



LOGIPIX ENSURES FULL AIRSIDE COVERAGE AT MUMBAI INTERNATIONAL AIRPORT

MOTIVATION

Mumbai Airport was long searching for an appropriate video monitoring solution to realize full visual coverage at the airside and to secure perimeter areas. It was a central task to observe the motion of all aircraft, ground vehicles and personnel on the ground and also to record and get irrefutable video evidence

of any occurring incident at the airside. They gave a try to a few video monitoring systems and cameras, but eventually Mumbai Airport has chosen the Logipix solution as it turned out our system is able to fulfill all airport requirements and even more.

CHHATRAPATI SHIVAJI MAHARAJ INTERNATIONAL AIRPORT, MUMBAI

Chhatrapati Shivaji Maharaj International Airport, Mumbai is the second busiest airport in India right after the international airport of New Delhi and the 28th busiest airport in the world. Its passenger traffic was approximately 49.8 million in year

2018. The airport also handles one of the busiest cargo traffic in the country. It has three operating terminals and the airside manages an average of 950 aircraft movements a day.





THE SOLUTION

The Logipix Airside Video Monitoring solution was installed at Chhatrapati Shivaji Maharaj International Airport, Mumbai in order to provide full visual coverage of the entire airside area.

Leading-edge Logipix 200 MP Panorama Cameras monitor the vast area that includes two runways, taxiways, the apron and also the perimeter areas. Besides, 20 MP single cameras and 6 MP PTZs are deployed to ensure the full coverage.

The cameras deliver extraordinary resolution and the system allows to fully utilize it in the monitoring room. Ground controllers and operators can easily observe the movements of aircraft, ground vehicles and personnel. Using advanced zoom functions they can get information on registration numbers or any other visible IDs on moving objects.

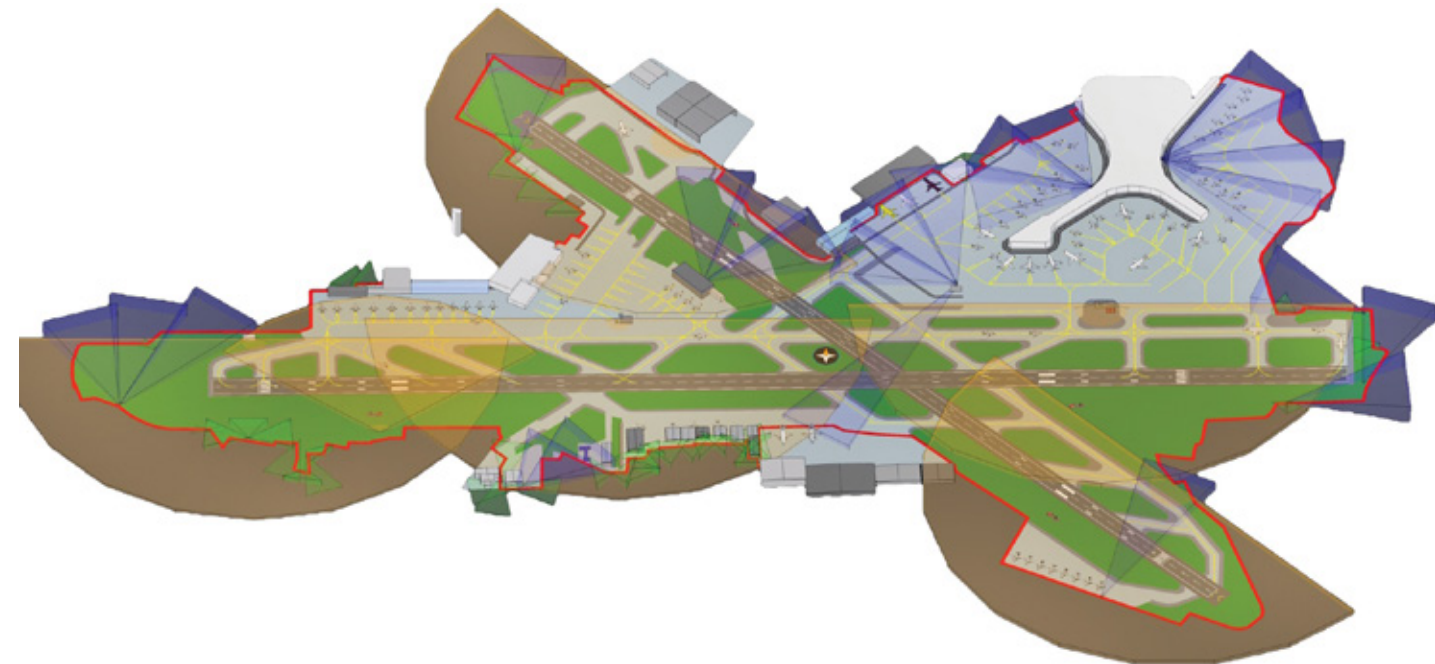
Logipix Panorama Cameras provide 20 fps video stream at full resolution, which mean controllers and operators see smooth and continuous movement of all monitored objects.



3D MODEL OF VIDEO COVERAGE

Logipix engineers created a 3D plan for the camera arrangement at Mumbai Airport in order to designate the most reasonable installation points of the Logipix cameras.

Based on layouts Logipix were able to determine the optimal number of devices to achieve the required resolution and to realize full coverage at the airside.



MAIN LOGIPIX COMPONENTS AT MUMBAI AIRPORT

- Logipix 200 MP Panorama Cameras
- 20 MP Logipix ONE Cameras in special camera houses
- Logipix 6 MP PTZ Cameras
- 3rd generation Logipix Network Video Recorders
- Logipix Storage Extensions
- Logipix PIDS Interface
- Logipix Control Center Professional
- Perimeter Online software module



BENEFITS

- **Full coverage with extreme high resolution** – Logipix Panorama Cameras provide full coverage at the airside area and make small details, like registration numbers visible in the monitoring room.
- **Better spatial awareness** – As the Panorama cameras monitor wide areas from a single viewpoint controllers and operators can better orientate within the visually covered space and they can observe each movement on the ground more steadily.
- **Quick and efficient decisions** – Quality visual information of an occurring incident means faster and more effective reaction.
- **Irrefutable visual evidence** – As the footage is stored for the required airport standard period in full resolution, incidents can be investigated to details searching in archive recordings.
- **Advanced perimeter security** – The Logipix system integrates the existing airport PIDS in order to use its alarm signals for triggering automatic zoom functions.



DETAILED DESCRIPTION

LOGIPIX COMPONENTS AT MUMBAI AIRPORT

Logipix delivered several 200 MP Panorama Cameras and a 120 MP Panorama in order to monitor two runways, all taxiways, the apron and all perimeter areas at Mumbai Airport.

Additionally several 20 MP and 4 MP individual cameras are also deployed to cover those areas that are hidden for Panoramas by buildings and other objects.

A dozen of Logipix 6 MP PTZ cameras continuously scan the airside, particularly the perimeter areas and the isolation

bays, where airplanes are directed in case of special incidents. The total of 2500 MP resolution image streams are recorded by the 3rd generation Logipix Network Video Recorders and also by Storage Extensions.

Logipix integrated Mumbai Airport's Perimeter Intrusion Detection System by a specially developed interface that contains more than five hundred relay inputs. Logipix also allows for making connection with external PIDS through IP network.



UNIQUE PANORAMIC TECHNOLOGY USED AT THE AIRSIDE

Logipix engineers maximized the potential of panoramic monitoring. They developed an advanced stitching technology, whereby images are not just overlapped at the image borders, but geometrically merged. The Logipix cameras capture their images synchronized, eliminating disturbing glitches like object duplication or disappearance. This feature is essential in airside environments where even the smallest mistake is unacceptable. Thanks to Logipix, operators and controllers can see what actually happens on the ground in real time.

An other benefit of Logipix Panoramas is their resolution. They are capable of providing detailed images of objects even at far distances while they are monitoring a broad range of area. Operators and controllers can observe all movements of an aircraft throughout the entire airside from the very moment of landing until its next take-off.

The act of monitoring with high-resolution panoramic images accelerates the work of operators. It is much faster to zoom in on objects in the panoramic images than picking a binocular up and scanning the airside.



SPECIAL DEVELOPMENTS FOR MUMBAI AIRPORT

Logipix developed special features in order to make the system more efficient at the airside. As the airport required a relatively long storage time, the storage capacity should have been extended as well. Our engineers created the Logipix Storage Extension units, which increasingly extend storage capacity. This way there was no need to increase the number of NVRs, the Extension units made it possible to satisfy the requirements.

The 6 MP Logipix PTZ cameras have been equipped with a new, more efficient Laser Illuminator. Thanks to this development they can effectively light the area of interest with IR light during night observation. This feature is crucial in perimeter security. In order to realize a smooth PIDS integration our engineers developed a straightforward User Interface and also advanced server applications that handle the large number of input signals.

PERIMETER SURVEILLANCE

The Logipix solution provides perimeter intrusion detection at Mumbai Airport. The intrusion detection basically relies on the integrated 3rd-party PIDS, and Logipix provides an instant visual confirmation on the alarms. The generated signals trigger the Logipix Panorama and also the appropriate PTZ to automatically zoom in on the exact alarmed area. On demand, trigger impulses can be also generated by Logipix VCA, when it detects intrusion.

In the Logipix system the Panorama and the PTZ cameras are measured together by designating common image points that are seen by both cameras. Based on common coordinates the PTZ positions are matched with the panoramic image areas and this way the Logipix PTZ can act like an additional optical zoom for the 200 MP Panorama Camera. PIDS inputs are assigned to predefined image areas, therefore in case of an intrusion the system can automatically control both the Panorama and the PTZ to show relevant images of the incident.



Logipix automatically guide the attention of operators to the area of interest and display an archive video loop of the trigger event. Thus, they can immediately explore the situation and further investigate or acknowledge it. An event grid makes search easier for operators among past events. Thanks to these functions Logipix helps filter many false alarms, avoid unnecessary efforts and save valuable time.





RECORDING WITH SPECIALLY DEVELOPED AGING TECHNOLOGY

Recording and storing a total of 2500 MP visual information with 20 fps calls for a need of an advanced solution. At Mumbai Airport several 3rd generation Network Video Recorders and additional Storage Extension units perform these tasks. The devices are ideal for recording the high-resolution panoramic images, since they have a 7 Gbit/sec recording speed. They use the JPEG2000 compression standard, which allows intelligent image transmission toward the monitoring center.

Thanks to the specially developed aging technology, the recorded images can be stored on 3rd generation Logipix NVRs and Storage Extensions for a thirty-day period. In case of any negligence or incident at the airside, the situation can be investigated searching in the quality footage.



MONITORING IN FULL RESOLUTION

Operators can work conveniently with the Logipix Control Center at their workstations in the control room. Displaying quality panoramic images with hundreds of megapixels during live monitoring or archive playback is no easy task. This amount of data can impose excessive burdens on the network infrastructure and client computers.

To overcome this issue, Logipix engineers developed a bandwidth effective method for monitoring. Utilizing the resolution scalability of JPEG2000 images, Logipix always

transmits only the screen-optimized resolution to the Monitoring Center, while stores the full resolution panoramic images on the Network Video Recorders. This means when operators zoom in on the panoramic images they receive higher resolution images on their monitors.

Logipix Control Center features multiple zoom windows in the Video Monitor interface. This way operators can observe certain areas in full resolution or track moving objects at the airside while they continuously see the entire area.

SUMMARY

Logipix Airside Video Monitoring Solution has been deployed in Chhatrapati Shivaji Maharaj International Airport, Mumbai in order realize high-resolution visual coverage of the entire airside area. As the main component of the system Logipix used 200 MP Panorama Cameras, which provide stunning images at high fps for the controllers and operators. They can track all aircraft movements throughout the airside and also monitor Ground Support Equipments and personnel. Operators can react quickly in case of any negligence or incident and they can also investigate any situation occurred thanks to the high resolution archive footage.