Power

Simple Cycle

Client
GE

Location
Groton, South Dakota, USA

Basin Electric LMS 100-Unit 1 Project

GE built a turnkey simple cycle power plant for Basin Electric Power Cooperative in Groton, South Dakota, utilizing GE's latest derivative, gas turbine engine - the LMS100PA. The project scope included the supply and installation of one, water-injected engine and 60 Hz generator, and all associated balance-of-plant equipment and systems, including a CO Converter for reducing CO emissions, fin fan coolers, fuel conditioning equipment and HV equipment.

Value Added

CH2M HILL was selected, on a lump sum, firm price basis, to perform the detailed design, including procurement specifications for a number of field-erected items. CH2M HILL provided a detailed Project Coordination and Quality manual and a detailed, level 3 engineering schedule for the work.

CH2M HILL was responsible for reviewing all of the balance of plant technical design data associated with this equipment, including the review of equipment supplier documents such as P&IDs, equipment layouts, electrical schematics, control logic diagrams, and foundation loadings

Project Specifics

CH2M HILL was responsible for the preparation of construction drawings and specifications to ensure the proper installation of all equipment for the proper operation of the plant. Detailed work included:

- Civil Design
  - Temporary facilities plan
  - Site preparation, grading and drainage plans and specifications
  - Equipment foundation and anchoring plans, details, and temporary facilities plan
  - Site preparation, grading and drainage plans and specifications
  - Equipment foundation and anchoring plans, details, and calculations
  - Control/Admin/Electrical Building design, layout, foundation plans and details
  - Structural Steel support and platform plans and details
  - Plant Road and fencing design and layout
  - Site erosion and sediment control plans, sections, and details
  - Civil construction specifications and general notes

- Mechanical & Process Engineering
  - Mechanical equipment list and specifications
  - Process Flow Diagrams
  - Piping Specifications, line list and valve list
  - Piping & Instrument Diagrams (P&IDs)
  - Equipment arrangement drawings

- Hazardous area classification drawing
- Fire protection design and installation details
- Piping plans, sections and isometrics
- Mechanical construction specifications
- Piping stress analysis

- Electrical Engineering
  - Single Line Diagrams
  - Three Line Diagrams
  - Cable Schedule (List)
  - Conduit/Raceway Schedule (List)
  - Interconnect List/Schematic Diagrams
  - Electrical Construction specifications
  - Aboveground conduit and electrical raceways
  - Electrical Equipment list and arrangement Relay Coordination study
  - Grounding Layout, Design, and details
  - Plant Lighting plans and details
  - Lightning Protection plans and details
  - Electrical Consumption study/list

- Controls Engineering
  - I/O List
  - Instrument List and specifications
  - Instrument Installation Details
  - Instrument Location Plan
  - Communications systems

- Other Documents and Specifications
  - Plant Performance Test Procedure
  - Noise Test Procedure
  - Functional test procedures for reliability and availability/reliability
  - Overall Plant Design Standards and Codes Document

- Field Engineering Construction Support
  CH2M HILL's scope included on-site and home-office construction support for the construction phase of the project. This support included responding to requests for information, updating and revising engineering design drawings as required, and performing periodic field inspections to review the construction installations.

Power

Simple Cycle

Client
General Electric (GE)

Location
Groton, South Dakokta, USA

Basin Electric LMS 100-Unit 2 Project

CH2M HILL & TIC have formed a Joint Venture to build a turnkey simple cycle power plant for Basin Electric Power Cooperative in Groton, South Dakota, utilizing GE's latest derivative, gas turbine engine - the LMS100PA. This is an EPC of a single fuel – Simple Cycle GE LMS 100 combustion turbine generator plant expansion at an existing facility built for Basin Electric Power Cooperative. The project scope will include the supply and installation of one, water-injected engine and 60 Hz generator, and all associated balance-of-plant equipment and systems, including a CO Converter for reducing CO emissions, fin fan coolers, fuel conditioning equipment and HV equipment. CH2M HILL was the EPC contractor on the previous Basin Electric LMS 100 project.

Value Added

As the EPC contractor for the initial Basin Electric LMS 100 project, CH2M HILL brings the added value of utilizing a team of professionals who are already familiar with the project detailed design, including procurement specifications for a number of field-erected items.

Project Specifics

GE will provide all engineered equipment including the gas turbine and retain performance and delivery responsibility. GE will also provide heavy haul for the CT and Generator

Commercial Operation - May 2008