

COGENERATION FACILITY MEETS LOW EMISSION LEVELS WITH NEW SCR

BOILER CASE STUDY

Plains Exploration & Company

McKittrick, California

Waste Heat Recovery and SCR Upgrade System

CUSTOMER APPLICATION AND KEY CHALLENGES

Plains Exploration & Production Company, also known as PXP, is a petroleum company based in Houston, Texas with several locations throughout the United States, including California. PXP has grown to be one of the largest independent companies in the U.S., and the fourth largest oil and gas producer in California.

PXP operated a cogeneration facility at a land exploration site in McKittrick, CA. When the state instituted new emission regulations, PXP was required to reduce NOx levels on the gas turbine generating electricity at the facility. PXP was dissatisfied with boiler companies they had worked with in the past and contracted with R.F. MacDonald Co. in order to obtain precision design and strict equipment delivery schedules for the SCR and system upgrade project.



Challenging development areas are a hallmark of Plains Exploration & Production Company

THE R.F. MACDONALD CO. ANALYSIS & SOLUTION

While PXP needed to upgrade existing equipment to meet emission requirements, the company engineering group had the internal expertise to perform equipment installation and programming of the control system. The main challenge of the project was ensuring a precise design that anticipated typical installation issues, while also reflecting future needs of the overall system. In addition, avoiding cogeneration system downtime resulted in a tight and precisely executed installation plan.

To respond to the special design requirements of the project, R.F. MacDonald Co. performed Computational Fluid Dynamics (CFD) modeling to guarantee proper flow distribution within the proposed system. Once completed, R.F. MacDonald Co. worked closely with vendors and PXP to fully design, integrate, and sup-



Equipment delivery and site installation in process

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The SCR facility during installation and testing

ply a heat recovery boiler with SCR, ammonia skid, 31 million BTU per hour duct burner with an economizer, all transition ductwork, exhaust stack and feed water piping. All components were built in modular sections, pre-assembled, then delivered to the customer site for assembly within the allotted time schedule.

PROJECT RESULTS

After successful customer assembly and installation, R.F. MacDonald Co. performed start-up testing. The overall system met the NOx requirement of 5ppm, with the capability of adjusting to 3ppm in the future. In addition, the ammonia slip successfully tested under 10ppm, thereby meeting the customer expectations as well as the state mandates for emission levels.

**Successful installation and assembly
of a heat recovery boiler with SCR system
resulted in easily meeting NOx emission regulations
now and into the future**



Cogeneration facility with upgraded SCR final installation