

CASE STUDY / AIRSIDE FUEL FACILITY PROJECT

# UPGRADING FUEL FACILITIES ON A TIGHT TIMELINE

When Milwaukee General Mitchell International Airport (MKE) Fuel proceeded to improve efficiencies and reduce environmental concerns for its sites, fast work was needed to modernize its bulk fuel facility to allow operations to remain active.



# EPC METHOD DELIVERS EFFICIENCIES

As an integrated team, Burns & McDonnell self-performed design and construction work using engineer-procure-construct (EPC) delivery services, allowing the project to complete early and under budget.

## PROJECT STATS

### CLIENT

MKE Fuel Company LLC

### LOCATION

Milwaukee, Wisconsin

### COMPLETION DATE

June 2020

# 100%

FULLY INTEGRATED  
EPC APPROACH

# \$25M

TOTAL CONSTRUCTION COSTS

# 0

RECORDABLES

## CHALLENGE

For decades, Milwaukee General Mitchell International Airport (MKE) received its jet fuel from an off-airport Shell storage facility supplied by a pipeline running from Chicago-area refineries up the western shore of Lake Michigan through Milwaukee to Green Bay, Wisconsin. But in 2016, the pipeline operator decided to decommission the segment of pipeline north of Milwaukee, and Shell consequently announced plans to sell the facility supplying all of MKE's jet fuel.

Suddenly, it became essential to rethink fueling operations for the county-owned airport. The solution, dubbed the Direct Feed Project, included a modernized fuel hydrant system for the airlines, removing the underground storage tanks at the on-airport facility, installing a new pumping facility and a new two-position island for over-the-road transport trucks loading and unloading jet fuel at the off-airport bulk storage facility.

After a \$25 million investment by the airport's fueling consortium, MKE now has a more modern and efficient fuel supply system — and the consortium can supply jet fuel to other regional airports to offset its costs.

Originally, the bulk facility transferred fuel via a 2-mile pipeline to the underground storage tanks at the airside facility. The hydrant pumps mounted to these storage tanks pushed fuel to the underground lines near the gates along the terminal to provide fuel to the aircraft. The modernization of these facilities involved transitioning the bulk fuel facility to directly feeding the hydrant



*The facts are that the MKE Direct Feed Project stayed on budget, on time and produced results that are clearly exceptional. It'll be very difficult indeed for any of your competitors to outshine what has been done by Burns & McDonnell in MKE. I look very much forward to continuing to work with your firm — at MKE and at any other location that may call for Burns & McDonnell's and AZCO's considerable talents and capabilities*

**- SOUTHWEST AIRLINES ASSOC.  
FUEL CATEGORY MANAGER**



system. With new environmental regulations taking effect in Wisconsin regarding the use of underground storage tanks for fuel, and with other upgrades already scheduled to take place, MKE Fuel Company LLC sought a solution to address both at once within a tight schedule.

## SOLUTION

Before the project could begin, an initial study was performed by Burns & McDonnell to determine facility improvement strategy and support in the programming of total project costs. Based on the study, the client chose to utilize full direct-hire EPC delivery services provided by Burns & McDonnell and AZCO for the entire design and construction project. Based on the results of a site inspection/evaluation, the project team's highest priority was replacing the bottom of one of the aboveground storage tanks. An overall assessment prompted the consortium to work with Burns & McDonnell on a plan for reconfiguring both the on- and off-airport fuel facilities.

But the first order of business was putting a new bottom in the largest tank, which took about 10 months. It was key to address the tank bottom and permitting issues quickly to confirm the long-term use of the facility.

While the first and largest tank bottom was being replaced, design continued on the remaining portions of the project. Identifying long lead items — some up to 36 weeks — allowed pieces to be procured while the remaining design and other construction was completed. Once a new plan was agreed upon, preliminary design, full detailed design and long lead procurement of special equipment followed. With an EPC approach, the design and construction team was able to complete the project while minimizing service disruptions.

After design and procurement, AZCO completed fabrication and construction of the mechanical scope of work and heavy equipment lifts. AZCO leveraged its pipe fabrication capabilities at its shop in Appleton,

Wisconsin — improving production efficiency, quality and safety of the overall installation of facility piping.

The scope of construction work included demolition of two existing 40,000-gallon underground storage tanks, aboveground and underground piping, valves, pumps, filter separators, and a 500-gallon waste tank. The refueler loading system was also modified to directly feed it from the hydrant system while maintaining operations on the active airfield.

## RESULTS

The EPC project was completed early and under budget. Working as one team enabled a more seamless project experience with better control over quality and schedule due to longer lead times and enhanced communication between the project team and client.

MKE now has a facility that meets new Wisconsin environmental regulations and is able to provide efficient fueling services to MKE as well as support the regional Jet-A market.



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