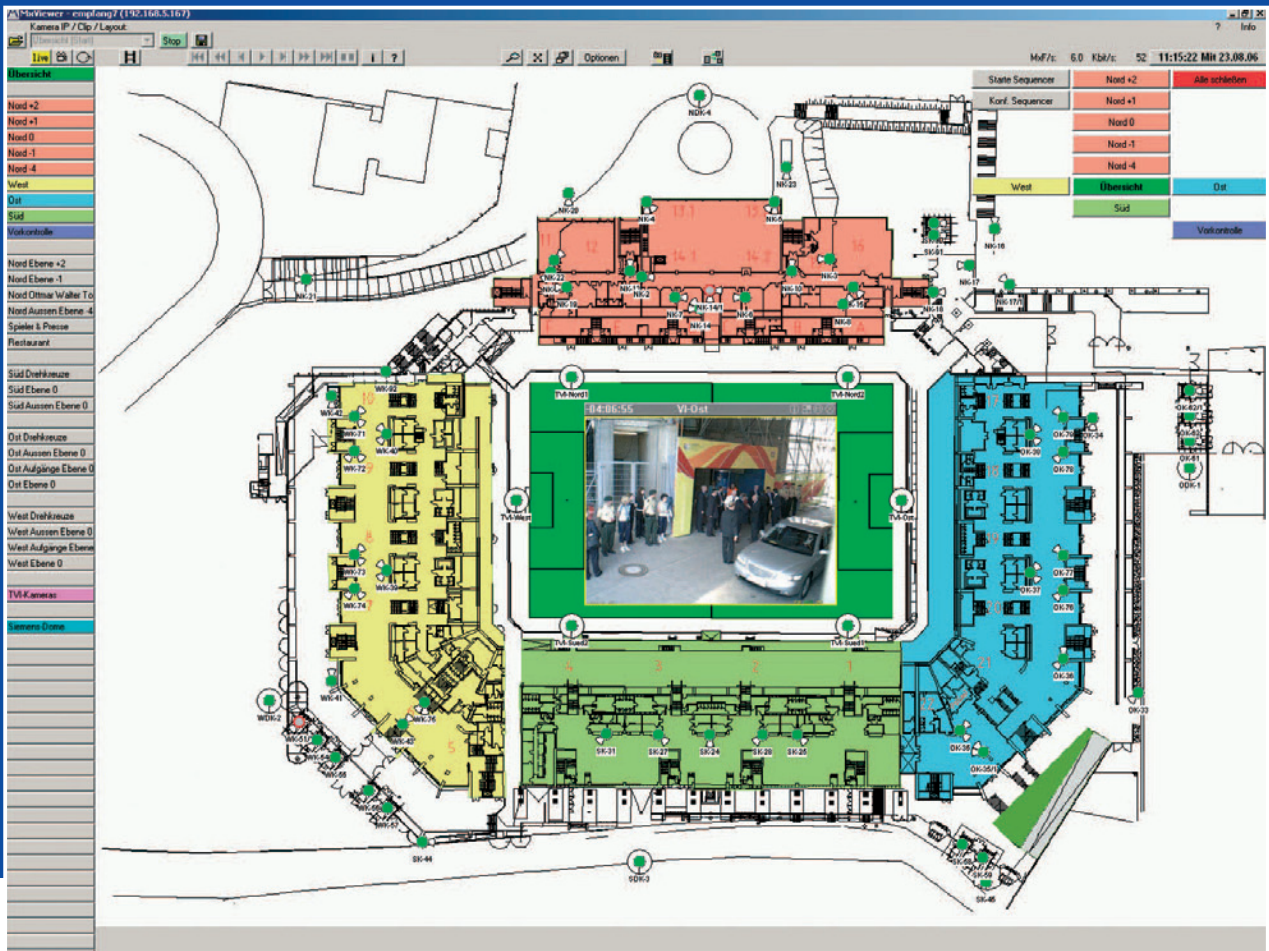
Video Management Included

No additional video management system was required to manage the total 87 cameras because all the necessary applications were included with the standard functions of the MOBOTIX cameras and the free MOBOTIX MxViewer program.
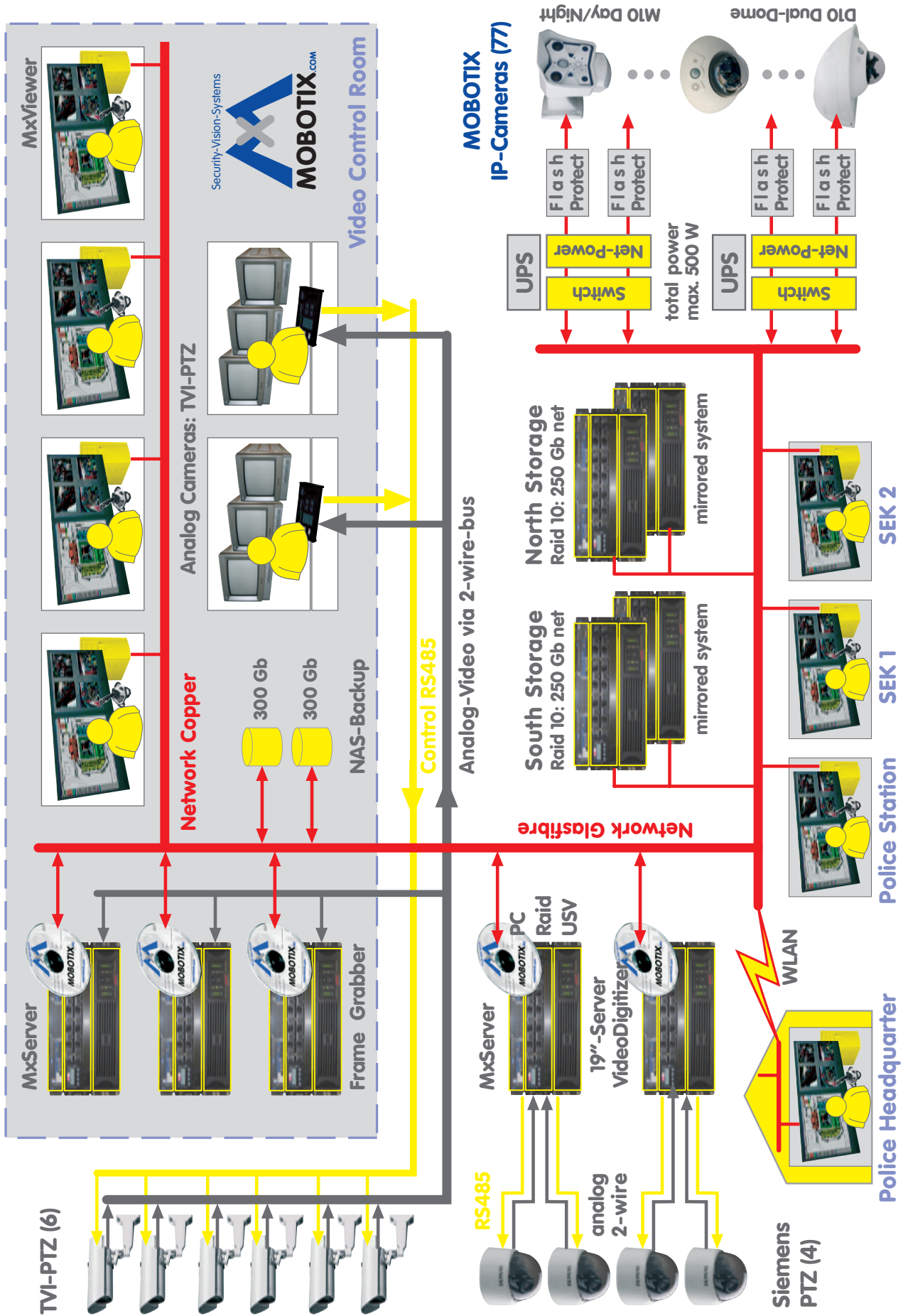
Based on the very strict and specific requirements of the police, MOBOTIX added a number of different features to the program. The camera symbols, for example, can be positioned in a background layout, while the individual camera's current operating mode is indicated in color. Convenient preview windows allow a quick look, color-coded soft buttons simplify the allocation to the cameras and any user can compile their own surveillance area. Even the Siemens dome cameras are now being controlled individually with the MxViewer. Another advantage: the images received from the many cameras can be displayed live on one screen at the same time using a high frame rate.

Finally, the network technology made it possible to easily access all the camera images remotely via the Internet, for example, from the traffic control center or police headquarters.

Compliments All Round

Chief Superintendent Uwe Giertzsch is very satisfied with the surveillance technology: "Our colleagues in the control center were extremely impressed with the camera support. They were able to identify any problems early and take appropriate action before the situation could get out of hand." The head of the stadium security team was particularly proud of the fact that colleagues who had worked in security in the other World Cup stadiums had nothing but praise for the new system. "They were really impressed by the technology."

WM 2006 • FCK-Stadium Kaiserslautern, Germany

Video Control Room

MxViewer

Analog Cameras: TVI-PTZ

Network Copper

300 Gb

300 Gb

NAS-Backup

Control RS485

Analog-Video via 2-wire-bus

MxServer

Frame Grabber

MxServer

19"-Server VideoDigitizer

PC
Raid
USV

Network Glasfibre

MOBOTIX IP-Cameras (77)

M10 Day/Night

D10 Dual-Dome

Flash Protect

Flash Protect

Flash Protect

Flash Protect

UPS

Switch

Net-Power

UPS

Switch

Net-Power

total power max. 500 W

North Storage
Raid 10: 250 Gb net

mirrored system

South Storage
Raid 10: 250 Gb net

mirrored system

SEK 2

SEK 1

Police Station

Police Headquarter

WLAN

TVI-PTZ (6)

RS485

analog 2-wire

Siemens PTZ (4)

D12 Dual-Fixdome Outdoor

D12 Dual-Fixdome

Two image sensors for 180° panorama images

Covers RJ45 wall outlets

M12 Day/Night

Microphone

Motion detector

Speaker

M22 Mono/CF

MOBOTIX Technology –
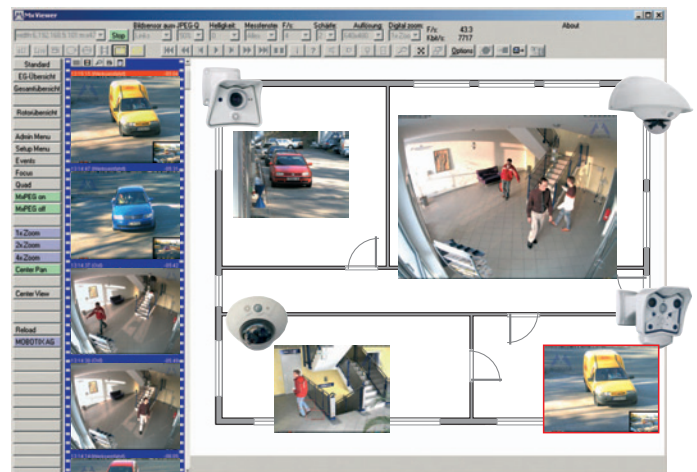## Cost Savings in Every Aspect

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.

Download **MxViewer** alarm management software free of charge. 30 cameras with 30 fps each, layout editor, remote alert notification

MOBOTIX AG
Security Vision Systems
Luxemburger Straße 6
D-67657 Kaiserslautern
Tel.: +49 (631) 3033-103
Fax: +49 (631) 3033-190
E-Mail: sales@mobotix.com
www.mobotix.com

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