

NEW BOILER PLANT MEETING LOW NOX EMISSIONS AND SEISMIC REQUIREMENTS

BOILER DIVISION CASE STUDY

El Camino Hospital

Mountain View California
New Central Plant

CUSTOMER APPLICATION AND KEY CHALLENGES

The 1994 Northridge earthquake, a 6.7 trembler centered in Los Angeles, resulted in 72 deaths, over 9,000 injuries and rendered dozens of area hospitals damaged or unusable. As a result, the California State Senate passed a law that amended the Hospital Facilities Seismic Safety Act. SB-1953 requires all hospitals to retrofit, rebuild or close hospital buildings by specific dates if they do not meet strict new seismic safety standards, which would ensure that acute care units and emergency rooms could withstand future earthquake events.

The El Camino Hospital is located in the heart of Silicon Valley and for over 43 years has supplied a blend of cutting-edge technology with high quality patient care. In the spring of 2004 the hospital began planning and development for a new and expanded facility, designed to meet the seismic standards in Senate Bill 1953, as well as enable the facility to pioneer new approaches to patient comfort, convenience and safety.



The new El Camino Hospital expansion located in the heart of Silicon Valley

THE R.F. MACDONALD CO. ANALYSIS & SOLUTION

The building plans for the El Camino Hospital involved construction of a 5-story 450,000 square foot facility with 241 patient beds, an expanded emergency department, conference center and a complete central plant expansion. The central plant expansion included EPA approved generators, co-generation of high efficiency energy, digitally controlled operation and capture of waste heat for co-generation.

R.F. MacDonald Co. worked in conjunction with the mechanical engineering firm who performed the layout and logistics for the Central Plant, a high pressure steam project responsible for supplying steam and auxiliary steam into the entire facility. Upon review of the project requirements, R.F. MacDonald Co. outfitted the plant with 3 Cleaver Brooks 400 hp units. A portion of the accessory equipment was also included in the deliverables including the deaerator that feeds water to the boilers, three pumps that supplied the entire new feed water system and the blow down separator. Economizers, designed to preheat boiler feed water, were also installed to provide greater efficiency and provide overall cost savings.

The control system was the CB Hawk ICS lead-lag system. This integrated microprocessor based platform combines burner management, combustion control and communications into one compact package. The system is ideal for precisely matching boiler operation with actual system demand, resulting in superior load tracking which saves fuel dollars over conventional systems. It also offers ease of operation, excellent menu driven graphics, and powerful communication and interface capabilities.

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Final installation of a portion of the plant equipment

PROJECT RESULTS

The installation was preceded by a lengthy process while the contractor installed foundational, structural and electrical systems. The delivery of the boilers was performed with field piping and installation of structural supports, as specified in the seismic design parameters.

The entire operating scheme of the central plant with high end equipment and technical operations management provided El Camino Hospital with excellent performance and high efficiencies for their new facility. The options in this project provided minimal cycling, lower maintenance and lower overall operating costs.

The regulations by the State of California Industrial Safety Division Title 8 mandate guidelines for boiler attendance based on size and capacity of the boilers. In this case, the new plant operates 24/7 with a three-shift staff to monitor, maintain and oversee the overall operations for the central plant. R.F. MacDonald Co. conducted all the training and service instruction for the staff. After initial operation the control settings were tweaked to provide the most optimum output for the Siemens system as well as individual preferences for the operating staff.