Abu Dhabi Airport Company (ADAC) – Airport-Wide Fibre Optic Network

THE PROJECT

In March 2015 FOSS was awarded a major fibre optic network contract. It included the design and installation of a resilient singlemode fibre backbone network to join the existing airport terminals at Abu Dhabi International Airport to the new Midfield Terminal along with 3 additional utility complexes.

The project was successfully completed on 31st May 2017 and the installed network comprises 1,100 km of fibre cable (24-288 fibres) providing inter terminal connectivity and redundant connections into 7 on campus data centres and providing control to the utility complexes. The solution includes Commscope imVision Automated Infrastructure Management on all optical patch ports providing real time information on the status of the optical infrastructure.

THE REQUIREMENTS

The physical topology of the networks is based upon multiple redundant rings providing resilient connectivity between the existing airport terminal buildings, the new Midfield Terminal Building (MTB), the existing utility complexes and new utility complexes.

A particular challenge of the project was based upon the fact that the client's specification required that there were to be no intermediary fibre joints in any of the fibre links to ensure the lowest possible optical link loss. This presented FOSS and Commscope with significant manufacturing challenges as many of the fibre cables were more than 15 km in length. Furthermore, many of the fibre cables were likely to come into contact with Jet Fuel and consequently Jet Fuel resistant cable had to be custom manufactured and installed.

A specific requirement from ADAC was to install fibre cables inside street telecom cabinets, which are located across the airport campus. The design of the cabinets includes 'Solar Shields' to help protect against the harsh environment. At a later stage, FOSS will use these cabinet interconnection points to extend the fibre network into additional buildings that are under construction.

Working in tandem with airside operations for access passes, security processes, available air traffic downtimes and coordinating with multiple third-party contractors for air side work has made the project even more challenging.

OVERVIEW

Abu Dhabi Airports Company (ADAC) is a public joint-stock company wholly owned by the Abu Dhabi Government. In 2008, ADAC added Al Bateen Executive Airport and Sir Bani Yas and Delma Island Airports to its portfolio. These airports help contribute to Abu Dhabi's development as a major destination for both business and tourism. Currently under way is the multi-billion dollar Mid Field Terminal Project which is a major expansion of Abu Dhabi International Airport. Upon completion this will increase the overall capacity of the airport to more than 30 million passengers per year.

The Mid Field Terminal initiative is part of the Abu Dhabi Government's plan to make Abu Dhabi a top international destination.

PROJECT REQUIREMENTS

- Lowest optical loss from splicing
- Armored Jet Fuel Resistant and armored outdoor fibre cables
- Adhere to strict and critical project milestones

SOLUTION

- 1.1 million meters of cable
- 96 million meters of individual fiber cores
- 673 km of armored Jet Fuel resistant fibre
- 471 km of armored outdoor fibre
- 78,768 optical fibre terminations
- imVision – Automated Infrastructure Management across all fibre optic patch panels.
- Providing real time visibility of fibre optic network status
- Over 100 racks distributed across 7 main data centres and utility complexes
- 120 remote node locations
- Fully customised software detailing all as built construction drawings, cable routes, room and racks layouts

BENEFITS

- High performance low loss optical network infrastructure

FOSS had to commission multiple airport licensed vehicles and train specialised drivers to be able to mobilise on airside site works.

THE SOLUTION

In line with ADAC's requirements, FOSS installed 1.1 million meters of cable, 96 million meters of individual fiber cores, 673 km of armored Jet Fuel resistant fibre and 471 km of armored outdoor rated firbe.

The installation included 78,768 fibre terminations (48, 96, 144 and 288 individual fibers in a single cable).

FOSS installed and commissioned Commscope imVision, an intelligent optical network monitoring solution which provides real-time monitoring of the optical infrastructure. A key security feature of imVision is the ability to actively monitor any unauthorised physical activity on the network and raise alarms in such an event.

Additional customised software was provided as part of the overall imVision solution. This software allowed the importation of all as built documentation (rack layouts, rack elevation animations, as built construction drawings detailing cable routes, equipment room layouts). This information allows the end user to quickly and easily identify the physical configuration of the optical infrastructure and efficiently identify faults and plan changes.

The installed system is backed by a Commscope 30 year warranty and FOSS 5 year service warranty.

CONCLUSION

The project was completed in 26 months. At its peak the onsite FOSS team involved 164 individuals. They performed the equivalent of 250,000 man hours without any accident.

FOSS has been a "Preferred Contractor" to ADAC since 2007. In April 2017, ADAC awarded FOSS with the "Supplier Excellence Award" in recognition of it's outstanding performance over the last 10 years.

PHOTO (from left to right): Saeed Khalfan Alzaabi, ADAC SVP Procurement and Logistics; Jim Underwood, FOSS Managing Director; Abdul Majeed Al Khoori, ADAC Acting CEO; Shahees Kanichirakkal, FOSS Business Development Manager.