

Top-flight radio: communications systems for Cairo Airport's control tower

Cairo Airport handles some 16 million passengers a year, a huge number that poses a sizeable challenge for the Egyptian ATC authority. Coping with this traffic volume calls for extremely reliable radiocommunications systems – which is why the authority chose Rohde&Schwarz.

Safety and reliability first

With around 16 million passenger movements a year, Cairo is one of the busiest airports in the Middle East and Africa. To be better equipped to accommodate this traffic load, the Egyptian ATC authority decided to build a third runway and a new control tower. A hundred meters high, the tower is one of the tallest in the world and, from the control room at the top, offers an unrestricted, 360-degree view of the airport (FIG 1). It was inaugurated on October 21, 2010. Inside, it is equipped with a comprehensive ATC radio solution from Rohde&Schwarz designed to ensure reliable and unrestricted communications.

Egypt's National Air Navigation Service Company (NANSC) hired ORASCOM as general contractor to build the tower. With the support of its local agency in Egypt, Rohde&Schwarz was awarded a contract by ORASCOM to supply the tower's radiocommunications systems. Consultants from the ADPi company were also involved in technical consulting and testing on behalf of NANSC.

The primary radiocommunications system consists of a main and a standby system. These include R&S®Series4200 VHF and UHF radios, which are remote-controlled by R&S®GB4000T and R&S®GB208 control units. The tower also has a secondary, independent radio system that can be used to control the airspace if the primary system should fail.

To deliver the high standard of safety required by the customer, the R&S®RCMS II remote control and monitoring system from Rohde&Schwarz continuously monitors the entire radio system to ensure that it is operating error-free.

Although working to a tight schedule, Rohde&Schwarz completed project planning, execution and acceptance testing on time. To ensure smooth commissioning, Rohde&Schwarz also trained the airport's air traffic control engineers at its own training facility in Munich.

The primary radio system operates on 18 different frequencies. Due to the prevailing spectrum occupancy, the focus was on achieving maximum reliability and optimum functional

performance. During the design phase, engineers had to contend with narrow antenna and frequency spacing (collocation). Here, the extensive experience of Rohde&Schwarz engineers in the field of air traffic control proved its worth. They came up with a convincing yet affordable concept for installing the large number of radios needed in the tower (FIG 2) – a concept that incorporated cleverly designed filters and combiners

FIG 1 The control room at the top of the 100-meter tower offers an uninterrupted 360-degree view of Cairo Airport.





FIG 2 The kind of technical challenge on which Rohde&Schwarz thrives: Accommodating a large number of radios in a minimum space calls for a smart system design to ensure smooth and reliable continuous operation.

to ensure reliable operation. Testing was conducted at night so as not to impact on air traffic.

The key criteria that prompted general contractor ORASCOM to decide in favor of Rohde&Schwarz were the company's many years of experience in providing high-end ATC radio systems and the outstanding reputation of its products, which offer the airport exceptional reliability combined with significantly reduced life cycle costs.

Final acceptance testing was carried out on behalf of NANSO by a consultant from ADPi. He was more than satisfied: "The Rohde&Schwarz solution for the new ATC tower in Cairo had to deal with a difficult environment, operational restrictions and a very complex set of requirements. I was thoroughly impressed by the quality of the equipment supplied, the entire system documentation, and the speed and professionalism with which Rohde&Schwarz responded to and overcame unforeseen difficulties."

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