



San Francisco Restaurant Solves Cooking Hood Draft Challenges with Fabric HVAC Diffuser Retrofit

KitchenSox[®] air diffuser reverses dining area cooking odor infiltration, reduces sanitation costs, improves employee air comfort and reduces energy costs.

Danville, Calif.—Facing seemingly insolvable performance challenges from its kitchen ventilation system, Bridges Restaurant & Bar, Danville, Calif. was ready to outlay upwards of \$20,000 for a new rooftop make-up air system.

Instead of exiting through the dual exhaust cooking hood, smoke and food odors wafted into portions of the 3,300-square-foot dining area raising complaints from patrons seated at tables near the kitchen.

The 24-year-old, independently-owned Bridges is popularly known in the San Francisco area for its casual-elegant dining and also as the famous location for actor Robin Williams' comedic multiple costume changes in the 1993 Hollywood movie, "Mrs. Doubtfire." Because of its upscale image and popularity, the vexing dining area cooking odors were bad for business and affected the overall guest experience, according to Kevin Gin, executive chef and a member of the restaurant's investor consortium.

Furthermore, drafts from the existing make-up air HVAC system were drawing smoke and grease, that should have been contained within the cooking exhaust hood, and depositing them onto the diffuser, walls ceilings and other kitchen surfaces requiring more than \$1,000 annually in maintenance labor and cleaning compounds.

Besides odor infiltration and maintenance costs, the drafts from the air conditioning supply over the food prep area was prematurely cooling prepared hot entrees while employees in other kitchen areas were uncomfortably hot.

Finding a Low Cost Solution

A large HVAC retrofit outlay seemed imminent until an arranged meeting between Gin and an HVAC ventilation product manager attending a Bridges-held 25th anniversary dinner for the nearby Food Service Technology Center (FSTC), a San Ramon, Calif.-based commercial foodservice equipment performance test lab

funded by Pacific Gas & Electric. Nick Paschke, product manager at textile HVAC ductwork manufacturer, DuctSox Corp., Peosta, Iowa, recommended a custom textile air dispersion system designed specifically for kitchens. The ceiling-mounted device disperses airflow uniformly, parallel and in front of the kitchen exhaust hood. The fabric diffuser is an easy-to-install replacement for metal air distribution diffusers that commonly cause kitchen exhaust hood overflow.

Instead of a 5,000-cfm make-up air equipment replacement, only the kitchen's lone conventional 3 x 3-foot supply box and four metal diffusers were switched out. Located over the food prep line





to distribute air throughout the 1,000-square-foot kitchen, the diffusers were replaced with two eight-foot-long, 28-inch-diameter D-shaped KitchenSox[®] fabric diffusers. Instead of the metal diffuser's estimated 500-fpm airflow that caused turbulence and disruption of the cooking hood's capture, the air is gently and evenly dispersed through the fabric into the entire kitchen area at a significantly slower 85-fpm rate. Without the previous high velocity airflow and subsequent turbulence, the dual exhaust cooking hood now efficiently performs up to its design standards and captures smoke, grease particulates and cooking odors without overflow.

CulinAire Systems, El Dorado Hills, Calif., a foodservice ventilation contractor specializing in demand ventilation controls and engineered kitchen ventilation equipment, fabricated the sheet metal plenum and metal/fabric adaptors that supply the 16 linear feet of fabric duct. The fabric duct system and metal accessories were installed by CulinAire overnight without disruption to the kitchen operation.

Without the drafts, the excessive airborne smoke, grease deposits and dirt that the return air system had once drawn onto diffusers, kitchen walls, ceilings and cabinets no longer occurs, which has expedited daily cleaning and sanitation routines.

Gin also plans annual cleaning since the fabric diffuser can be disassembled by kitchen staffers in just minutes and commercially laundered, a process that would require days to complete by an outside contractor with a metal system.

Green Mission Accomplished

By improving the air distribution and eliminating the hood's hot air overflow into the kitchen, a considerable energy savings supplements Bridges' green mission, which is strategically marketed among its clientele. Gin said it's difficult to pinpoint energy savings of the new system because FSTC continually uses Bridges as a beta test site for new technology. However, Gin did estimate recent Bridges' conservation efforts are saving the restaurant more than 20-percent in energy costs with quick investment paybacks.

For example, FSTC oversees results of Bridges' variable speed Intelli-Hood control and won the renowned "AHR Innovation Award" in the ventilation category presented at the 2012 AHR Expo in Chicago.

Bridges' challenges with HVAC ventilation was solved completely with fabric diffusers that cost less than ten percent of the approximate \$20,000 for a new make-up air system. Furthermore, the energy savings and reduced maintenance costs offer a payback of less than one year on the air diffusion system. "This is really a common problem (inadequate cooking hood drafting) I think many restaurants suffer from and don't realize there's a simple, inexpensive solution," said Gin. "We once thought replacing the HVAC system would improve our kitchen ventilation challenges, but we now realize it probably wouldn't have remedied what was actually a ventilation problem that fabric ductwork solved."



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