



## Food Processing

### E<sup>2</sup>Stak Boiler System Achieves Ultra Low NOx Emissions & High Efficiency

#### Background

A major food processing manufacturer required a new boiler at the company's fruit processing and packaging plant for process steam. The plant processes and packages over 25 million cases of a variety of fruits per year and required a system that would meet current and future low NOx air quality regulations, while performing as energy efficient as possible.

#### Problem

The food manufacturer operated in California's San Joaquin Valley Air Pollution Control District (SJVAPCD), one of the most stringent in the country. NOx emission limits of no more than 9 ppm, using the best available control technology, were required. In addition, the installation of a back-pressure steam turbine for additional electricity generation to the plant was going to be integrated with the new boiler system and on time delivery and start-up were

#### Summary

- Install a new low NOx package boiler and CataStak SCR system
- Meet less than 5 ppm NOx emission limits
- Increase efficiency and fuel savings with an EconoStak economizer

important in order to meet future project deadlines.

#### Solution

Nationwide Boiler supplied a new 50,000 lb/hr Babcock & Wilcox water-tube package boiler with a low NOx 30 ppm burner. The system was also equipped with a CataStak™ selective catalytic reduction (SCR) system and an EconoStak™ economizer for fuel efficiency. The equipment supplied by Nationwide Boiler worked efficiently with the addition of a condensing stack heat recovery system, provided by Benz Air, to produce heated feedwater at 200 degrees Fahrenheit.

#### Results

The equipment was delivered on time and exceeded the customer's expectations. It was certified to operate at better than 95% fuel-to-steam effi-

ciency with less than 1 ppm NOx emissions at full-load conditions. The exceptional efficiency and clean operation of the boiler earned the company a substantial energy efficiency rebate from the local utility company and the boiler's emissions are expected to meet any future low NOx emission levels expected to be put in effect by the SJVAPCD in the near future. The steam turbine is expected to be installed on time and it will produce additional electricity towards the plant's operations.

#### Equipment Used

- 50,000 lb/hr, Babcock & Wilcox water-tube package boiler
- CataStak SCR System with an Ammonia Injection Grid, Ammonia Supply Skid, and Controls
- EconoStak Economizer
- Low NOx 30 ppm Burner

**E<sup>2</sup>Stak**  
emissions / efficiency

**CataStak**  
Ultra Low NOx Solutions

**EconoStak**  
Energy Saving Solutions