

Dallmeier gives the Macao Sands Casino 320 TB of high quality video



DIS-1 - Encoding/decoding, video streaming and recording combined in one system

Video security technology and network technology are converging more and more. Concepts like video over IP, IP servers, network transmission, bandwidths are being talked about everywhere. The integration of recording systems into complex networks, with remote configuration, remote control, central alarm management from decentralised recordings are becoming more and more important. Besides these functions, the large security system user needs to have analogue components available (keyboard, joystick, jog shuttle) as well as digital features such as a graphical user interface or digitised site plans to ease his task and enable him to work as effectively as possible. In pursuit of this goal, the conventional analogue matrix is increasingly being replaced with a modern digital matrix. In its FRS - Full Resolution Surveillance system, Dallmeier electronic has created a cost effective, high quality solution which, thanks to its great flexibility, can meet the individual configuration requirements for operation and management in a wide variety of applications, including large projects. But not just large solutions. A decisive advan-

tage of the digital matrix is that it can be used very flexibly and there are a variety of stages in going digital. For instance with an existing analogue CCTV system the first phase is to change from analogue recording to digital (perhaps this too in stages). This provides the advantages of digital technology even if an existing analogue matrix remains in use. In a further hybridisation step the analogue matrix can be replaced with a digital one. This provides remote control access to all networked recorders, their live and archived pictures. The DIS-1, MPEG-2 recorder has an important role here for any solution.

The multi talented DIS-1

As a video streaming server and digital MPEG-2 recorder, the DIS-1 is an all-round talent. The quality of the video picture is hardly discernable from the live picture.

The DIS-1 has built-in replay functions such as forward and reverse playback, slow motion (all with different speed settings available), single frame replay forwards and backwards, which enable the user to analyse the pictures accurately and efficiently. Fast, easy-to-use and highly accurate picture analysis systems are required espe-



cially for monitoring tasks involving fast movement and action scenes, such as hand movement when counting or positioning chips at the casino gaming table. Dallmeier electronic has been able to apply its decade of experience to meet these high requirements.

Redundancy for maximum data security

The picture data can be stored with redundancy on two hard disks. Here the standard hard disk is used for recording and a second hard disk acts as an emergency track so that at least the current day's data will always be available even if the standard hard disk fails. The operating system is also kept separately on a flash ROM so that it runs independently of the hard disk. Even if the hard disk fails the DIS-1 is still able to provide video pictures to the 12 security workstations using streaming.

High cost efficiency from distributed recording

Increasingly large CCTV security projects do not involve a dedicated recording solution. Instead distributed recording with network connection to central storage units is becoming more

popular.

Experience has shown that decentralised solutions provide maximum data security and data availability as well as maximum cost-efficiency. Compared to centralised solutions, decentralised archiving solutions with digital virtual matrix functionality offer significant savings in network system peripherals and components and significantly cheaper and more secure archiving.

If you compare the two solutions types, the centralised with the decentralised recording system, the cost factor is 3:1 as a result of the cost of storage, network and survivability for the centralised recording system.

"The biggest recorder in the world" in China

"Since its smooth installation in April 2004, the whole CCTV system has been running without a hitch," commented William F. Bonner, Director of Security at the Las Vegas Sands. "To date it has already proved itself and its stability under extreme circumstances a number of times. My people from Security Team are happy to be working with it. Choosing a decentralised storage design from Dallmeier electronic has proved to be the right decision"

The security concept at the Las Vegas Sands

Casino in Macao includes a fully digital CCTV system with over 1100 cameras (693 fixed cameras and 422 domes) for monitoring the casino, restaurant and hotel, 500 slot machines and 300 gaming tables. In all 1117 DIS-1 video streaming servers and MPEG-2 recorders from Dallmeier both encode and decode as well as simultaneously record the picture data. In co-operation with each other and in their total performance they constitute the "biggest recorder in the world". In this massive project involves the handling of 320 Terabytes of data. Just to put this volume of picture data in perspective, let's look at an industrial network example: A large German car supplier with a very high storage requirement (very large files from construction plans, CAD drawings, simulation etc.) with over 2000 compute clients only handles a data volume of 32 Terabytes.

Analogue and digital operating devices

Both camera management as well as picture transmission, picture recording and picture analysis are handled through a digital virtual matrix. Each of the 12 workstations which are fitted with three CVBS monitors also has available a special graphical "Casino control" interface (GUI) including Dallmeier's PView software and an integrated site plan as an additional graphical operating interface. In addition to the graphical interfaces the staff can also choose to use a keyboard with joystick and/or jog shuttle for camera switch-

ing and picture analysis tasks involved in their monitoring work. Special customised OPC servers (OLEs for process control) ensure the smooth communication between individual components and co-operation between the various commands and protocols.

A management system saves presets to enable efficient control of pan/tilt/zoom dome cameras. The network access time is less than 200 ms.

DBC - Dynamic Bandwidth Control - A clear still picture and low data volumes

Dallmeier electronic recording systems are fitted with a specially developed digital picture filter (DBC). This enables for example general camera noise to be reduced to a minimum. The recorder delivers a clear still picture which is comfortable to work with and significantly faster recognition and analysis of picture details.

The generally prevalent CCTV problem of camera noise creates picture interference which the recorder usually interprets as change in the picture and therefore movement. It consequently records unnecessary additional picture data. The data volume may be increased several-fold without the system storing any new operationally relevant picture content. The DBC eliminates this interference before the pictures are transmitted without reducing picture resolution. The transmitted data volume is therefore reduced and the available bandwidth used more efficiently. [•]

