

CASE STUDY / **RAWHIDE ENERGY STATION**

ACHIEVING A PLAN FOR COMPLIANCE WITH EQUIPMENT REDUNDANCY

Upgrading an existing coal plant's bottom ash system frequently creates space constraint challenges for the new equipment. For Platte River Power Authority, meeting coal combustion residual (CCR) requirements became an opportunity to adopt new, innovative technologies while also keeping desired redundancy for the utility's largest source of power.



A UTILITY SECURES RELIABILITY WITH A COMPLIANCE UPGRADE PROJECT

A unique bottom ash technology solution adds both redundancy and CCR compliance for Rawhide Energy Station.

PROJECT STATS

CLIENT

Platte River Power Authority

LOCATION

Larimer County, Colorado

COMPLETION DATE

November 2018

4,500
ACRE SITE

280
MEGAWATT
NET CAPACITY

1st
USE OF REDUNDANT
OR MULTIPLE SGCS
ON ONE UNIT

CHALLENGE

Since 1984, Platte River Power Authority has operated Rawhide Energy Station Unit 1 in Larimer County, Colorado. The coal-fired plant has a net capacity of 280 megawatts (MW) and is the utility's single largest source of system power, providing over half of the utility's annual delivered energy.

In developing a coal combustion residual (CCR) compliance strategy for Rawhide, Platte River desired a solution to both address groundwater separation and remove ash transport water while also safeguarding the long-term availability of Rawhide for customers.

SOLUTION

Our team worked with Platte River to address the entire scope of CCR compliance, including identifying water redirection options, alternative wastewater solutions, ash bunker location options and potential landfill impacts on the more than 4,500-acre site.

Rawhide was previously designed with a system where bottom ash was collected in the base of the boiler and then hydraulically sluiced through a piping system to one of two bottom ash transfer ponds. Sluice water was circulated back to the plant and reused. When a bottom ash pond was full, it was isolated to





allow evaporation, then solids were dredged and hauled to an on-site ash monofill. To meet the CCR rule's stipulations for ash transport water and groundwater monitoring for ponds, Platte River decided to install a mechanical ash removal system and close its existing bottom ash ponds.

Our team helped specify a technology solution from Babcock & Wilcox that allowed for redundancy and operational flexibility. This included two discrete, submerged grind conveyors (SGCs) that interfaced with the existing ash hoppers. Additional new equipment included four clinker grinders, two economizer dry flight conveyors, economizer chutes, pyrites sluice and flushing pumps, and pyrites basalt-lined piping to sluice pyrites to the boiler. With SGC conveyors smaller than traditional conveyor systems, they can avoid interfering with existing equipment that would otherwise need to be relocated.

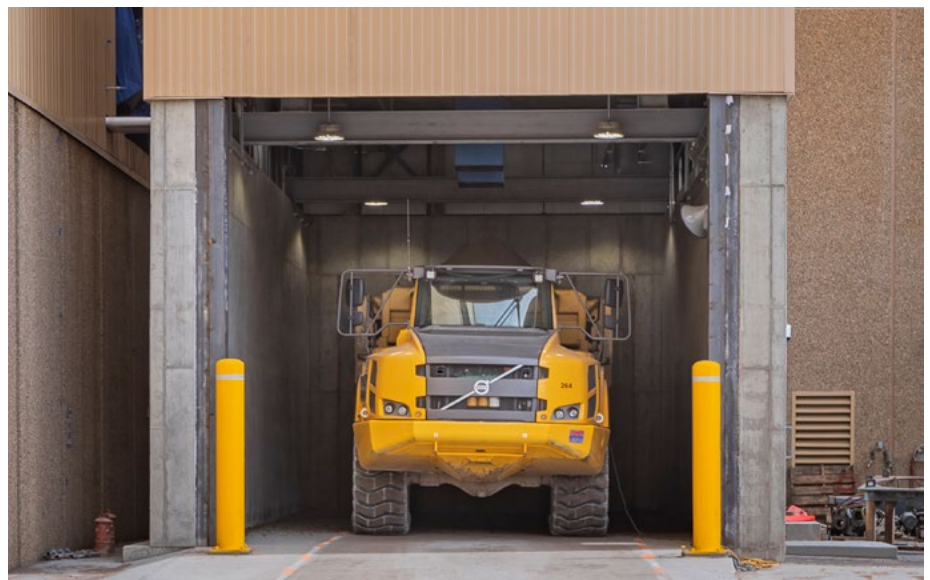
Rawhide's aging sluicing system was removed and replaced with an SGC system to handle bottom ash, economizer ash and pyrites. The new SGC conveyors rise above the ash hopper water level and exit

the building, transferring ash into a new bottom ash bunker that can operate as a traditional bunker or truck loading bunker. New dry flight economizer conveyors were installed to transfer economizer ash from the economizer hopper and drop the ash into the wet SGCs.

To facilitate the collection and reuse of water, two new settling basins were constructed and leak tested. Both basins offer the same redundancy to plant operations as the existing bottom ash ponds.

RESULTS

Following successful completion of the project, Rawhide Energy Station is following CCR compliance requirements and, with an installation of redundant SGC systems and supporting infrastructure, offers operational flexibility to allow the unit to run 24/7, even during maintenance needs for one of the conveyor systems. The use of two SGCs as part of a bottom ash system installation is believed to be the first in the world.





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