Providing energy to Korea
Samcheok Green Power project – a new era in clean coal technology

The Samcheok Green Power project is one of the world’s most ambitious energy complexes. Located in the northeast of South Korea, it aims to provide Korea with a constant, secure supply of electricity. Despite being coal fired, the project will be one of the greenest and most efficient power plants ever built.

The first phase of the plant featured four of the world’s first 550MW ultra-supercritical Amec Foster Wheeler CFB boilers – producing a total of 2,200MW – firing imported coals and biomass.

Korea is a major importer of fuels; with the supply of high-grade fuels declining and becoming more expensive, the use of conventional thermal plants is becoming increasingly costly to run. The use by Korea Southern Power Company (KOSPO) of Amec Foster Wheeler’s Circulating Fluidised Bed (CFB) technology boilers, provides Korea with the ability to burn different fuels and waste materials including low rank coals, petroleum coke and biomass.

The CFB technology has several benefits such as improved efficiency, reduced emissions, high fuel flexibility, high reliability and lower maintenance costs. Another significant feature is its ability to tightly control nitrogen oxides (NOx), and sulphur dioxide (SO2) emissions in the boiler, therefore avoiding the costs associated with the installation of additional equipment.

The benefits include:
- The CFBs wide fuel range and the ability to reliably burn low rank and high quality coals as well as biomass and waste coal slurries gives KOSPO the widest fuel procurement flexibility and security, along with the ability to save millions of dollars in fuel cost over the plant’s life.
- The CFBs do not require back-end flue gas desulphurisation equipment for SOx control saving KOSPO hundreds of millions of dollars to build this plant, in additional to reduced operating cost and water usage.
- The unique low temperature CFB combustion process minimises NOx formation, and allows limestone to be fed directly into the furnace to capture SOx as the fuel burns. This, coupled with ultra-supercritical steam technology, provides KOSPO with high plant efficiency and low emissions including carbon emissions.

When fully complete, in addition to the CFB boilers, the site will generate 1,000MW from renewable sources, comprising of wind turbines mounted on the plant’s seawall, solar panels, on rooftops and slopes, wave power generation at the seawall, small hydropower at the plant’s drainage canal, and fuel cells from nearby Korea Gas Corporation.

The plant infrastructure will include bilateral mooring for coal barges and an indoor coal yard which are all contained, ensuring coal will never be exposed to the outside, reducing the spread of coal dust. The roofing of the coal storage will be covered with solar panels.

The site, once complete, will also contain a world leading CO2 research centre employing technical experts to continue development and reduce emissions.

Watch the video to find out more about the Samcheok Green Power project.