GEUTEBRÜCK
Competence in Video Security

Harbor management – maritime traffic / locks / mooring areas

As opposed to airports, seaports and inland ports have specialized in the movement of goods and containers.

The transaction volume of the largest seaports is over 400 millions tons per year. The largest container terminals have a yearly container turnover of 9 – 10 million TEU (**T**wenty-foot **E**quivalent **U**nit – standard container). The geographic dimensions of such ports are accordingly large; the largest occupy areas of p to 100 km^2, and the wharf can stretch over several kilometers. Up to 50,000 employees may work there, around the clock and at all times of the year.
To improve the security and danger prevention for ships and in port facilities, measures have been prescribed in the so-called ISPS Code (International Ship and Port Facility Security Code), which have been obligatory for all ports since 2004. An important component of these measures describes the monitoring of activities of persons and freight on ships and port facilities for danger prevention.

An intelligent video security system supports the port security regulations and facilitates the work of the security personnel.

The technical requirements for the video security system are high. Weather conditions including high humidity, squalls, strong UV radiation, splashing water and icing all strain the outdoor equipment. Fluctuating lighting conditions, caused by light reflections in the water, fog, beams of light from the port spotlights, etc., all place exacting demands on the camera technology. Large distances, i.e. long signal distances, must be bridged without quality loss. Electromagnetic disturbances caused by radio equipment or voltage spikes in the electricity grid (inrush spikes of the cranes and machines) may not adversely affect the system's functioning.

In addition to highly available, IP-based centralized video technology (picture editing and recording, system management), GEUTEBRÜCK offers professional products for picture acquisition and transmission:

- Twin cameras, IP cameras, thermal imaging cameras
- Camera protection housing, also for aggressive weather conditions
- Twin dome, ARGUS high-speed pan/tilt head systems (Dual System) in V4A
- Signal transmission components for all distances FOC, twisted pair and UTP technology
- IP encoder

Examples of port monitoring

Harbor / Installation requirements

Due to the massive dimensions involved, the cable installation of a video security system in a port stretches over several kilometers. This demands a great deal from the quality of the signal transmission components and the transmission medium.

Transmission of a video signal using standard coaxial cable (e.g. RG 59) has a maximum range of 100 meters, and thus is not suitable.

GEUTEBRÜCK offers signal transmission components for all required transmission distances:

- Twisted-pair transmission components for transmission of the video signal for distances up to 2 km
- Fiber optic cable transmission components multimode for video and data (range up 3 to 8 km)
- Fiber optic cable transmission components single mode for video and data (range up 50 km)
- UTP signal transmission components, for video and data (active components, range up to 1 km)

Or the transmission of all necessary data (video, control signals) can be performed using the existing port network infrastructure. In this application, IP cameras can be integrated directly and analog cameras over an IP encoder (CAM2IP).

With the DSP-based compression technology MPEG4CCTV, which has been specially designed for CCTV applications, high picture quality is realized in real time with a high level of compression and short latency times for live picture transmission that does not strain the network (low bandwidth).

This naturally also has a positive effect on the storage requirements of the video security system. MPEG4-CCTV compression achieves an average data reduction of more than 50% when compared with M-JPEG, with no reduction in picture quality. Using dynamic GOP length control in MPEG4CCTV, depending on the type of movement in the camera picture, even high levels of data reduction can be achieved and with it further reduction in the network load.

Example: Monitoring of Mooring Areas

For monitoring of activities of persons and freight at the ship mooring areas (danger prevention), high resolution twin cameras or megapixel IP cameras are positioned as fixed cameras in stainless steel weather-proof housings so that the entire docking area is covered completely.

All cameras are equipped with video motion detectors that are enabled during idle periods (no active loading). When there is movement in an alarm field, the corresponding high-speed pan/tilt head system zooms in, controlled by the video management system, to the area of the picture of the alarm field and switches on the alarm picture in the security headquarters.

In idle periods, the video security system records all camera signals with 2 to 5 pictures per second. In case of an alarm, the recording speed is increased – live recording ensues.

During freight loading, all cameras at a loading station record live and are displayed on the monitor of the loading foreman. The high-speed pan/tilt head system is now ready for manual operation at this monitoring station.

Recording of the freight loading can then be archived or exported onto various media. Pictures of incidences of danger can be immediately transmitted to the safety officer, exported or printed out.

The video security system can be networked over the Internet or private networks with other GEUTEBRÜCK systems worldwide so that the stored pictures of a loading procedure can be accessed regardless of location.
This makes it quite simple to inspect at the port of destination whether the freight was possibly damaged during loading.

Optionally, the entire system can be operated using a graphic interface (MultiMap) especially designed for the needs of the particular port.

For the realization of this example, we recommend the following products:

Twin cameras
Megapixel cameras
Stainless steel weather-proof housing
ARGUS high-speed pan/tilt head system
GSC/VMD video motion recognition licenses
GeViScope hybrid server
GeViSoft video management system
MBeg/GCT-3X-LAN multifunction operating device
MultiMap graphic user interface (GUI)

Example: Monitoring of Ship Traffic and Locks

Ship traffic is continually increasing. The port or harbor master is responsible for the smooth and secure coordination of all ship movements in the port.

Sport boots push their way into the locks next to huge freight ship and are in danger of being crushed, gigantic container ships or passenger ships approach the seaport at the same time, towboats pull car transporters in the inner harbor and much more. Often dangerous situations cannot be recognized quickly or exactly enough just using the radar system or radio communication.

A modern video camera system, mounted at the corresponding locations around the port, provide the necessary additional visual information, just when it is needed, regardless of the weather, day and night and throughout the entire year.

The GEUTEBRÜCK **ARGUS Dual System** high-speed pan/tilt head system is predestined for such applications. The ARGUS Dual System is equipped with 2 stainless steel weather-proof housings (right and left) that are moved in parallel by the pan/tilt unit.

On the one hand a high resolution day/night system camera with a motor zoom lens (focal length up to 320 mm) operates, while on the other hand a compact thermal imaging camera is operated that provides crystal clear and high-contrast pictures, over several hundred meters, in complete darkness or fog. It is possible to switch between the two cameras at any time so that you always have the optimum camera technology available.

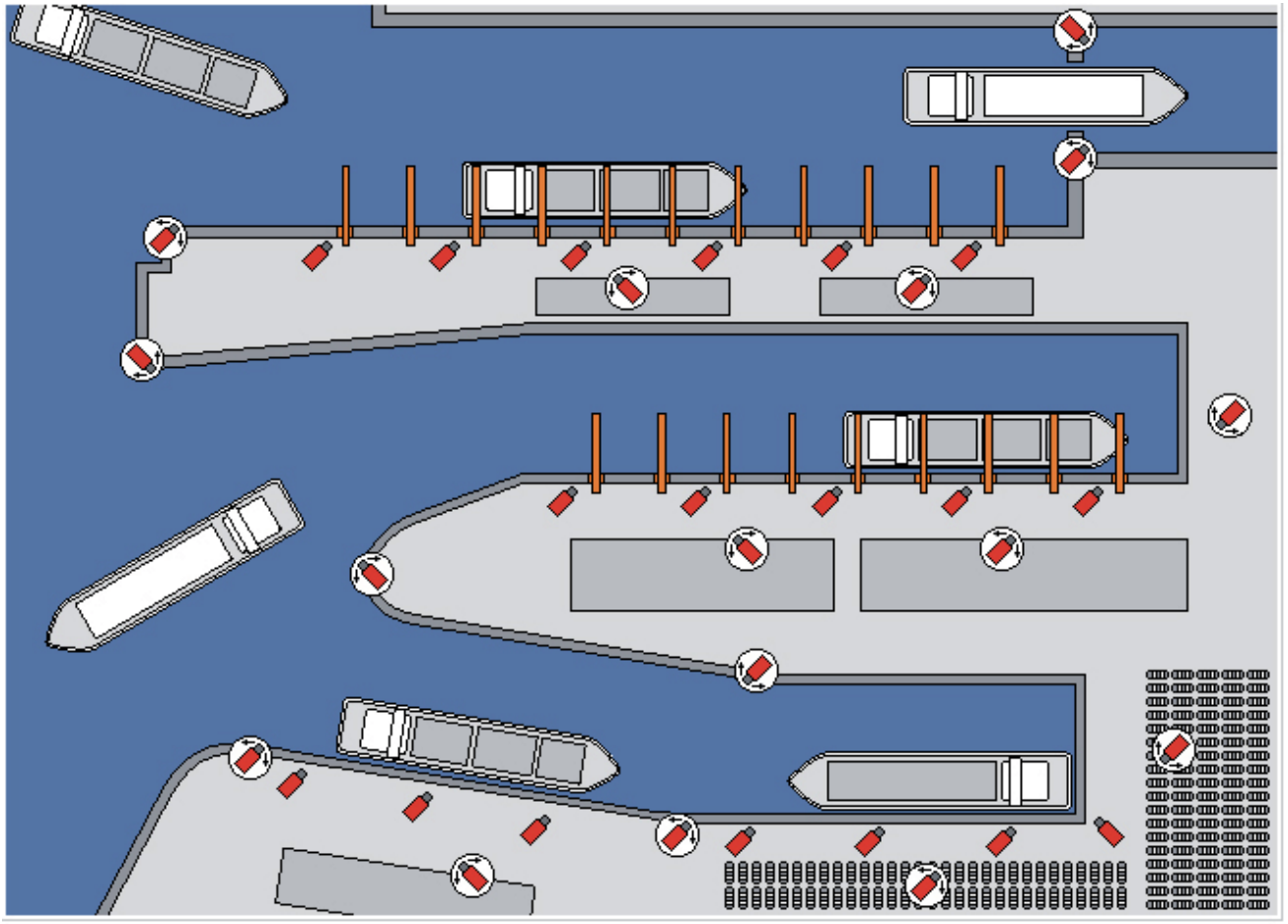
The integrated position control (255 fixed positions, P, T, F, R) move the head in a matter of seconds to the preprogrammed position (max. pan/tilt speed = 200 degrees/second) and is operated and programmed with the multifunction operating device MBEG. Control by external port systems can be performed using an interface connection or contacts.

Of course the system can be integrated into the "master" video security system and optionally controlled using graphic user interfaces.

For the realization of this example, we recommend the following products:

ARGUS system cameras
Thermal imaging cameras
ARGUS weather-proof housing
ARGUS high-speed pan/tilt head system
MBeg/GCT-3X-LAN multifunction operating device

Example: Port layout



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