Transforming air traffic management with advanced automation from Frequentis

FREQUENTIS
FOR A SAFER WORLD

Air Traffic Management

Safe and sustainable growth

Abu Dhabi Airports is pioneering the future of aviation by advancing automation to support growth, safety, and sustainability across the region and beyond.

In collaboration with Global Air Navigation Services (GANS), Abu Dhabi Airports is setting a new benchmark in air traffic management through the deployment of intelligent, forward-looking automation technologies.

With air traffic volumes expected to double before 2030, recent infrastructure investments have significantly expanded capacity, strengthening Abu Dhabi's position as a key international aviation hub and strategic transit gateway between continents.

To handle this growth efficiently and sustainably, Abu Dhabi Airports has implemented the Advanced Automated Tower concept from Frequentis.

This intelligent solution consolidates operational data into a single, streamlined screen, empowering air traffic controllers to manage increasing volumes with improved situational awareness, faster response times, and reduced environmental impact through streamlined coordination, real-time insights, and smarter decision-making tools.

"There's an increased focus on sustainability in the region, which includes reducing holding patterns because that burns a lot of unnecessary fuel. Technology has a really crucial role in the sustainability journey."

Jane Boyle, Head of Sustainability, Abu Dhabi Airports

Client profile

Abu Dhabi Airports, founded in 2006, manages five key airports, including Abu Dhabi International Airport (AUH), the second largest in the UAE, serving 102 destinations with 24 airlines.

Business situation

Abu Dhabi Airports needed to address increasing air traffic volumes and ensure efficient, safe, and sustainable travel following the opening of Terminal A, which effectively doubled capacity to 45 million passengers annually.

Solution

To meet rising demand, Abu Dhabi Airports introduced the Advanced Automated Tower from Frequentis with the region's first Level 4 A-SMGCS. Frequentis TowerPad consolidates flight data, weather, lighting, and communications into a single user interface, enhancing efficiency and situational awareness.

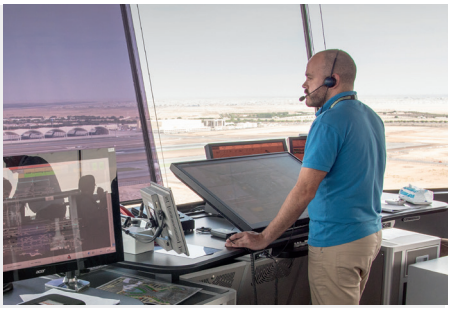
Enhanced situational awareness and improved safety for controllers through real-time alerts and data consolidation

Advanced automation increases operational efficiency by enabling controllers to manage growing traffic volumes seamlessly

The innovative Follow the Greens system reduces taxi times and lowers fuel consumption and emissions

"The Frequentis TowerPad has resulted in a massive reduction in taxiway incursions due to the simplicity. The pilots just Follow the Greens."

Andrew Edwards, ATC Training Instructor, GANS



Empowering Abu Dhabi Airports for the future

Abu Dhabi Airports is embracing innovation to enhance efficiency, safety, and sustainability in air traffic operations. Ensuring they have a future-ready solution that empowers controllers, improves decision-making, and delivers a seamless experience for passengers and airlines.

Working closely with the airport and Frequentis, GANS launched a strategic transformation plan. Their goal was to introduce advanced automation to handle greater traffic volumes while delivering a smoother passenger experience and maintaining on-time performance.

This transformation began with the implementation of the Advanced Automated Tower concept, powered by Frequentis incorporating the region's first Level 4 A-SMGCS. TowerPad consolidates all essential information including flight data, weather, airfield lighting, and communications into a single, user-friendly display. By streamlining access to critical information, controllers can manage higher traffic volumes with greater accuracy and reduced workload, even under challenging operational conditions.

A key element of the solution is the Follow the Greens functionality, which enhances taxiway management by guiding pilots with a trail of green taxiway lights. This automated system reduces radio traffic and also reduces potential pilot error, while dynamically adjusting to other aircraft and ground vehicle movements. The ability to automatically route aircraft based on real-time ground traffic conditions improves both operational efficiency and safety. Shorter taxi times also reduce fuel consumption and carbon emissions, directly supporting Abu Dhabi Airports' environmental and sustainability goals.

The Advanced Automated Tower solution also enhances operational safety through advanced safety net capabilities, which monitor activity in real time and automatically trigger alerts for safety-relevant events. This proactive approach to safety allows controllers to respond quickly to changing conditions, increasing overall airport resilience and operational efficiency. By reducing the risk of human error, safety net ensures that controllers can focus on managing complex traffic scenarios with confidence.

Frequentis´ open system architecture ensures that Abu Dhabi Airports can integrate future technologies and solutions without disruption. The system supports flight data management and ground surveillance, providing a flexible, future-ready platform for long-term growth. TowerPad's modular design allows Abu Dhabi Airports to adapt the system as new requirements emerge, ensuring that the solution remains effective as traffic volumes and operational demands increase.

The introduction of automation has already delivered measurable benefits, including fewer taxiway incursions and increased overall handling capacity, enabling the airport to safely manage higher traffic volumes.

By implementing the Advanced Automated Tower concept, Abu Dhabi Airports has positioned itself at the forefront of modern air traffic management. The partnership with Frequentis equips the airport to respond dynamically to growing passenger numbers and evolving airspace demands. With a future-proof, scalable solution in place, Abu Dhabi Airports is well-positioned to reinforce its status as a key aviation hub, delivering a more efficient and reliable experience for passengers and airlines alike.

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Further information

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