



No Perspiring at Cheney/Edwards V.P. Debate – Thanks to Consulting Engineer.

Except for fingerprinting, background checks, secret service agents and a do-nothing 16-hour service call, debate was a typical day for installing contractor.

Cleveland — The rhetoric was occasionally hot, but one reason Dick Cheney and John Edwards remained cool without a trace of perspiration at last October's vice presidential debate was due to a mechanical engineer's HVAC design.

While Cheney and Edwards stayed cool, mechanical engineer Jerry Lordi, admits he was sweating out the culmination of a six-month air conditioning retrofit project he designed expressly for the 90-minute pre-election debate and the more than 25 million television viewers.

Although the retrofit of Case Western Reserve University's (Case) 50-year-old, 14,000-square-foot Horsburgh/Emerson Gymnasium had passed simulated tests with flying colors and was loaded with equipment redundancy, Lordi, a mechanical engineer at Middough Consulting Inc., Cleveland, worried about "Murphy's Law."

To stifle "Murphy's Law," the building's electrical service was supplemented with one temporary 1,200-Kw diesel generator. The project's newly installed rooftops also have redundant compressors. Additionally, service people from project HVAC contractor Environmental Conditioning Systems, Mentor, Ohio, the building automation system manufacturer, and the Case facilities department were on hand the entire day of the telecast, which mandated

prior background checks, fingerprinting and monitoring by Secret Service agents.

Lordi's HVAC design had to meet a stringent criteria specified by the debate sponsor, Commission on Presidential Debates, Washington, D.C. Stipulations included a non-varying temperature of 65°F monitored by a sensor under the debate table, a gentle airflow velocity of 50 fpm that wouldn't disturb candidates' hair or desktop papers, and recording studio quality noise criteria (NC) of 15 to 20. Another engineering challenge was keeping the debate area 65°F and the remainder of the gym 67°F via a different sensor, which was virtually air conditioning a space within a space. Lordi solved all those air distribution challenges while also providing a long-term aesthetic solution by specifying the permanent installation of fabric ductwork by DuctSox, Dubuque, Iowa.

Along with its reputation as one of the nation's elite research universities that's known for fostering political, social, and economic discussion, the gym retrofit was a factor in Case winning the site selection bid among a dozen other applicant sites. While the impetus for the retrofit was the debate, the university also planned to use the gym for commencement, athletic events, and other large gatherings.

Lordi's design was anchored with two McQuay International, Minneapolis, Minn., 75-ton, 27,000-cfm DX rooftop air conditioning units to offset the heat load of 165,000 watts of television studio lighting plus other heat generating equipment from the five major television networks on hand. Since the units would be considered vastly oversized for any post debate operation in a gym that normally operates 24,000-watts of lighting, Lordi specified the units with staged compressor operation and variable speed fan drives to save energy during typical gym usage.



Lordi even designed a "Murphy's Law" buffer into the custom designed fabric duct's airflow design. Off-the-shelf DuctSox typically have ??-inch static pressure, however Lordi specified ??-inch static pressure. "Our ideal rooftop operation was designed around a very low velocity

for the purposes of limiting noise," noted Lordi. "In the event noise was still a factor and we had to turn down the rooftops to as much as 60 percent with the variable speed drives, I wanted some wiggle room."

Super Quiet Operation

Under Lordi's specification, ECS installed Vibro-Curb II, Thybar Corp., Addison, Ill., spring isolated curbs for the rooftops to keep mechanical equipment noise and vibration to a minimum. Supply air from the units goes through a custom-manufactured Aerosonics, California, Mo., sound attenuator. The 12-foot-long, 60-inch-diameter unit has 12 inches of soft sound absorbent material around its interior circumference that's held in place by perforated metal. Adding to the noise attenuation, fabric duct statistically transmits equipment and airflow noise considerably less than metal duct in research tests.

From the sound attenuator, Lordi's design called for a snow and rain-shedding 48-inch-diameter, double-wall spiral round metal duct. The duct goes through the roof into a ceiling-mounted plenum that supplies two

36-foot-long and two 45-foot-long runs of 32-inch-diameter Sedona, DuctSox's premium model. Lordi specified Comfort-Flow fabric which allows approximately 15 percent of the air to be gently distributed through the fabric itself while the

remaining 85 percent is dispersed through DuctSox's Sonic Vents, which run the entire length of the duct and contribute to quiet and gentle airflow. Robert Laneve, director of engineering at manufacturer's representative, Air Control Products, Cleveland, Ohio, assisted in the airflow design with flow and throw analyses diagrams.



"We were impressed with the air movement of fabric duct and we're now considering it in a factory application involving circuitry soldering because it doesn't create drafts," said Hank Bloom, president, Environmental Conditioning Systems.

Now that the debate is over, CASE has a world class air conditioning system. Director of Facility Services, Eugene

Matthews, who was introduced at the product at GreenBuild Expo environmental conference in Pittsburgh, was integral in the choice of blue DuctSox to match school colors. Matthews also ordered factory silk-screening of white school logos on the fabric. "Based on the performance of the gym's air distribution system, we're now considering fabric duct for other campus building applications," said Matthews.

"The challenge of this job was the fact it had to be perfect the first time because the debate was just one night with no time for changing anything," said Lordi. "Usually an engineer can design something well on paper, but in application it might need refinements. In this instance, there was no second chance, it had to be right the first time."

"...it had to be right the first time."

DUCTSOX®
Fabric Air Dispersion Products

4343 Chavenelle Road ■ Dubuque, IA 52002-2654
866-382-8769 ■ www.ductsox.com
563-589-2754/FAX