case study

Advanced Integration at Ashgabat International Airport

Many projects in Turkmenistan are ambitious. The new Ashgabat International Airport is no exception. Built to replace existing airport facilities to respond to rapidly growing domestic and international passenger traffic, the project was extensive in scope and presented certain special requirements unique to the country, geography and climate. The terminal building takes the form of a soaring eagle, the mascot of the national airline carrier. An aerial look upon the airport reveals several other large-scale designs inspired by national symbols of Turkmenistan.

The new airport can host 14 million domestic and international passengers annually to IATA Class A service standards. The main terminal provides 30 bridged gates for passengers and covers an area of 161.851 square meters. Beyond that, the airport's campus includes a VIP terminal, an air traffic control tower, indoor and outdoor parking lots, a cargo terminal with an annual load capacity of 200,000 tons, an aircraft maintenance hangar with a capacity for three planes, a catering building, new fuel supply facilities, firefighting buildings, maintenance-repair and warehouse facilities, a civil aviation school, a flight and cabin training simulation building, a hospital, dormitory, an indoor sports hall and other administrative and technical support facilities. In all, the airport design includes 110 unique buildings within a total enclosed area of 408,046 square meters.

CHALLENGE

Each of its many buildings needed state-of-the-art controls and integration suitable to its unique function. In addition, Ashgabat International Airport required a campus-wide building management strategy that pulled together all of the data from each building, shared subsystem (such as chiller plant), and individual pieces of equipment in a highly flexible and adaptable way. When system designers inside Polimeks — the large, international general contractor who won the $2.1 billion contract to build Ashgabat International Airport in 2013 — scoped the controls portion of the project, they realized how critical it was to the airport's longterm success. They recognized the need to plan for the current diversity of control requirements and future growth and technological innovations. Plus, it all had to be designed, installed and commissioned in record time.

SOLUTION

Design and deployment of the building management and Integration systems for this ambitious project were entrusted to Ontrol, a long time Niagara partner and distributor based out of Istanbul, Turkey. Ontrol assembled a dedicated team comprised of both local partners in Ashgabat and experienced Niagara systems integrators based back in Turkey.

"We had a very large complex of buildings and subsystems to monitor and control. Thanks to our prior experience with the Niagara Framework over several years and projects, we already knew its openness and flexibility would provide the perfect solution for the task."

Cenk Hakan Türk
Mechanical Group Manager
Polimeks

POLİMEKS

FAST FACTS

Project Type: Advanced integration of airport facilities

Niagara Partner:

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Project Completion Date: 2021

Number of Buildings: 110

Project Area: 408,046 square meters

Physical Control Points: 12,000

Total Control Points: 20,000, including system-wide integration

Number of Controllers: 51 JACEs running Niagara Framework, 557 PLCs

Tridium's Niagara Framework was the system-of-choice in virtually all control specifications, that is, for all controls in the original project design and also for any additional requirements that came up during project execution. The Niagara Framework's flexibility and extensive driver capability enabled many integrations to be completed smoothly and in record time. Many systems with multiple vendors were seamlessly integrated using BACnet, KNX, and Modbus communications on several levels.

RESULTS

The Niagara system connects each and every plant throughout the facility and serves thousands of points of data, histories and alarms to facility managers in user-friendly graphics across different devices and mediums. In total, 20,000 physical and integration points are operated by the system and monitored through 14 dedicated workstations.

Now that the airport is open and operating, all of the technology, strategy and teamwork that went into the design, installation and custom programming of the building management system is delivering the expected value. The facilities-wide systems integration is enabling operators to ensure the highest level of passenger comfort and energy savings without compromise.

With such diverse facilities and requirements, large international airports like Ashgabat are pushing the state-of-the-art in automation and controls. The airport's Niagara Framework-based platform is not only serving its day-to-day needs, but also it is making it easier to handle emergencies and overload situations. Even now that responsiblity for operations has been turned over to the Ashgabat team, Niagara partner Ontrol is staying involved. The feedback and experience it has gained in this airport deployment is informing its work for facility managers in numerous other prestigious international airports around the world.

ABOUT ONTROL

Ontrol is a major systems integrator based in Istanbul, Turkey, that traces its roots back to 1963. The company developed a strong specialization in automatic control systems, which continues today under second-generation management. Ontrol serves a wide geographical area, stretching from South America to Europe to Kazakhstan with projects in several cities and countries, including the New Istanbul Airport in Turkey. Ontrol has been a very early adapter of Niagara Framework, starting with R2 in 2001.

ABOUT TRIDIUM

For over 20 years, Tridium has led the world in business application frameworks — advancing truly open environments that harness the power of the Internet of Things. Our products allow diverse monitoring, control and automation systems to communicate and collaborate in buildings, data centers, manufacturing systems, smart cities and more. We create smarter, safer and more efficient enterprises and communities — bringing intelligence and connectivity to the network edge and back. Additional information about Tridium is available at www.tridium.com

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