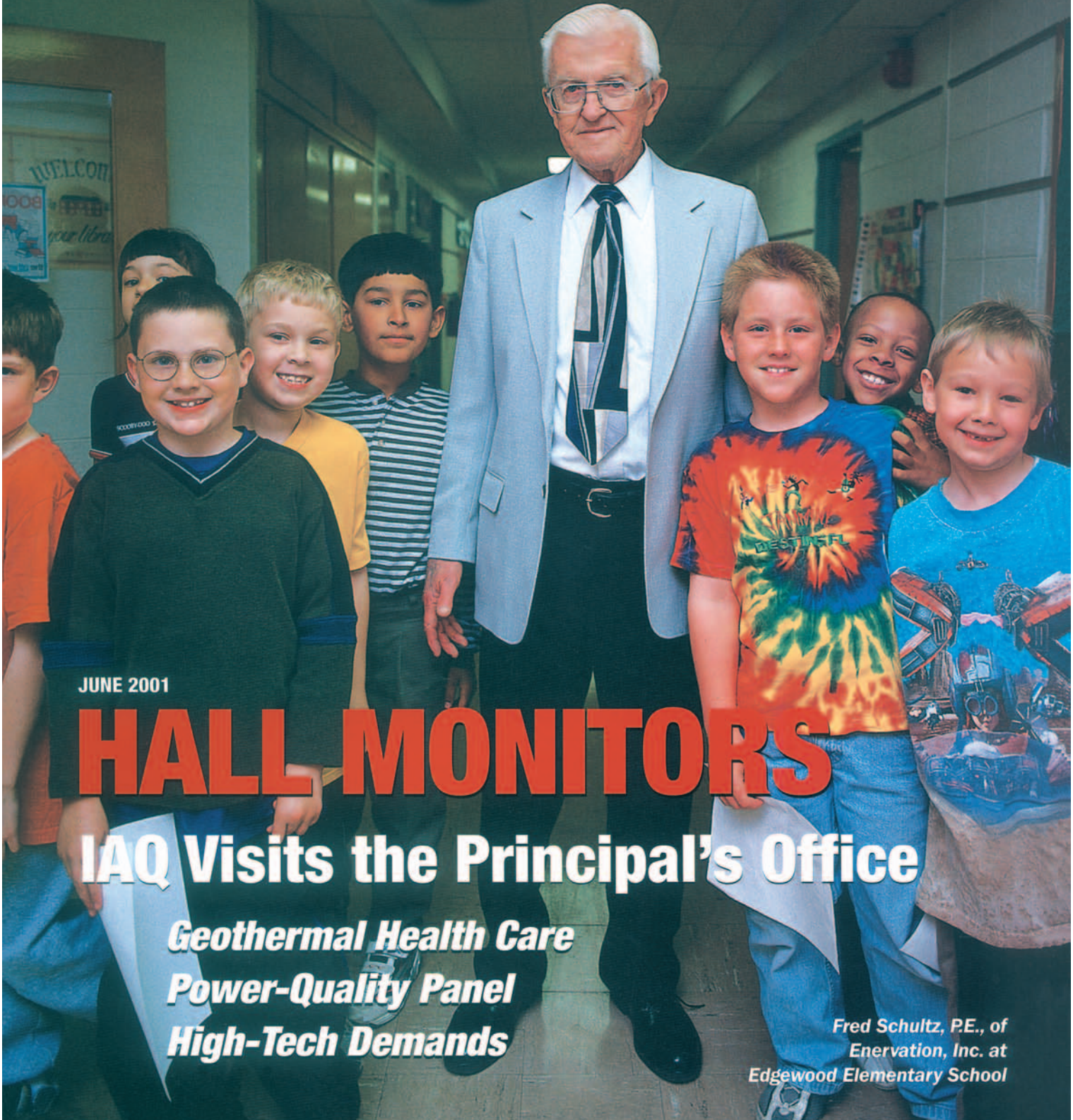


CONSULTING engineer SPECIFYING



JUNE 2001

HALL MONITORS

IAQ Visits the Principal's Office

*Geothermal Health Care
Power-Quality Panel
High-Tech Demands*

Fred Schultz, P.E., of
Enervation, Inc. at
Edgewood Elementary School



Technology

IN ACTION

ART PRESERVATION THROUGH BETTER IAQ

H At the Museum of Fine Arts (MFA) in Boston, preserving priceless works of art for future generations is the highest of priorities. The MFA houses approximately 350,000 objects, including some of the world's greatest collections of 19th-century American paintings and decorative arts, French paintings and silver, Egyptian and Asian art.

A few years ago, the MFA staff noticed a mold problem developing in some of the humidifiers. David Geldart, director of facilities at the MFA, explains, "It's very common for mold to develop in air-handling systems and generate spores that travel through the airstream to the occupied space, where it can be very detrimental to old photographs and other works of art."

To maintain good air quality and preserve the art, the staff had to drain and clean the humidifiers almost daily.

"This approach kept the mold growth in check but created a costly maintenance headache," says Geldart. "Even with all our efforts, a musty odor caused by the mold was evident in some galleries."

SEEKING A BETTER SOLUTION

To help preserve their collection and create a healthier environment, MFA officials decided to embark on an indoor-air-quality program. But because cleaning agents such as chlorine posed a danger to artwork, the MFA needed to find an alternate option.

Museum staff learned of a new technology—based on ultraviolet (UV) light in the "C" band of the spectrum, or UVC—for the control of mold prolifera-

tion in air-handling equipment.

The germicidal properties of UVC light have been used for decades in water purification and other applications. But when conventional UVC devices were tried in air-handling equipment in the 1950s, they appeared to fail. UVC devices encountered drastic output losses when placed in moving or cold airstreams; thus, they lost their ability to destroy any harmful microbes.

In the mid-1990s, a new generation of high-output UVC devices were designed specifically for use in building heating, ventilation, air-conditioning and refrigeration (HVACR). The newer devices were shown, in testing, to destroy mold, viruses, bacteria and other microorganisms in HVACR equipment—without the use of chemicals or ozone.

Working with the vendor, the MFA decided to conduct their own test of UVC devices in the air handler experiencing the worst problems. Before installing the UVC devices—above the humidifier sump and downstream of the chilled-water coils—the installers took samples of the mold and accumulated organic materials in four loca-



Boston's MFA houses over 350,000 pieces of art.



The Museum of Fine Arts in Boston has taken new steps toward a better indoor environment for its art and inhabitants.

tions. Cultures confirmed high concentrations of mold in all four samples. After the UVC devices had been operating for just one week, follow-up sampling showed the same areas to be virtually sterile.

After continuing the study for six months, the MFA was convinced of the UVC product's effectiveness. The MFA equipped 19 remaining air-handling systems with UVC emitters on a phased basis. While these air handlers are also equipped with state-of-the-art, high-efficiency air filters for particulate removal and carbon filters for odor control, the UVC devices provide an added dimension of performance beyond that attained through air filtration alone.

OPERATIONAL BENEFITS

Geldart reports that the standing water in the system is much clearer now, nearly eliminating his staff's twice-a-year maintenance and cleaning procedures.

"In addition, the perpetually clean coils are more energy efficient," Geldart comments. "Between the maintenance and energy savings, the lights definitely pay for themselves."