

CASE HISTORY



Western Farmer's Mooreland Generating Station, Unit #3		
PLANT NAME	WFEC Moreland #3, Moreland OK	
APPLICATION	135 MW _e . Nat Gas, B&W front wall fired.	
PROJECT SCOPE		
BOILER DATA	Manufacturer	B&W
	Type	Utility
	Fuels	Natural Gas
	Burners	Early (1990's) RJM Low NOx
	Burner firing duty	160 MM-Btu/hr per burner
	Firing Arrangement	Nine burners, 3x3 pattern, Front Wall
	NO _x	0.18 – 0.2 lbs/MMBtu
NOx Controls	Early Low NOx burners, burners out of service (BOOS) and NOx tempering	
CONTACT PERSON	Ron Melton (contact info upon request)	
DESCRIPTION AND PERFORMANCE	<p>Plant is part of the Southwest Power Pool (SPP). Typical for this region, older gas fired, drum-boilers are utilized to back up wind generation. This will typically require the plant to rapidly change electric load to ensure grid stability. First generation RJM low NOx burners were installed in the late 1990's. Plant operated well from 2000 – 2016. Early 2017, the plant contacted RJM for assistance in NOx (less than 0.2 lbs/MMBtu) and CO (no current mandate) burner tuning.</p> <p>RJM (then SAS) performed a combustion audit to determine current condition and operation of burners. Site data proved crucial to proper diagnosis of operations as data taken during the site visit – observations and quantitative - strongly indicated one or two burners needed adjustment. Final combustion audit report recommended physical inspection of all burners in windbox to ensure settings were correct.</p> <p>Burners were subsequently inspected. On one of the burners, identified during the combustion audit, showed actuator linkage slippage with 100% open reading corresponding to only 40% open movement. All burners were inspected and properly set. In addition to resetting several of the burners, a furnace inspection showed dark carbon deposits on the burners.</p> <p>A week after the inspection and the settings were changed, start-up occurred. While burner performance was greatly improved, control curves needed further tuning for the rapid load variations required to back up wind generation. Working with plant personnel, RJM developed new control curves that allowed the plant to rapidly change load, while optimizing NOx and CO.</p>	

