


Fabric Duct Transforms Gym/Banquet Room's Poor Airflow Into Comfortable IAQ.



"The airflow before was drafty and cold in certain areas, but now nobody even notices that the air conditioning is on, except for the fact they feel comfortable."

CINCINNATI, OH—The HVAC air distribution at Cinergy Hartwell Country Club's 5,000-square-foot Recreation Center was sufficient for Cinergy Corporation's employee member sports activities and functions, but fell short when the Cincinnati-based company's club began competing for local banquets, weddings, and other outside meeting/convention business.

Guests complained of drafts, excessive air noise, and hot spots from the circa 1930's building air conditioning system because it was incapable of evenly distributing air from the original seven 40X24-inch wall grills in such an expansive room. Solving this problem became the responsibility of Ray Shelton, manager of Site Services East of Cinergy, which is the Cincinnati-based electric and gas merchant, and delivery operation provider that owns the club.

case study

Retrofitting the air distribution system with conventional ceiling ducts and registers at an estimated \$100,000, was cost prohibitive, not to mention inaccessibility above the dropped ceiling and costs to update lighting systems. However, Shelton and longtime Cinergy HVAC vendor and mechanical contractor, Michael Jay Ester, service manager for DeBra-Kuempel, Cincinnati, a recently acquired division of Norwalk, Conn.-based EMCOR, solved the challenge at a quarter of the cost by recommending a fabric air distribution system.

DeBra-Kuempel and manufacturer's representative, Jeff Johnson, territory manager at York International-Tri-State Branch, Cincinnati, suggested the D-Shape model fabric duct by DuctSox, Dubuque, Iowa, to Shelton. The seven duct runs of the flush-mounted white D-Shape now appear more like architectural ceiling adornments than functioning ductwork.

Shelton, who weighed several air delivery options prior to deciding on fabric duct added: "This retrofit wouldn't have been possible cost-wise without fabric duct."

Linear mesh diffusers that run the entire length of each duct run provide a draft-less air flow that disperses air gently down to the occupancy zone of the 20-foot-high, 2,500-square-foot room. Approximately 15 percent of the air is factory-designed to permeate through the Comfort-Flow. Because the duct suspension system is designed to accommodate connections to dropped ceiling grid hardware, installation time was considerably less than conventional duct, according to Ester, who coordinated the project.

Equally important to the aesthetics and functionality of the fabric air dispersion, are the custom-designed sheet metal plenum transitions between the duct and existing wall grills. Designed by John Kuempel, Jr., P.E., vice president at DeBra-Kuempel, the 20-gauge sheet metal plenums collect air from the wall grills and direct it upward to a connection for the fabric duct. Because of the ceiling contour, the outlets include a 15-degree downward angle offset for proper alignment into the fabric duct. The plenum also enables a horizontal offsetting so each duct run avoids existing ceiling lighting fixtures. Each take-off employs a round 16-inch-diameter sheet metal adapter with internal balancing dampers to direct air into the end-inlet orientation of the D-shaped fabric duct.



FABRIC TRANSITION: Round to D-Shape

Cinergy saved additional costs by having DeBra-Kuempel validate the performance of the original Buffalo Forge, custom constructed air handler for which no design data was available. "We sized the fabric duct based on the antiquated air handler's maximum performance based upon coil area," said Kuempel. "The fabric duct air throw performance was checked with the installation height from occupants to assure draft free performance." ■



D-Shape DuctSox blends in with acoustical ceiling tiles and maintain their shape in deflate stage.