

# POWER FLAME PROJECT SHOWCASE

California Dairies, Inc., Visalia CA.



Mike Alles – Facilities Superintendent in front of the LNINVC17 burners & Hurst Boilers

In 2006, California Dairies began designing and building their new Powdered Milk/Butter Processing facility in Visalia, CA. This new facility would utilize the largest skimmed milk evaporator in North America and would play a significant role in the regions production of these products. Amongst the early design considerations were the selection of the steam boilers. Based upon this growing need, Michael Wyant, Vice President of Engineering For California Dairies, Inc., contacted Central Boiler & Industrial Service, and requested an equipment bid. California Dairies operates numerous plants throughout California, many of which are using Power Flame / Alzeta CSB Technology Ultra Low NOx Burners. While these Ultra Low NOx Burner Packages have performed very well, they were not the only burners Cal Dairies was acquainted with. To secure this project, Central Boiler & Industrial Service was going to have to provide the client with a Boiler / Burner / Control Package that satisfied California Dairies significant technical requirements. More importantly, we had to create a cohesive partnership between ourselves, Power Flame and a competing contractor in order to solidify Mr. Wyant's support.

California Dairies had gained a trust and appreciation for the Power Flame Ultra Low NOx Burner Technology which made our choice of burners quite easy. The Hurst Boiler, which was paired with the Power Flame Ultra Low NOx Burner in most all of the existing California Dairies facilities, shared in the established trust, and made for another clear choice. The selection of control systems however, was another matter entirely.

California Dairies had worked with a competing boiler contractor over the years, and had gained a strong degree of confidence in the control system they had created and supported. The system utilizes a fully metered and cross-limited approach to Air / Fuel and FGR Control and allowed for fast and accurate changes in firing rate. In the world of Ultra Low NOx Burners, firing rate modulation speed is more commonly reduced to a sluggish and unresponsive grind in which the plants steam requirements must give way to the burners' inability to follow the load. California Dairies knew, based upon experience, that the inherent design of the Power Flame Nova Plus Ultra Low NOx Burner, lent itself to the fast modulation speeds more common to non-Low NOx Burners. This combination of the proven Power Flame burner design and the trusted fully metered control system was exactly what California Dairies required. Knowing that we had selected the right components, our challenge was quickly transformed to one of packaging and execution. Based upon the construction schedule, there would be no time for field R&D. These two (2) 1,500 HP Boiler / Burner / Control Packages would have to arrive fully integrated and ready to operate. These systems would need to be reliable, efficient, user friendly and above all else, they would need to satisfy the sub 9.0 PPM NOx / sub 50 PPM CO emissions limit imposed by the local Air Pollution Control District.

The challenges associated with the manufacture of the burner, while not daunting, were significant. Power Flame had fabricated Nova Plus Burners up to 1,000. HP, however, the 1,500 HP requirements provided for a significant leap forward. To further complicate matters, the new fully metered control system would require elongated intake ducts that would house the averaging pitot tubes needed to accurately measure the flow of combustion air being supplied to the LNINVC-17-30 Ultra Low NOx Burner. The airflow pattern entering the CSB Ultra Low NOx Element would also have to be balanced within the larger burner housing which would require additional modeling. Accurate and repeatable air and fuel flows are an absolute requirement for the proper operation of a fully metered control system and imperative to the success of this project.

While the technical demands associated with this project were significant, the larger challenge was in the packaging. To satisfy California Dairies requirements, we suggested that three (3) distinct Companies would work together as one, to create two (2) unique boilers that would in-turn, be ready on time and operate as promised. With a full understanding of the project requirements, we set a meeting with Mr. Wyant and described our challenges and our strategies in detail. Central Boiler & Industrial Service would supply the Hurst Boilers and the Power Flame LNINVC17-G-30 Ultra Low NOx Burners, less controls. McNulty Mechanical would supply the Fully Metered Control Systems. Power Flame would step out of the background and would provide single point accountability for the performance of their burners and the fully metered control system. It quickly became apparent that Bob Rizza's acceptance of single point accountability was the final assurance that Mr. Wyant needed to gain complete comfort with the project.

Upon being awarded the job, our three (3) companies worked diligently together to ensure that nothing was overlooked. The equipment was designed, manufactured and delivered to the jobsite where it was subsequently assembled and installed. The two (2) 1,500 HP Power Flame Ultra Low NOx Burners were completed on time and to specification. The start-up went very smooth with steam being supplied to the plant on time. The final hurdle to be overcome was the Formal Compliance Source Test which verifies the NOx and CO emissions being emitted from each boiler. Regardless of how nice looking or smooth running the equipment is, it is worthless if it cannot comply with the stringent emissions requirements set forth by the San Joaquin Valley Air Pollution Control District. Power Flame had guaranteed that the burners would produce less than

9.0 PPM NOx and less than 50 PPM CO. The actual emissions values proved better than expected. Both burners produced sub 5.0 PPM NOx and sub 10 PPM CO and did so while modulating quickly and operating efficiently and reliably.

This project was and continues to be a success on many levels. First and foremost, it resulted in a satisfied client. The positive recognition that is garnered from a project such as this can pay dividends for years to come and fully justifies the effort. California Dairies placed their trust in what was clearly an unorthodox sales approach. The confidence that Mr. Wyant and California Dairies placed in Power Flame, Central Boiler & Industrial Service and McNulty Mechanical was highly motivating. The resulting success proves that we must, at times, be willing to work outside of our normal channels when confronted with unique opportunities.

The boilers have been on-line now for approximately 9-months and have performed beautifully. Mr. Wyant and California Dairies are quite pleased with the outcome. This project has helped Power Flame to advance their Nova Plus Ultra Low Nox Burner Line and has strengthened the relationship between our four (4) Companies. McNulty Mechanical utilizes Power Flame Nova Plus Burners extensively and continues to be a strong partner / competitor.

A true success for all involved. *By Jim Lieskovan – Central Boiler & Industrial Service*