

Boiler and APC Equipment Performance

Background

As countries in the Middle East are allocating more of their natural gas to the growing petrochemical industry there is a shift towards burning heavy fuel oil (HFO) for electric power generation which is an economical and abundant commodity in the region.

The use of HFO is not without its challenges and a major OEM wanted to understand the effect of firing this fuel on boiler performance and air emissions at a boiler in Saudi Arabia. They sought the help CleanAir.

The OEM's plan was to evaluate boiler operation as a function of firing system parameters and additive dosage rates over 22 various conditions to quantify the unburned carbon, cenosphere and sulfur trioxide (SO₃) generation and impact on combustion efficiency and the electrostatic precipitator (ESP) and salt water flue gas desulfurization system (SWFGD) performance.

CleanAir's Approach

CleanAir mobilized a 12 person test team that performed simultaneous testing at multiple test locations over a 35 day test period to determine particulate matter mass and particle size distribution, sulfur dioxide (SO₂), sulfur trioxide (SO₃), nitrogen oxides (NO_x), carbon monoxide (CO), flue gas temperature and flue gas flow rate

Results

The results of the study provided valuable information for the improved operation of the existing unit and insight into the needed design parameters of future units to be constructed. CleanAir successfully completed the project on time and within budget.

Summary

A major OEM wanted to understand the effect of burning heavy fuel oil (HFO) at a Middle East power plant. Specific areas of interest were the boiler performance and the subsequent air emissions. CleanAir developed unique sampling equipment to quantify the overall plant performance giving valuable insight into the design parameters needed for future units.

