New surveillance technology:

Q&A with Roland Meier, Team Leader Panomera®

Multifocal Sensor Systems Dallmeier

Video technology has become an indispensable element of the security arrangements at ports. German developer and manufacturer Dallmeier has unveiled a new approach to video surveillance of large areas: the Panomera® multifocal sensor system.

Mr. Meier, what is new about the Panomera® system?

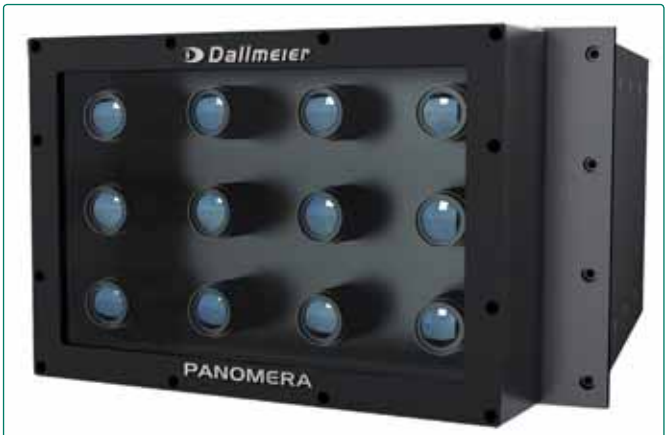
With the Panomera® multifocal sensor system, a huge area can be monitored from a single location extremely efficiently. The most impressive aspect of the product is that it combines the overall view with simultaneous top detail resolution. Even distant objects are displayed with the same resolution as objects in the foreground of the picture. The entire area observed by the camera should be displayed in uniformly high quality. But anyone who has ever zoomed in on an image will notice a marked difference: the farther you zoom into the picture, the greater the loss of detail, causing the picture to become blurry. While objects in the foreground are certainly displayed with sufficient resolution, when the user attempts to enlarge objects from the background, they appear as so many ill-defined blocks. This is why when we developed the Panomera®; one of our objectives was to ensure that the resolution never fell below the specified parameters, not even in the most distant areas of the image.

How is this high resolution possible?

We are using a completely new lens and sensor concept. In conventional cameras, the pixels are used uniformly within the sensor, that is to say, the available megapixels are distributed evenly throughout the entire image. But the actual scene is not two dimensional like the sensor, it is three dimensional; the expanse of the lateral and depth perspectives becomes progressively larger the farther back you go. If the pixels are distributed evenly on the camera sensor, this means that the same number of pixels is available for capturing a much larger area than in the foreground of the image. And logically, as a result, more distant objects cannot be resolved any more when you zoom in. With Panomera®, we do not use just a single optical device, but a multifocal sensor system, meaning several lenses with different focal lengths. In this way, we "slice up" the scene so that each area has the optimum focal length assigned to it.

What advantages does this have for monitoring ports?

Panomera® works well both for very wide panoramas and for areas involving great distances. In effect, it is as if you were to combine the advantages of an overview camera and a high optical zoom PTZ camera. Panomera® records the entire area continuously, like an overview camera – unlike a PTZ camera for example, with which only the currently active zoom area is recorded. But at the same time you can move and zoom anywhere in the entire coverage area – and individuals are clearly recognisable even at distances of more than 160 meters.



The multifocal sensor system Panomera®, a unique new technology.

Panomera® unveils an entirely new approach to video surveillance of large areas.

Dallmeier offers complete solutions from a single supplier: cameras, recording servers, video management and analysis.

Until now continuous recording of the entire surveillance area was not standard practice. Of course, fixed dome or box cameras always record the whole of the area they are monitoring. But these cameras are not equipped with an optical zoom, so they are not suitable for monitoring expansive areas, or at least only as overview cameras. This is why a lot of PTZ cameras are being used at the moment. These can be used to zoom and move within the scenes. But at the same time, PTZ cameras have a definite disadvantage: they can only ever record the area that the operator is currently watching live. If the operator is currently zooming in on the front left portion of the image, only this area is being recorded. So if an incident were to take place at a different location at the same time, it would not be possible to review it afterwards. With Panomera®, on the other hand, the entire scene is recorded continuously and in maximum detail resolution – regardless of which area the operator is viewing live. This makes it possible to analyze incidents after they have occurred.

Couldn't you achieve this effect by using several HD cameras in conjunction with each other?

An operator can work much more efficiently with a single, synchronized system than he ever could with just multiple HD cameras strung together in line. The operator would have to concentrate on lots of individual images simultaneously. Moreover, the field viewing angles could never be synchronized with one another as much as with a single, integrated multifocal sensor system.

Another advantage of the Panomera® sensor concept is a substantially higher dynamic range. Panomera® works with several sensors, each of which selects its own exposure strategy in order to achieve ideal saturation. While with other cameras an average value is determined, Panomera® can make distinctions more effectively: Light areas are exposed for a shorter time and dark areas for a longer time. As a result, situations with a large dynamic range can also be recorded with good quality, without overexposure or "drowned" black areas.

If the entire scene is monitored by one camera, is it only possible for one security operator to work with the camera?

In contrast to PTZ cameras, with which only one operator can control the camera, with Panomera®, an unlimited number of operators can navigate across the entire scene independently of each other. Although all operators are connected with the same camera, each of the individual users can select his view individually and zoom or pan as he desires. Or he can perform evaluations of the recordings at the same time. So analyses can be carried out by any number of employees at various workstations simultaneously. For example, one may be watching the overview image live, another may zoom in on a suspicious vehicle in the port area, while yet another is looking at the recording from an hour ago to see how some containers have been loaded onto a ship.

What bandwidth is required for this?

Owing to the so-called multicast capability several users can view the images from Panomera® without requiring repeated transmission of the data via network. This reduces the necessary bandwidth significantly.

How fluidly is movement represented in the images?

Panomera® provides image material in real time and at high frame rates of up to 30 frames per seconds, which translates to a completely fluid representation.

What is the situation regarding price?

Of course, a Panomera® is more expensive than a single conventional HD camera. But then you only need one Panomera® system to cover the same area that previously required several cameras. Even so, the greatest savings are realized in expenses for the infrastructure. The most expensive factor in installing a camera is not the camera itself, but the infrastructure it needs, that is to say: camera masts, wiring, electricity supply and so on. If you only need a single camera installation site, you save an enormous amount of money.

Would an existing video system have to be replaced completely?

No, existing cameras can be incorporated in the Panomera® concept. Even so, the entire video system can be monitored and controlled using a single management system. Also, a mobile solution can be created without difficulty via our iPhone server. The images from Panomera® can be displayed on an iPhone or iPad, for example. This results in faster response times and greater flexibility.

What plans do you have for developing this technology in the future?

We are in the process of completing project studies for a large number of customer enquiries, because Panomera® is not a mass-produced "off-the-rack" solution for all requirements. We perform the necessary project studies in advance to ensure that the multifocal sensor system is customized and the resolution required by the customer is achieved.

ABOUT THE COMPANY

Dallmeier has more than 25 years of experience in transmission, recording and picture processing technology and is a pioneer of CCTV/IP solutions worldwide. The company develops intelligent software and high quality recorder and camera technologies, enabling Dallmeier to not only offer stand-alone systems, but complete network solutions up to large-scale projects with perfectly integrated components.

ENQUIRES

Dallmeier electronic GmbH & Co.KG
Cranachweg 1, 93051 Regensburg, Germany
Tel: +49 (0) 941/ 8700-0
Fax: +49 (0) 941/ 8700-180
Email: info@dallmeier.com
Web: www.dallmeier.com, www.panomera.com