Unleash the power of remote tower control
Centralised solution with multiple benefits

The German air navigation service provider DFS Deutsche Flugsicherung was one of the first to recognise the opportunities offered by remote tower control (RTC). Together with the Austrian high-tech company Frequentis, DFS has developed an advanced solution for three international airports in Germany: Saarbrücken, Erfurt and Dresden. In December 2018, remote tower control went into regular operations for Saarbrücken International Airport, which has 15,000 flight movements per year. The other two airports will be phased into the Remote Tower Control Centre in Leipzig step by step.

The benefits of remote control at a glance

- Cost savings
- Efficiency gains
- Productivity enhancement
- More flexibility in shift planning
- Improved proficiency of operational staff
- Enhanced provision of safe services

PTZ camera

360-degree video and infrared camera

PTZ camera
The situation

DFS operates 16 control towers at the designated international airports in Germany. Some of these airports have low to medium traffic volumes. Maintaining services at these airports requires a lot of personnel and is relatively cost intensive. The main objectives of the remote tower project in Germany are to reduce the cost of tower operations by using new technologies and procedures, and increase productivity – while maintaining safety and performance/service quality for airspace users. The system had to deliver a safety level that is at least equivalent to conventional aerodrome control services. It had to comply with ICAO and EUROCAE as well as with Regulation (EC) No 549/2004 for the use of new systems and had to be approved by the national supervisory authority.

The solution

Creating a remote tower solution is more than a technical question. A good solution should consider your individual needs. In Germany, the best solution was to establish a remote tower control centre in Leipzig, where the international airports of Saarbrücken, Erfurt and Dresden will be controlled. One tower controller in the RTC Centre in Leipzig will provide single tower control services for one airport at a time. However, they will be cross-trained to provide control services for the other airports as well. There will also be one common clearance delivery position.
The equipment

The DFS Remote Tower Control Centre is based on the conventional out-of-the-window view. Three independent camera systems ensure that the air traffic controllers (ATCOs) at the RTC Centre can monitor traffic at the airport at all times. A 360-degree video camera delivers a panoramic view of the airport. A 360-degree infrared camera is also provided. The advanced thermal infrared camera technology provides an enhanced view of the airfield and the terminal area, for example at night. In addition, two pan-tilt-zoom (PTZ) cameras are used. Each camera is equipped with a video sensor, one with an infrared sensor. The controller can zoom in and track objects of interest as well.

The RTC system offers more than a mere replacement of the view from the tower. Controllers have access to additional information and are supported in their daily work. The system is equipped with advanced automatic object detection and can highlight all relevant traffic in the control zone. The PTZ camera can also automatically track objects. The system provides ATCOs with all the information they need. The system incorporates controller working positions and state-of-the-art ATS systems.

The advantages

- One common clearance delivery position and one supervisor for all airports
- Optimised shift planning due to cross-training and licensing of ATCOs for all airports
- Better planning of breaks and night shifts
- Improved situational awareness at night
- State-of-the-art technologies to increase situational awareness (bird strikes or distance measuring, for example)
- Better maintenance of proficiency, especially for ATCOs from aerodromes with low traffic
- Harmonised ATM infrastructure pooled in one building
- Reduced costs and lower staff numbers for central maintenance services

The future

Work on the DFS single remote tower project is not yet complete. Gradually, more medium-sized airports will be integrated into the RTC Centre. Remote tower control offers more: The concept means that one ATCO would control more than one airport at the same time. The multiple remote tower concept promises even higher productivity and greater cost-efficiency. However, the concept is still the subject of research. DFS, together with other partners in SESAR, is examining the technical and conceptual possibilities. The innovative concept has the potential to spark a revolution in tower control.
An innovation such as RTC is based on years of research and development. DFS initially started investigating RTC in 2010. Together with the German Aerospace Centre (DLR), DFS set up a research project and conducted a human factors study to analyse the influence of remote tower operations on ATCOs – the essential basis for successful remote tower operations. This study scrutinised the feasibility of the planned operations. In 2015, DFS started developing the RTC solution together with the Austrian high-tech company Frequentis.

It took scores of analyses, studies, tests, operational and technological changes and safety assessments to finalise the DFS approach. In 2017, the remote tower solution finally cleared its last hurdle. In a practice run, the system demonstrated that it met all requirements. Additional training and approval processes followed until the Remote Tower Control Centre went into operation in December 2018 with air traffic control services for Saarbrücken International Airport. The RTC Centre is located in Leipzig, 450 kilometres away.
Creating a viable remote tower solution requires a lot more than just installing the technical environment. The best way to achieve centralised operations is to follow an individual approach. DFS Aviation Services, a DFS subsidiary, and Frequentis have set up the joint venture FREQUENTIS DFS AEROSENSE. We provide turnkey remote sensing solutions for ATC, combining virtual tower systems delivered by Frequentis with proven operational and regulatory concepts and expertise from DFS. Benefit from our ANSP perspective, our broad knowledge and experience in operations.

DFS Aviation Services can offer you project support from the first step until completion. The consultancy services comprise setting up and executing the project based on your local conditions and requirements. These include compliance with ICAO requirements, optimisation of the tender process to find the most suitable infrastructure and technology, validation and adjustments, operational procedures, safety assessments as well as the certification process.
One of the biggest challenges faced when introducing RTC is dealing with the change in the culture of service provision. For your project to succeed, you need the acceptance of ATCOs, staff representative bodies and unions, not to mention the responsible authorities, airports, airlines and pilots’ associations. A new era in tower operations has begun. This is your opportunity to unleash the power of RTC.

If you are interested, contact us by e-mail or telephone. One of our consultants will be happy to provide you with the information you need.

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