

CASE STUDY / **RIVERTON POWER STATION**

EPC DELIVERS A NEW ERA OF EFFICIENT ENERGY

The Empire District Electric Company knew upgrading its facilities in Riverton, Kansas, was necessary to deliver reliable energy and economical rates for customers in four states. However, the compressed site next to Spring River required close collaboration and exceptional project delivery to safely and efficiently replace and add capacity.



EFFICIENT, HIGH-QUALITY EPC DELIVERY RESULTS IN SAVINGS FOR EMPIRE DISTRICT

The upgraded combined-cycle unit meets energy demands for 65,000 customers — while saving the utility more than \$1 million a year.

CHALLENGE

Empire District Electric's Riverton Power Station dates back to 1905. In order to increase the efficiency of the site while controlling fuel costs, lowering emissions and providing reliable energy for customers, Empire decided to construct a new combined-cycle gas-fired generating facility as an expansion of Unit 12 — an existing simple-cycle combustion gas turbine unit. However, the expansion would have to take place on an active, compressed site located next to the Spring River.

SOLUTION

In June 2013, Empire selected Burns & McDonnell to make its vision a reality. In collaboration with partner AZCO Inc., we served as EPC contractor and quickly went to work engineering the details of converting an existing Siemens V84.3A combustion gas turbine generator to a combined-cycle unit.

Our team procured a Siemens ST-700/900 steam turbine generator (STG), a Nooter/Ericksen triple pressure heat recovery steam generator (HRSG), an SPX mechanical draft cooling tower and a range of other materials and equipment needed for the plant upgrade.

To fit the new combined-cycle unit in between the existing combustion turbine and the river that runs along the site, we worked closely with Empire and Riverton to compress the overall footprint of the unit. This strategy required significant crane planning and placement on the site, specifically to not obstruct or interfere with the operating unit and any exhaust emitted from the operating unit. To house the STG indoors, our team transported it from the south side of the site to the north before enclosing the building around it.

Our team collaborated with Empire throughout the entire project to discuss any issues. This allowed everyone to know the progress and situation of the projects, to be involved in the development of any solutions and to keep the project moving forward.

RESULTS

The successful upgrade — completed under budget and a month ahead of schedule — increased net electric output to 255 megawatts (MW). The 30 percent efficiency increase resulted in annualized savings of more than \$1 million for Empire. We completed 600,000 on-site man-hours without an OSHA recordable, fulfilling both companies' desire for a safe, high-quality and efficient project.

PROJECT STATS

CLIENT

The Empire District Electric Company

LOCATION

Riverton, Kansas

EPC CONTRACT AWARD

July 9, 2013

MECHANICAL COMPLETION

Dec. 15, 2015

SUBSTANTIAL COMPLETION

May 1, 2016

143

SIMPLE-CYCLE CAPACITY (MW)

255

COMBINED-CYCLE CAPACITY (MW)

600K

MAN-HOURS ON-SITE WITHOUT AN OSHA RECORDABLE