

REPLACE EXISTING BOILER TO MEET LOW NOX EMISSIONS REQUIREMENTS

BOILER DIVISION CASE STUDY

ConAgra Foods

Modesto, California

Boiler Replacement

CUSTOMER APPLICATION AND KEY CHALLENGES

ConAgra Foods is one of North America's largest packaged foods companies with products available in supermarkets as well as restaurants and food service establishments. One process involves a DL68 Watertube Boiler that supplies steam to a frozen vegetable facility for the Flash Carrot Peeler. For this specific process, carrots are loaded into a bin that rotates slowly while being quickly pressurized to 200 PSI and then vented to explode the skin off the carrot. The carrot peeler would require 20,000 PPH for 10 seconds every minute and a half. This cycle is repeated 24 hrs a day.

The DL68 Watertube Boiler was 30 years old and had trouble handling the drastic change in load. In addition, new regulations imposed by the Air District retrofit rule would now require NOx emission levels of 9ppm.



Frozen foods produced and packaged by ConAgra Foods

THE R.F. MACDONALD CO ANALYSIS & SOLUTION

Replacing the existing unit with a new Watertube boiler exceeded the customer's available budget. As a result, R.F. MacDonald Co. recommended the Cleaver-Brooks CBL1500 Firetube boiler with an IC-NT 9ppm burner to meet emissions and budget. A Firetube boiler is a cylindrical vessel, with the flame in the furnace and the combustion gases inside the tubes. The furnace and tubes are within a larger vessel containing the water, which is converted to steam or hot water. They are highly efficient, durable, and easy to use and maintain.

Although the customer was concerned that a Firetube boiler would not react to instant 20,000 PPH load demands, R.F. MacDonald Co. engineers felt sure that this particular boiler would meet the requirements of the Flash Carrot Peeler system. This project also required the boiler room to be re-designed to accommodate the larger Firetube footprint.

BOILERS

PUMPS

SYSTEMS

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PARTS

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New boiler installed in the re-designed plant location

PROJECT RESULTS

The new boiler was installed and commissioned in the redesigned boiler room. Start-up services, load testing, source testing, and operator training was performed by R.F. MacDonald Co. factory authorized technicians.

“We had a budget to deal with and R.F. MacDonald Co was able to meet the numbers. Concern for the Firetube handling the load went away after the first hour of operation.” Mario, ConAgra Foods

The unit was successfully compliance tested and the emission levels were easily met with NOx emissions that were measured at an average of 6.5 ppm with the CO emissions measured at 8.2 ppm. The system provided optimum efficiency that resulted in project savings of \$95,000 and the steam pressure profile was smoother than customer expectations.