

FEASIBILITY STUDY FOR COKE OVEN GAS RECOVERY @ USS STEEL PLANTS

SUMMARY

United States Steel Corporation (US Steel) is the second largest producer of steel and steel products in the United States. One of their major production locations is in the Monongahela River valley near Pittsburgh, Pennsylvania. The Mon Valley Works includes four plants: the Clairton Plant, the Edgar Thompson Plant, the Irvin Plant, and the Fairless Plant. The Clairton Plant produces coke used within the Mon Valley and at other USS plants, and in the process generates a large volume of coke oven gas (COG), a low to medium Btu gas. This COG can be used for combustion in boilers, to fuel combustion turbines to generate electricity, and in the steel making processes.

Bryan Power performed a detailed evaluation of the seasonal availability of COG, the existing and planned use of steam, and the electric use of the Mon Valley Plants. Based on these Bryan Power developed a number of simple and combined cycle power Combined Heat and Power (CHP) alternatives. These included configurations based on new and secondary market (refurbished used) GE Frame 6 and LM2500 combustion turbines. Due to the low pressure of the COG (approximately 10 psig), the high volumes, and the composition and impurities within in the gas, extensive work was required to develop a gas compression and clean-up design suitable for the combustion turbines.

After review of alternative configurations with USS, Bryan Power developed preliminary drawings, steam, gas and electrical interconnection drawings, and a detailed capital cost estimate.

Client

- United States Steel



Location

- Mon Valley, Pennsylvania

Date

- 2015

Equipment

- Gas Turbines

Service

- Feasibility Study /
Preliminary Drawings /
Detailed Capital Cost
Estimate