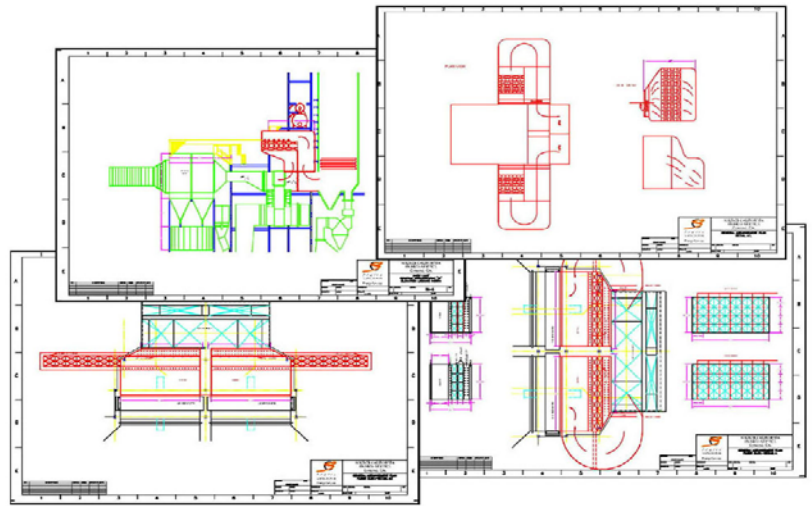


Compact Selective Catalyst Reduction (SCR) Installation Assessment Orion Power



LOCATION:

Avon Lake, Ohio

PROJECTS & SERVICES:

- Mechanical Design
- Electrical Design
- Instrumentation & Control Design Modifications

PROJECT OVERVIEW:

Source California Energy Services, Inc. (SCES) creatively upgraded the Avon Lake Unit 9 boiler and draft system for emissions control. The design involved retrofitting a "hybrid technology" combination of Selective Catalytic Reduction and Selective Non-Catalytic Reduction (SCR/SNCR) components. SCES developed several SCR design options, which utilized ammonia slip generated by urea injection across the catalyst modules to affect a target of 30%-40% NO_x reduction. The compact SCR installation was not only compatible with the SNCR design parameters during full-flow active performance, but also included an alternate flow path to bypass all, or portions of, flue gas flow in all operating modes. The design addressed significant localized equipment impediments and allowed for required maintenance activities, minimized demolition, relocation, and rerouting of existing plant equipment.

Major design hurdles of the various SCR arrangements including NO_x and ammonia flow distribution unknowns, higher than usual flue gas velocities, high dust loading, plugging and poisoning, pressure drop and subsequent impact on the boiler draft system. Due to the requirement for a bypass system, dampers and controls were incorporated into the design, as well as soot blowers, acoustic horns, and associated controls.