



Ventilation Upgrade Case Study

Lundberg Family Farms Receives Overhaul of Ventilation System to Improve Popping Room Efficiency

Background

Lundberg Family Farms is a major supplier of rice and rice products based in Richvale, CA. Being a family-owned and operated farm since 1937, Lundberg carries a strong emphasis on “leaving the land better than they found it” while upholding high standards for their Regenerative Organic Certified and non-GMO rice.

Their facility includes a 14,000 sq ft rice popping production room, which contains hundreds of automated rice popping machines for the production of rice cakes, a critical operation for the large demand of their popped rice products.

Issue

With each popping machine reaching temperatures over 700°F, large amounts of smoke, fumes, and heat are produced during the rice popping process. There are hundreds of rice popping machines in the room, and the smoke and heat buildup led to frequent production stoppages. The existing ventilation system in the popping room could not clear the smoke buildup, and the excessive heat on the production floor was challenging for staff.

Cooper Oates provided an engineering study to identify the heat dynamics in the room, and then provided several schematic design options to mitigate the smoke and heat build-up. The selected option turned out to be less complex and more cost effective than the original plan prior to our engineering study.

Solution

As a result of the engineering study Cooper Oates performed, we solidified a plan to reduce production stoppages due to the smoke buildup and heat, keep Lundberg staff comfortable and improve the ventilation efficiency in the facility. This included replacing the existing overhead ventilation supply fans with new air handlers and replacing the existing exhaust fans which included a far easier way to be access for service and maintenance.



Work Performed

New fresh air handling units and new exhaust fans were installed to eliminate the smoke and fumes and reducing the heat for the operators. First, Cooper

Quick Facts

- Name:** Lundberg Family Farms
- Building Size:** 14,000 Sq Ft rice popping production room.
- Location:** Richvale, CA
- Scope of Project:** Replace the current ventilation system inside the popping room to help clear smoke build-up, prevent stops in production, and keep workers comfortable.

Documented Results

- ▒ Ventilation Effectiveness Increase (via ASHRAE): **+25%**
- ▒ Increased Air Change Rate: **+80%**, with only **70% horsepower** increase.
- ▒ New air handlers and exhaust fans installed are now **easily accessible for service and cleaning**, with the added capacity to provide **chilled water** during hot weather.
- ▒ Increased efficiency- smoke is now easily cleared out during production.
- ▒ Comfortable working environment for employees.



Oates replaced the existing overhead ventilation supply fans with new floor-mount fresh air ventilators. The fresh air delivery was moved to wall diffusers at the floor level to deliver the fresh air directly into the breathing zone of the staff.

The previous design had ventilation air delivered at 12 ft above the floor, which ineffectively mixed with smoke from the popping machines, and did not improve worker air quality. The new air handlers included filters and fans at floor level for ease of cleaning and service. They also included energy efficient redundant fan arrays to minimize down time as well as coils for future chilled water cooling.

Cooper Oates also replaced the existing exhaust fans and increased the exhaust capacity by **87%**, without any structural modifications to the building. The new exhaust fan installations remedied the restrictive ductwork, reduced the ducting in the popping room to be cleaned, and positioned the new exhaust fans outside for ease of service access without needing to work in the food areas.

Outcome

ASHRAE provides guidelines for ventilation air distribution effectiveness, and Cooper Oates' new installation provided a **25% improvement** in the ventilation effectiveness calculation compared with the original installation. When the new air handlers were turned on, the smoke at operator level immediately cleared out, and the staff applauded the result.

The new exhaust fans increased the air change rate by **+80%**, with only a 70% increase in horsepower, and the new air handlers increased the ventilation from **48,000 CFM to 90,000 CFM**. The new air handlers and exhaust fans are easily accessible for service and cleaning, and now have the capability to provide chilled water cooling during hot weather.



Before and after the ventilation upgrade. Smoke and heat buildup is no longer an issue for workers in the popping room!



Our History

For over half a century, Cooper Oates has proudly served businesses and commercial properties throughout the Sacramento Valley and Northern California. From our beginnings as an air conditioning installer, to our current capability as a full-service mechanical provider, we have placed your facility's comfort and your business's profitability front and center.

Our team of experts has extensive experience designing, installing, monitoring, and servicing a broad range of mechanical projects including:

- Office Buildings
- Industrial / Conditioned Warehouses
- Hospitals / Clinics / Labs / Medical Offices
- Educational Facilities
- Server / Datacenter / Clean Rooms
- Restaurants / Commercial Kitchens
- Manufacturing / Distribution Centers