

CASE STUDY

New Fuel Facility Supports Current, Future Airline Needs at TUS

As air travel demands shifted over the years, the jet fuel storage facility at Tucson International Airport (TUS) became outdated and struggled to meet the airport’s needs. Burns & McDonnell quickly delivered a new fuel storage and delivery facility by self-performing the construction and quickly pivoting when unforeseen project challenges arose.



Challenge

Over the past few decades, the number of air travelers that use Tucson International Airport (TUS) in Tucson, Arizona, has grown. As a result, airlines have added flights, resulting in the need for a larger jet fuel supply to keep up with the increased demand.

The original jet fuel facility at TUS was designed by Burns & McDonnell back in the 1970s. It met airlines’ jet fuel needs for a long time, but after so many decades in use, the facility became outdated. In 2014, Tucson Airport Authority leaders met with eight airlines — Alaska, American, Avelo, Delta, FedEx, SkyWest, Southwest and United — and formed the fuel consortium TUS Fuel Facilities LLC to begin discussions about what to do next.

Project Stats

Client

TUS Fuel Facilities LLC

Location

Tucson, Arizona

Completion Date

December 2021

500K

GALLONS OF JET
FUEL STORAGE

13

MONTHS FOR
PROJECT COMPLETION

\$28M+

PROJECT COST

After TUS Fuel Facilities LLC took over fueling operations at TUS, the consortium hired Burns & McDonnell in 2016 to conduct a detailed analysis of the existing facility. The goal of the analysis was to determine what changes (if any) could be made to the existing fuel facility so that it could meet airlines' current and future jet fuel needs. The analysis verified that the mechanical systems were at least 30 years old and the electrical systems were in poor shape. The eight underground storage tanks were also single-walled, meaning they were non-compliant with current federal regulations. New fuel tanks must be double-walled for environmental safety reasons.

After determining the scope and cost for retrofitting the existing facility to keep up with demand, it was determined the cost to build a new fuel facility with above-ground tanks and a new operations building was similar to the cost to upgrade the existing outdated underground tank system. The consortium therefore decided to build new.

Solution

While there was an understanding that the current fueling facility needed to be replaced, TUS Fuel Facilities LLC had concerns about the potential investment upfront. Burns & McDonnell and the consortium came up with a solution: Burns & McDonnell would cover the upfront costs of the design process and worked with the airlines to develop a capital budget for the new facility construction through internal design work and cost estimating. To maintain cost effectiveness and meet the airport's timeline, Burns & McDonnell agreed to design-build the project.

The project's contracts and permits were approved in 2019 and work began on the new above-ground fueling facility in late 2020. During construction, the project teams were met with some challenges related to undocumented existing underground utilities which crews navigated by performing subsurface utility engineering surveys and hydro exaction instead of mechanical digging. These methods allowed the teams to develop solutions while not risking safety or daily operations to the airport.

Results

By self-performing the majority of the construction, Burns & McDonnell delivered a new fuel storage and delivery facility by having direct control of construction schedule impacts, quickly pivoting due to unexpected project challenges as well as seamlessly increasing safety on

the project by adhering to a single, comprehensive safety culture. With the critical components and work on the project being self-performed, most of the schedule risk is controlled internally. The result is a new facility capable of storing a larger amount of jet fuel while meeting or exceeding government safety regulations.

The new state-of-the-art jet fuel facility was completed 13 months later in December 2021, followed by demolition of the old facility in March 2022, including the removal of the obsolete underground tanks, with a total project cost of \$28.8 million. The new facility includes three 168,000-gallon above-ground jet fuel tanks, capable of holding a combined total of approximately 500,000 gallons of jet fuel. Burns & McDonnell also designed space to add a fourth fuel tank if future demand creates a need for additional fuel storage.

The fuel facility connects directly to the airport's existing hydrant system that delivers fuel all the way to the airline gates. The new fuel facility's location is also key as it sits closer to the airport's fence line, which is a more convenient and secure location for incoming fuel trucks as they no longer have to drive within the restricted airside. This eliminates the burden of airport personnel having to monitor and communicate with a large volume of trucks each day needing access to secured areas. The new digital and electronics systems within the new operations building also allow operators to measure incoming and outgoing fuel during truck offloading and aircraft fueling.

By expeditiously installing the new jet fuel facility at TUS, the airport was able to avoid fuel shortages impacting flights while greatly improving airline fueling operations, efficiency and safety.

About Burns & McDonnell



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