



Tram Line 1 Passenger and Traffic Surveillance System, Budapest

Monitoring stops, elevators and bridges with high-resolution IP cameras

Reasons for choosing D-Link

D-Link provides high end network cameras that are professional, cost-effective and reliable and the support is always excellent. There are competitors offering alternative products but they do not have as many features or the broad range that D-Link provides.

The Network cameras fully integrated with other VMS system, such as NETAVIS without any compatibility issues

D-Link also offers a rapid response support service - D-Link Assist. The D-Link Assist Gold is available 24 hours and also offers a 4-hour replacement service



The Project

The Centre for Budapest Transport (BKK) started a major reconstruction of tram Line 1 financed by the European Union. This 145.5 million EUR investment has helped in reducing the impact on the environment and has increased the speed to the trams, that are now much faster than before. The infrastructure has also been renewed. The newly constructed stops can be easily accessed by the disabled. This new architecture has gathered interest from the architecture discipline too. A new traffic system has also been introduced to be competitive with the traffic on the road.

The Challenge

The major tram line that started in 1984 soon became one of the busiest tram lines in Budapest. There is a tram every 3 minutes during rush hours. However, the infrastructure wasn't developed to meet this demand and became obsolete over the years.

As part of the reconstruction that started in 2014 not just the track and the safety system

is renovated, but new stops are built too: there is barrier-free access for the disabled. The elevators are installed at 8 stops for the disabled. There is a sun and water shield roof at every stop.

The passenger information system has also been updated. The monitors show the estimated arrival time of the next tram at all the major stops. At each stop, loudspeakers have been implemented in order to provide immediate information to passengers about any breakdowns, accidents or other traffic measures. The loudspeakers are equipped with an adaptive volume control in order to be loud in daylight traffic, but not to be obtrusive at night.

The protection of this new infrastructure and the efficiency of the new passenger information system required a new, up-to-date remote monitoring system that guarantees more efficient intervention capabilities, prevention of damages and illegal activities plus provides evidence for the investigating bodies.





The Solution

After examining all the potential solutions, the management of BKK decided to implement an IP-based surveillance system with high-resolution and vandal-proof outdoor night vision cameras. Based on the versatility and favourable price, they chose D-Link IP Surveillance cameras and the NETAVIS Video Management Software (VMS).

Parts of the Solution

88 units of DCS-6314 Full HD WDR Varifocal Day & Night Outdoor Dome Network Camera were installed at the stops for the monitoring of passengers waiting for the trams at the stops. These cameras were mounted on the ceiling at the stops.

The 1.2MP sensors in the camera provide crystal clear image of each and every passenger.

Thanks to the varifocal lens and the long distance IR LEDs crystal clear greyscale images can be taken up to 15m distance.

The PoE functionality enables data traffic and power to be provided on one cable

For internal monitoring of elevators, 5 units of DCS-6210 Outdoor Full HD Vandal-Resistant Mini Fixed Dome Network Camera were installed.

These cameras monitor the proper use of the elevators and provide fast visual communication in case of malfunction of the elevators.

These cameras were ideal because of tough metal exterior, industry-certified IK-10 (vandal-proof) and IP-66 (weather-proof) housing and are specially designed for use in rugged environments. Due to the compact size, they were a perfect choice for installing in cramped environments.

It's 3 axis lens mounting allows you to position it perfectly in short distance

NETAVIS VMS system is a scalable server-based surveillance system that fully integrates with D-Link cameras.

It is a Linux-based server solution with flexible client devices that allows playback of both the live and the archive footage in the NETAVIS system, together with the administration of the system (adding and deleting users, setting user rights, setting and distributing camera parameters) through a web browser

The NetAVIS works with every major network technology (LAN, WAN, VPN, internet, wireless)

The NetAVIS is an ideal solution for enterprise scale security systems as it has the ability to integrate the local and remote NetAVIS systems combining up to hundreds or thousands of IP cameras.



Benefits of the implemented solution

The ability to monitor and view in real time enables assistance to be sent to the stops immediately in times of emergencies. The two-way audio functionality allows instructions or warnings to be announced from the remote monitoring room through the loudspeakers. Remote monitoring enables the emergency and rescue teams to be directed from a remote location. The NETAVIS VMS system records and provides live view simultaneously in HD resolution

The system is scalable – due to the PoE technology adding a new camera needs only one cable. All the cameras are high-definition and some are also powered via PoE (Power Over Ethernet), which makes them easier to install and provides greater flexibility in the deployment of the cameras.

Future plans

In the near future BKK would like to develop the system with high-resolution 2MP outdoor cameras with long distance IR LEDs for monitoring the tracks on the bridges. For this task the Centre chose to deploy D-Link's DCS-7513 cameras.

Because of the ongoing reconstruction of the tram lines, there are further opportunities to deploy about 100-120 network cameras for similar applications.

Products installed in the system:

DCS-6314	Full HD WDR Varifocal Day & Night Outdoor Dome Network Camera for the monitoring of passengers waiting for the trams at the stops.
DCS-6210	Outdoor Full HD Vandal-Resistant Mini Fixed Dome Network Camera for the internal monitoring of the elevators built for the disabled.
DCS-7513	Outdoor Full HD WDR PoE Day/Night Fixed Bullet Network Camera for monitoring traffic on the bridges.



For more information: www.dlink.com

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