

RETROFIT EXISTING BOILERS TO MEET LOW NOX EMISSIONS REQUIREMENTS

BOILER DIVISION CASE STUDY

Teva Parenteral Medicines

Irvine, California

Boiler Retrofit

CUSTOMER APPLICATION AND KEY CHALLENGES

Teva Parenteral Medicines has been operating with a Cleaver Brooks Firetube boiler since its installation in 1989. This unit operates around the clock and is responsible for sterilizing products, producing water used for medications, and all of their HVAC needs. R.F. MacDonald Co. has been responsible for maintaining this boiler through their "Annual Efficiency Program" (AEP) for the past 20 years allowing for the facility to retrofit versus the more time consuming and costly option of replacing the boiler. When Teva approached R.F. MacDonald Co., the boiler was operating at a 35/40% firing rate and at 50% capacity, while running off of an obsolete CB Hawk Controller.



Finished installation of Hawk ICS panel, entrance panel, VFD, ULN burner, and economizer

THE R.F. MACDONALD CO ANALYSIS & SOLUTION

R.F. MacDonald Co. proposed several different options for meeting the AQMD and EPA regulation requirements; however, due to the immediate needs of the facility, the retrofit was agreed upon with a duration of 9 days for completion. The project required the complete retrofit of

the Cleaver Brooks boiler as well as the installation of a new Hawk ICS control, economizer, and feed tank. During the project, Teva also requested installation of a new steam flow meter, gas train, and gas flow meter which would allow them to better track the unit's efficiency. In addition to the proposed solution, R.F. MacDonald Co. provided the facility with necessary permit information as well as a list of Gas Co. savings Teva could qualify for at the completion of the project.

R.F. MacDonald Co. installed a Cleaver Brooks exhaust economizer which recovers heat from the natural gas firing boiler and transfers that heat to the boiler feedwater system, thereby increasing overall efficiency and decreasing fuel demand. The newly installed Cleaver Brooks Hawk ICS controller is a fully integrated, industrial platform control which allows for precise boiler/burner management while maximizing efficiency, decreasing operating costs, and increasing overall productivity.

The project was completed in 6 days with all combustion testing and all operational tests completed by R.F. MacDonald Co. factory authorized technicians. Upon completion, the unit was operating at a 25/30% firing rate and at 40% capacity. The retrofit has allowed Teva Parenteral Medicines to improve overall facility operation and efficiency, and increase annual energy efficiency savings.

BOILERS

PUMPS

SYSTEMS

SERVICE

PARTS

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SAN DIEGO

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Poway, CA 92064
858.538.5877

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Finished installation of new feed tank.

PROJECT RESULTS

Teva Parenteral Medicines, a leading pharmaceutical company specializing in injectable medicines, came to R.F. MacDonald Co. after learning of a problem with their AQMD and EPA permit which required immediate action. R.F. MacDonald Co. proposed several different options, finalizing on a boiler retrofit that would satisfy permit needs as well as increase operating efficiency.

R.F. MacDonald Co. completed the retrofit in 6 days, meanwhile allowing Teva Parenteral Medicines to decrease mbtu/hr and submit for a \$27,000 rebate from Southern California Gas Company.

In addition to this incentive, NOx emissions were reduced from 30ppm to 9ppm, allowing the facility to increase their efficiency resulting in overall energy and production savings. Juan Uvina, Maintenance Supervisor of the Irvine facility stated, "I am very satisfied with R.F. MacDonald Co.'s performance and their ability to understand and work with our urgency in this situation." Additionally, R.F. MacDonald Co. provided a comparison sheet to the customer outlining the projected \$29,000 in VSD, O2 Trim, and Parallel Positioning savings over the following 2 years.



R.F. MacDonald Co.

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