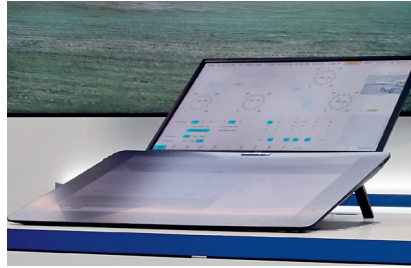


# Vision enhancement in military ATC

## Digital tools increase safety



### Vision enhancement enables

- Advanced view in low visibility conditions
- Seamless blind spot coverage
- Object detection and tracking

### Enhanced situational awareness



### Solution components

- smartVISION software
- High definition cameras
- Thermal cameras
- PTZ cameras
- Integrated light gun

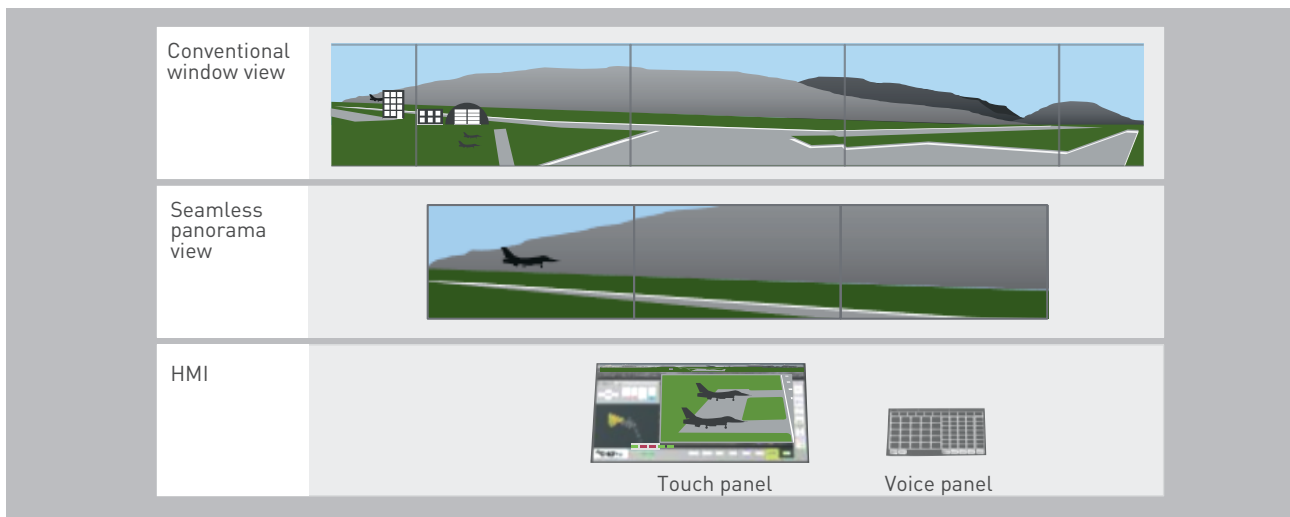
### Improved flight safety through full integration



For the last 100 years, air traffic at civil airports and military airbases has been controlled from a specifically designed tower that allows all aircraft to be observed by eye. Even today, at the vast majority of airports, aircraft are controlled from a conventional brick-built ATC tower. Over the course the last decade, however, the use of cameras to visually observe obstructed parts of the airfield has become more and more common, allowing controllers once again to provide a safe service to all parts of the airport. Receiving information from various sources increases the controllers' workload. The implementation of digital towers resolves these issues instantly by providing the air traffic controller (ATCO) with a 360° seamless visual panorama. This can also include integrated hot spot cameras as well as a range of augmented reality tools to enhance situational awareness.

Not every air traffic control service provider is willing or able to replace their conventional ATC tower with a digital solution. It could be that the ATC tower has just been refurbished or newly built, that infrastructure budgets are unavailable for technology purchases or that the desire and willingness to switch from conventional to digital ATC is just not yet achieved.

The Frequentis vision enhancement system is the optimal solution to supplement existing ATC infrastructure – helping ATCOs to increase their situational awareness, reduce the workload whilst improving flight safety. If an apron at an airbase is not visible to ATC personnel, the Frequentis smartVISION software, together with an optimum choice of cameras and mounting location, displays the area to the ATCO in a dedicated compact seamless panorama display. Instead of ATCOs having to observe feeds from multiple different camera angles, smartVISION provides a holistic view of the complete apron. In addition to the provision of the normal visual view, the use of thermal cameras, integration of augmented reality-style overlays and labels can add to the situational awareness.



Upgrade your conventional ATC tower and increase the situational awareness of the controllers.

Cover blind spot areas through a seamless panorama.

Replace binoculars through a PTZ camera to increase zoom level and the field of view.

Reduce controllers workload adding digital tools.

Enhance your services and improve flight safety.

Realise a future-proof technology level, keeping cost and maintenance level on an acceptable level.

Another example of a digital addition to an ATCO's portfolio of tools is the use of the pan-tilt-zoom (PTZ) camera as a replacement for standard binoculars. Binoculars are used in an ATC tower for various reasons - to check the landing gear of an aircraft, observe wildlife or to do regular visual checks of the runway. If the ATCO must hold the binoculars in two hands, it limits their ability to perform other tasks simultaneously, such as marking flight strips or manipulating the other parts of the tower automation system.

The use of the Frequentis PTZ camera will solve this issue and also has a range of additional capabilities. The camera can track objects automatically and can zoom in to carry out detailed visual inspections such as to carry out undercarriage checks. This image is displayed on the ATCO's HMI in the ATC tower and can also be available to other interested parties such as the base flight safety officer or squadron operations staff in the case of an emergency. To enhance vision at night or during periods of poor weather, the Frequentis PTZ camera housing can also include a thermal camera, vastly increasing the chances of observing wildlife, vehicles or drones on the manoeuvring area at night.

Finally, the ICAO compliant signal-light gun (SLG) built into the PTZ housing adds another capability and completes the PTZ solution. The SLG removes the need to have a conventional light gun in the tower and is controlled directly through the HMI. The co-location of SLG and PTZ camera makes targeting and sending of relevant signals a simple task.

All these features and functions can be integrated within the Frequentis integrated controller working position (iCWP). With this integration, the ATCO is provided with a state-of-the-art CWP bringing together voice communication, vision and handling of electronic flight data in one solution.

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