Engineering High-Efficiency Natural Gas-Fired Power Plants

The Challenge

Moxie Energy and Gemma Power Systems sought to construct two natural gas-fired combined cycle power plants at the same time. The Liberty Generating Station and Patriot Generating Station will take advantage of the natural gas resources from the Marcellus Shale Dry Gas Region's abundant natural gas resources. Each of the 829-MW power plants will provide clean, reliable electric power to two million homes in Pennsylvania.

The Liberty Generating Station in Towanda, Pa. will provide electric power to two million homes.

The Technical Solution

The EPC contractor Gemma Power Systems selected POWER Burns and Roe as the design engineer for both plants. Challenged to co-design both facilities with common elements, POWER Burns and Roe developed a building block concept for the two sites, each consisting of two single-shaft power blocks with fixed interface points wrapped with supporting infrastructure in site-specific arrangements. Common designs and specifications were developed enveloping both projects.

"Critical to the success of these projects was the close, collaborative execution approach between Gemma and POWER Burns and Roe. To facilitate communication and coordination, we established a dedicated project area and an open-door policy that welcomed Gemma in our offices throughout the engineering phase," reports POWER Burns and Roe Project Manager Bill Richardot.

These are the first U.S. installations of Siemens "H-Class" gas turbines in single-shaft power train configuration. These machines will make the Patriot and Liberty facilities among the cleanest, most efficient natural gas-fired generating plants in the U.S. Substantial completion is planned for early 2016. ■