

A Loaf of Bread, A Jug of Wine, And Therma-Fuser™ VAV Diffusers Provide Comfort for Minimal Cost At The Christian Brothers Winery.

Office And Laboratory Space is VAV-zoned For Approximately 25 Percent Less Than Standard Variable Air Systems.

NAPA, California—Keeping its wines cool has never been a problem for the Christian Brothers, one of California's oldest and best known wineries. Once, caves dug into the bedrock of the Napa Valley, and later, well-refrigerated aging rooms sufficed to keep both whites and reds at the proper temperatures. However, keeping the office and laboratory spaces equally comfortable for employees proved a slightly trickier task.

The problem of providing multiple zones with individual control in the winery's new administrative and laboratory complex was solved by installing approximately 40 Therma-Fuser VAV diffusers units from Acutherm. According to project specifiers, the product was selected for two reasons.

First, The Christian Brothers required zone control provided by a low-cost, packaged equipment. The alternative to the Therma-Fuser solution was a standard variable air system, which would have cost approximately 25 percent more. Second, the units were really the only way to provide the individual control necessary to keep offices at a comfortable temperature while maintaining the controlled conditions required in the laboratory.

The Christian Brothers

The Christian Brothers has been in the wine producing business since 1882, when the first members of the Roman Catholic lay religious group planted vines to produce sacramental wine. Surplus wine was sold to neighbors, and its high quality resulted in increased demand. Wine grew into a booming business that still subsidizes the group's educational and religious endeavors.

In 1983, the winery decided to build a new facility to consolidate administrative staff and provide a laboratory for wine testing. The 13,000 sq. ft. building is a single story, slab on grade wood construction with a large peaked roof that



CHRISTIAN BROTHERS WINERY— OFFICE & LABORATORY BUILDING
Mechanical Engineer: MCT, Inc., San Francisco, California
Architect: John Picchi Associates, Santa Rosa, California

provides space to mount most of the heating and cooling equipment.

The offices surround a central area, and include a computer room and a large conference room. The entire west end of the building houses the laboratory, complete with fume hoods which allow small but significant amounts of conditioned air to leak. The laboratory requires controlled conditions, and the allowable fluctuations between heating and cooling temperatures is minimal. The Therma-Fusers maintain a steady temperature within one or two degrees of the desired setting.

Temperature control

The mechanical system is based on an air-to-air heat pump. Four packaged Carrier systems are located on the roof of the new facility, and are connected via refrigeration lines to air handling units, two each on the east and west ends of the building.

Looped ducting maintaining $\frac{3}{4}$ " static pressure supplies air to the 40 TF-HC Therma-Fuser units located throughout the building. A static pressure sensor, located approximately two-thirds of the way into the supply duct, maintains the low pressure system. By-pass dampers are located at the return air supply duct.

Therma-Fuser benefits and operation

Therma-Fusers are designed to

assure consistent, even, air flow and temperature maintenance to within one or two degrees. A room temperature sensing and control element within the unit contains a thermal compound that expands in temperatures between 70–80°F, causing a shaft to extend which opens four perimeter-diffusion blades. As the room cools, the sensing mechanism retracts, closing the blades and closing off air entry.

Because the units are self-regulating and require no wiring or pneumatic connections to other devices, much of the cost savings are realized in installation costs.

The Christian Brothers realizes much of its operating cost savings because it has a low pressure system based on Therma-Fusers. In medium and high pressure systems, horsepower requirements for the fans that maintain the pressure often account for as much as 65 percent of total heating and cooling operating costs. Low pressure systems reduce the horsepower requirements and, therefore, operating costs.

In short—everything is cool at The Christian Brothers, from wines to employees.



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