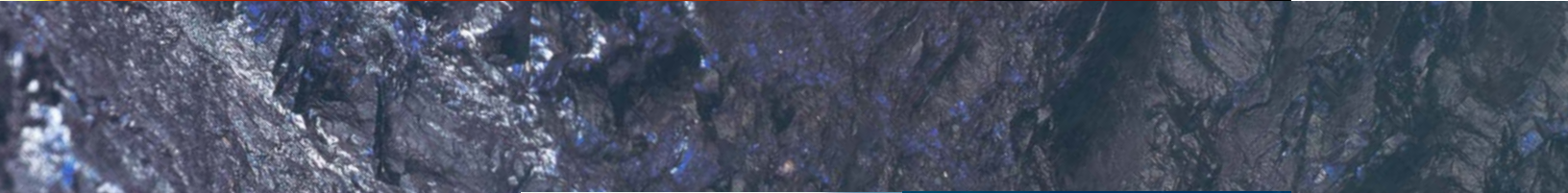


Continuing the Legacy



COAL

A legacy of success
a future built on innovation

In 1932, Burns and Roe was founded as a partnership between Ralph C. Roe and Allen E. Burns. Ralph Roe went on to have twenty engineering patents credited to his name and built the company into a premiere engineering and construction firm it is today. Our legacy continues with the fullest commitment to customer satisfaction and innovation.

1930s In 1936 Burns and Roe engineered the Ottawa Street Station winning many accolades for concealing the plant's stack behind a modern office building facade.

1940s The company becomes a pioneer in standard plant design by deploying the first condenser to be built and shipped on trailers to a project site. The 72-ton condenser traveled 45 miles from Carteret, NJ to Tompkins Cove, NY.

1950s Burns and Roe engineers the Allen Generating Station incorporating a reheat system known as the Roe Cycle that greatly improved cycle efficiency.



1960s As part of a Rural Electrification Act construction program, Burns and Roe brings electricity to remote rural electrical coops by engineering and managing the construction of coal-fired plants.

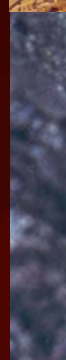
1970s Burns and Roe ranks as a top construction management firm due, in part, to the company's expertise in managing large scale coal-fired generating stations.

1980s Burns and Roe broadens its overseas power market. This experience continues into the 1990s and 2000s with the Paiton Plant in Indonesia and the Dezhou Facility in China.

1990s The latest technology for three-dimensional computer aided design and virtual plant walk-throughs are fully employed. Award winning visualization drawings are incorporated into major power projects.

2000s As the U.S. Energy Policy calls for a greater reliance on coal and price projections for natural gas continue to rise, coal-fired plants becomes a viable alternative for energy generation.

Burns and Roe has the experience and expertise to engineer and construct clean-burning and cost efficient coal-fired generating stations.



Case Study: Paiton Private Power

Burns and Roe provided a broad range of engineering, procurement and construction services for this 2x660 MW Rankine cycle power plant that burns very low sulfur, very low ash content coal. Plant features include seawater scrubbing to virtually eliminate sulfur dioxide emissions. Electrostatic precipitators were also included to remove particulate. The plant produces a million gallons of fresh water per day using a reverse osmosis system with Dissolved Air Flotation pretreatment. A fully lined ash disposal area receives fly ash and bottom ash via an overland tubular belt conveyor. All plant



wastewaters are filtered, neutralized, and treated for heavy metal removal. Power is delivered to the East Java grid through a 500 kV Gas Insulated Switchyard.

Challenges

Minimize sulfur dioxide emissions in an area that does not have sufficient lime or limestone available.

Design a plant that achieves the desired performance even though the contracted coal had never before fueled a Pulverized Coal plant.

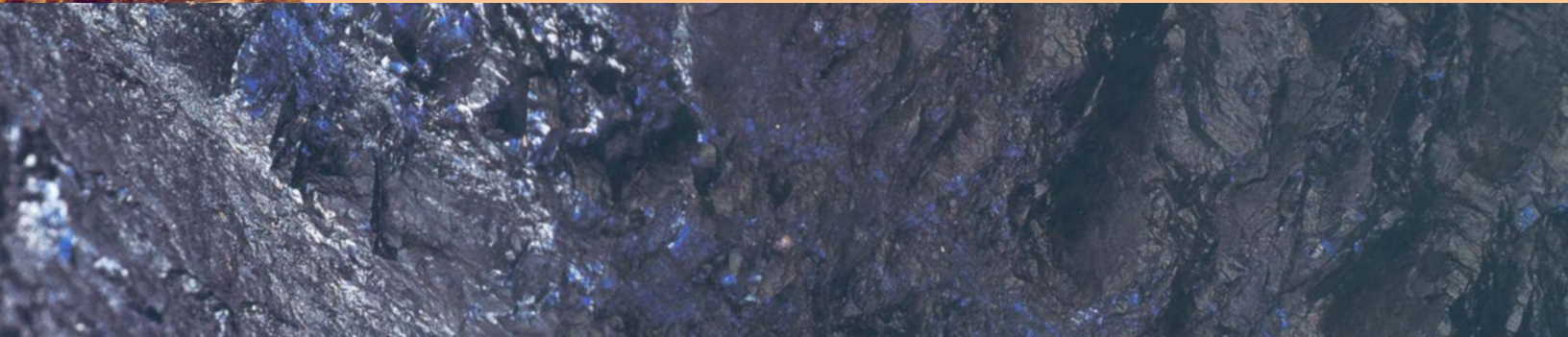
Design a second coal yard and receiving facility within an existing site that had provisions for only a single coal yard.

Solutions

Burns and Roe recognized that low sulfur coal was being used and specified seawater scrubbing to meet appropriate sulfur dioxide emissions levels.

Burns and Roe developed and executed a comprehensive coal characterization program to ensure that the plant met the desired performance criteria prior to construction.

Burns and Roe designed and executed a geotechnical program to determine lowest cost means of reclamation that supported the construction schedule.



Did you know?



- Burns and Roe coal-fired project portfolio includes 70 stations totaling more than 25,000 MW
- Burns and Roe experience includes bituminous coal, lignite and brown coal
- Burns and Roe has been active in development of Fluidized Bed Boiler projects for over 20 years
- Burns and Roe has designed and specified over 120 coal handling systems
- Burns and Roe provided engineering services to eight 500 MW supercritical units in Korea
- Burns and Roe has 1,700 employees and six domestic office locations
- ENR consistently ranks Burns and Roe as a top power and international engineering and design firm

Representative Coal Fired Projects

PLANT	RATING
Paiton Private Power Project, Units 7 and 8, Indonesia	2x660 MW
Dezhou Project, China	2x660 MW
Bo Nok Power Station, Thailand	2x367 MW
Anhui, Fuyang Power Project, Units 1 and 2, China	2x600 MW
Henan, Yuzhou Power Project, China	2x350 MW
Bhilai Power Project, India	2x287 MW
Ao Phai Thermal Power Station, Thailand	2x700 MW
Seminole Generating Station, Units 1 and 2, FL	2x620 MW
Big Cajun No. 2 Power Plant, Units 1, 2 and 3, LA	3x560 MW
Fort Martin Station, Units 1 and 2, WV	2x540 MW
Muskogee Generating Station, Units 4 and 5, OK	2x508 MW
Tangjin Thermal Plant, Units 1 and 2, South Korea	2x500MW
Hadong Thermal Plant, Units 1, 2, 3 and 4, South Korea	4x500 MW
Poryong Thermal Plant, Units 3 and 4, South Korea	2x500 MW
Cross Generating Station, Unit 2, SC	500 MW
D.B. Wilson Generating Station, KY	440 MW
Leland Olds Power Station, Units 1 and 2, ND	2x230 MW
Genoa Power Station No. 3, Unit 1, WI	350 MW
Thomas H. Allen Electric Generating Station, Units 1, 2 and 3, TN	3x287.5 MW
Winyah Generating Station, Units 1, 2, 3 and 4, SC	4x280 MW
R.D. Green Generating Station, Units 1 and 2, KY	2x240 MW



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