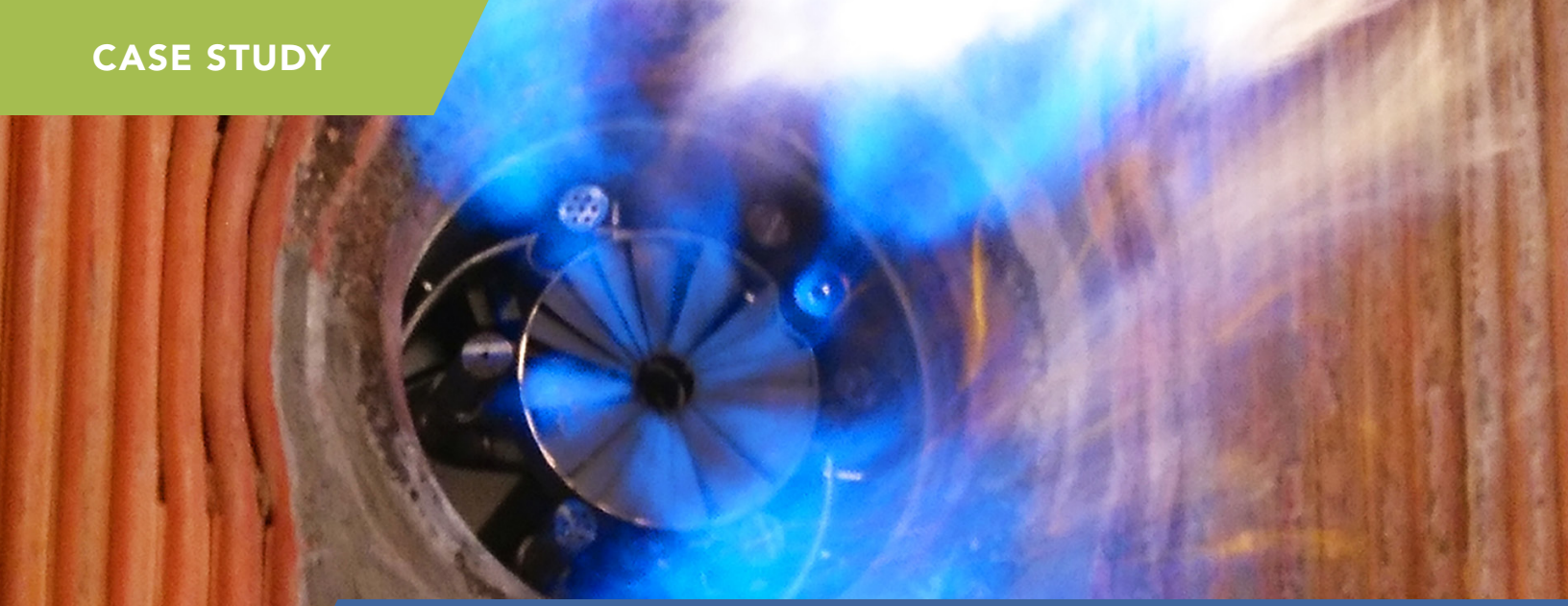
CASE STUDY



Utility Boiler Burner Replacement for Tucson Electric Power

CECO ENVIRONMENTAL

OPERATOR: Tucson Electric Power

LOCATION: Tucson, AZ

PROJECT COMPLETED: 2019

THE CHALLENGE: Tucson Electric Power (TEP) experienced long-term reliability issues with high carbon monoxide (CO) emissions on Sundt Generating Station Unit 4. This problem was due to burner component failure and an automated control system on the over-fire air (OFA) ports that resulted in an imbalance of fuel and air for combustion. Also, the existing burner was designed for coal- and gas-firing, making it less than optimal for low NOx operation. The plant also needed to maximize burner turndown and reduce the nitrogen oxide (NOx) emissions.

THE SOLUTION: CCA was contracted to replace the nine (9) burners on Sundt Unit 4 with the CCA Low-NOx gas burner designed to directly replace the existing burner. The retrofit CCA burner uses an NFPA Class 2 igniter with a flame rod for igniter proof of flame. The main gas flame is proven using the existing flame scanners. The CCA burner design and tuning provided lower NOx and CO which met the customer's needs.

Optimization Results:
Tested @ 165 MWg
NOx = 0.162 lb/MMBtu
CO = 0.009 lb/MMBtu

Baseline Data from Historian:
161 MWg
NOx = 0.230 lb/MMBtu
CO = 0.062 lb/MMBtu

THE RESULTS: The new CCA burner has provided reliable and repeatable light-off without operator adjustments, as well as improved operating and emissions reliability.

The customer can operate the unit at full load with minimal CO and low NOx emissions. The CCA low-NOx burners provide a stable flame with a 10:1 turndown, allowing for maximum boiler turndown with all burners in service and an increase in boiler ramp rate.

The CCA burner components are extremely robust and will provide extended life and reduced maintenance costs.

CCA