BURNS McDONNELL

CASE STUDY

New Bulk Fuel Storage Facility at STL Doubles Jet Fuel Capacity

As the number of air travelers grows, airlines are adding more planes, flights and destinations, thus increasing the need for additional jet fuel. STL Fuel Company LLC, a consortium of airlines, contracted with Burns & McDonnell to provide design-build services for a new $50 million bulk jet fuel storage facility at St. Louis Lambert International Airport (STL). The new facility nearly doubles STL's previous fuel storage capacity.

Challenge

St. Louis Lambert International Airport (STL) had an antiquated underground jet fuel storage system that no longer could support the airport's needs. Constructed in 1957 and expanded by Burns & McDonnell in 1985, the system's old and outdated pumps often needed to be repaired or would fail altogether. The facility was also designed prior to any environmental regulations that exist today for underground fuel storage tanks. All the fuel storage at STL was in 41 underground tanks, providing no visibility to operators should degradation or a leak occur.

In November 2016, the airlines and a newly formed STL fuel consortium — STL Fuel Company LLC — commissioned Burns & McDonnell to conduct a feasibility study to help determine whether to modify portions of the existing fuel storage system or build an entirely new system. The study included site surveying, geotechnical

Project Stats

Client
STL Fuel Company LLC

Location
St. Louis, Missouri

3
ABOVE-GROUND JET FUEL TANKS

11K
LENGTH (IN FEET) OF A NEW UNDERGROUND FUEL TRANSFER PIPELINE

4.3K
SQUARE FOOTAGE OF A NEW OPERATIONS BUILDING

investigations to document existing subsurface conditions, and analysis of the potential construction of a new fuel storage facility. The study also provided possible solutions for connecting a new storage facility with existing hydrant systems and supply lines on the airfield via new transfer lines.

Our study showed that a new above-ground (versus underground) fuel storage tank facility would be more efficient, sustainable and economical. A new facility would also meet current environmental regulations and better support STL's future air travel needs. Therefore, a decision was made to build new.

Solution

STL Fuel Company LLC selected Burns & McDonnell to design and build a new facility, transfer line and associated enabling projects on an 8-acre greenfield site on the airfield. We then removed all the old underground tanks, remediated hydrocarbon contamination and demolished the old fuel facility. This allowed the airport to use this space for other purposes. We selected regional subcontractors to help with each construction phase.

Construction of enabling projects on the airfield began in October 2017 and included:

- Fuel hydrant system updates.
- A hydrant cart test stand.
- A fuel truck loading facility.
- Ground service equipment fueling facilities.
- Isolation vaults.
- An update to the emergency fuel shut off (EFSO) system.

Burns & McDonnell broke ground on the bulk fuel storage facility in July 2019. The upgrades consisted of:

- Three new above-ground fuel storage tanks, each able to store up to 1 million gallons of jet fuel with room for a fourth tank if needed, doubling the capacity of the airport's fuel storage.
- An 11,000-foot-long underground fuel transfer pipeline with a leak detection system and five horizontal pumps, each capable of delivering jet fuel at 1,200 gallons per minute directly to the terminal, greatly increasing reliability and safety for aircraft refueling.
- A 4,300-square-foot operations building with a control room, offices and vehicle maintenance shops.
- A backup electrical power system that allows fuel to be distributed even during extreme weather events.
- A fire suppression system.

Results

Construction of the new above-ground fuel tanks took place mostly in the summer of 2020, when air traffic was significantly down due to the COVID-19 pandemic. With fewer flights, project teams were able to run the transfer pipeline through a parking lot for airline employees and avoid the originally planned route through an alley that contained utility infrastructure.

The approximately $50 million bulk jet fuel storage facility took two years to complete and became fully operational in August 2021. STL invested another $50 million into other fueling-related needs and all projects were completed in April 2022.

The new fuel facility at STL was named among Airport Business' 2022 Projects of the Year, a program that honors projects the magazine believes are "transforming the North American aviation system."

The new fueling infrastructure is positioned to support STL for many years to come.

About Burns & McDonnell

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