



Project: **Frontier Boiler No. 3**  
 Location: **Cheyenne, Wyo.**  
 Client: **Frontier Refining Inc.**

## Operating at Full Steam

Frontier Refining Inc. in Cheyenne, Wyo., needed a fast, reliable replacement boiler to keep its refinery in operation during colder months. Through a lump-sum engineer-procure-construct (EPC) design-build contract, Burns & McDonnell selected a 150,000 PPH, 275 psig boiler with ultra low NO<sub>x</sub> burners and flue gas recirculation and developed a quick-factored estimate and fast-track execution approach to get the project's funding approved. With approval, the project's timetable meant detailed engineering needed to commence before the project was fully scoped and definitively priced and without final equipment information. "We performed all the design work and scope diligence up front. When we were awarded the EPC contract, there were minimal changes," says Randy Satterfield, Burns & McDonnell engineering project manager. Despite construction challenges threatening delayed completion, Burns & McDonnell mitigated those potential hang-ups. "We delivered boiler completion within Frontier's original budget and on the original completion date," says Craig Henre, Burns & McDonnell construction project manager.

*For more information, contact Randy Satterfield, 832-214-2857, or Craig Henre, 816-823-7026.*

## Protecting the Present from Remnants of the Past

Cleaning up contamination left by 19th-century manufactured gas plants (MGPs) that converted coal to gas for lighting, heating and cooking is a complex operation. When AmerenUE set out to remediate an MGP site, the safety of workers and the surrounding community was paramount. The tar left behind by MGP operations contains chemicals that threaten groundwater and can become airborne volatile organic compounds (VOCs). To contain airborne contaminants, owner's engineer Burns & McDonnell constructed a temporary structure over the site. "Through real-time monitoring, we were able to quantify airborne VOCs and modify our control measures to regulate air quality and maintain safe levels on site and in the surrounding area," says Burns & McDonnell project manager Gary Schnell. "The air handling system with carbon filtration kept fresh air inside the building and removed contaminants." Overhead electrical lines and tight site boundaries made construction and the use of large excavation equipment challenging. The excavation of 18,000 tons of waste was completed in July 2008.

*For more information, contact Gary Schnell or Tom Zychinski, 314-682-1500.*

Project: **Manufactured Gas Plant  
Site Remediation**  
 Location: **Moberly, Mo.**  
 Client: **Ameren Services**



## Military Success Built for Two

The military forces of two countries are reaping the benefits of a collaboration between Burns & McDonnell and the Arizona Department of Emergency and Military Affairs (DEMA). Both the Arizona DEMA and the Singapore Royal Air Force were in need of administrative space and an expanded training site for AH-64 helicopters. The solution was the 24,500-square-foot, three-bay Singapore Peace Vanguard Hangar with a 12,000-square-foot administration area. The new structure includes training rooms, work spaces, an arms vault, a flight office and a three-bay maintenance area. Construction began in December 2007, and personnel were moving in by early November 2008. "The design and construction schedule was aggressive, but we were able to accommodate last-minute client design changes," says Bob Schulz, Burns & McDonnell project manager. "Because of the flexibility and cooperation of the construction-manager-at-risk's method of delivery, everyone's needs were met." Burns & McDonnell provided comprehensive planning, programming and A/E design and construction services.

*For more information, contact Bob Schulz, 602-977-2623, or Bob Beeson, 816-822-3523.*

## Controlling SO<sub>2</sub> in a Big Way

MidAmerican Energy went big in its efforts to remove sulfur dioxide (SO<sub>2</sub>) from the flue gas at its Louisa Generating Station. The project included a new dry scrubber, fabric filter, induced draft fans, and ash and lime handling systems. When it went online, it was the largest single dry scrubber module in the world. In a joint venture with Kiewit Industrial Co., Burns & McDonnell provided engineer-procure-construct services for the air quality control system upgrade. The dry lime flue gas desulfurization system, working with the plant's existing electrostatic precipitator, is capable of removing SO<sub>2</sub> down to 0.08 pounds/mmBTU. "Efficiency drove the design of all systems, including the installation of three axial induced draft fans to provide better system performance," says project manager Greg Mack. "A new ash handling system also uses the recycled ash in the spray dry absorber to minimize the amount of lime required." Burns & McDonnell performed mechanical, electrical, structural and foundation design, as well as instrumentation and controls. "The project was completed concurrently with other major client initiatives, requiring intense coordination during scheduled outages," Mack says.

*For more information, contact Greg Mack, 816-822-3178.*



Project: **Peace Vanguard Singapore Hangar**  
 Location: **Marana, Ariz.**  
 Client: **Arizona Department of Emergency  
and Military Affairs**



Project: **Louisa Generating Station  
AQCS Retrofit**  
 Location: **Muscataine, Iowa**  
 Client: **MidAmerican Energy Co.**