



“We decided to go with the StrionAir System because of its unique ability to provide cleaner air with lower energy usage”, said Jon Clark, Director of Facilities. “A high-efficiency filter that lowers HVAC energy consumption and provides germicidal effect was a great choice for Denver Health.”



The filter rack in the Denver Health Pavilion for Women and Children’s air handler.

Air filters help Denver Health achieve LEED certification

Introduction

As the green building movement expands, so does the awareness of a buildings’ overall effects on human health and the environment. Although hospitals and their operations have always had a large footprint, only recently have designers, contractors, operators, and even ground-level staff been making decisions in light of this larger awareness, including product life spans, waste streams, occupants’ means of transportation, and other far-reaching concepts. Another consideration is air quality, whose footprint covers anything from the insulation inside walls to adjacent properties and into the earth’s atmosphere.

Of the different green and sustainable aspects of the Denver Health Pavilion for Women and Children (which has earned LEED-NC v2.1 Silver for new construction and major renovations), its approaches to air quality are perhaps the most innovative. As part of a first-responder hospital, as a facility dedicated to a vulnerable population segment, and as a publicly funded project, the Pavilion for Women and Children addition needed to be ever more aware of its health and environmental effects, including its air-quality footprint.

Challenge

Aside from using low-emitting interior materials, installing cotton insulation (avoiding the particulates from fiberglass fibers), running a strict construction indoor air-quality program, and installing a carbon dioxide monitoring system, the project team also took a close look at both the operating emissions that the building puts into the exterior air and how the building takes in that same air. The team chose to conduct tests on exterior exhaust streams in a wind tunnel and to install a state-of-the-art air filtration system that electrically charges and attracts particles. The combination of the air-filtration system and the design guidelines from the wind testing mitigate, if not totally eliminate, air-quality issues such as operating emissions from Denver Health buildings and surrounding buildings, general community pollution, bioterrorism, and pandemics.

Solution

“We decided to go with the StrionAir System because of its unique ability to provide cleaner air with lower energy usage”, said Jon Clark, Director of Facilities. “A high-efficiency filter that lowers HVAC energy consumption and provides germicidal effect was a great choice for Denver Health.”

The StrionAir System in the facility’s air handler combines mechanical filtration, electrostatics, and ionization to achieve infection control along with energy efficiency and relatively low waste. The facility is a first-response hospital, which means it will have to handle an influx of patients in the event of a bioterrorism act or a disease pandemic. The filtration system can filter anthrax and has recently been shown in a joint Centers for Disease Control and Prevention (CDC) study to filter the avian influenza virus.¹



“Denver Health has a high volume of air at 282,000 cfm”, Bob Padgett of distributor Engineered Mechanical Systems, LLC, stated. “StrionAir’s products allowed us to assist them in achieving the high quality of indoor air required for both healthcare and LEED® facilities, while substantially reducing their operating costs, life cycle costs and environmental impact. The combined influence on energy consumption and occupant health also helped Denver Health achieve their LEED® goals.”

Results

“Denver Health has a high volume of air at 282,000 cfm”, Bob Padgett of distributor Engineered Mechanical Systems, LLC, stated. “StrionAir’s products allowed us to assist them in achieving the high quality of indoor air required for both healthcare and LEED® facilities, while substantially reducing their operating costs, life cycle costs and environmental impact. The combined influence on energy consumption and occupant health also helped Denver Health achieve their LEED® goals.”

Not only does the electric charge throughout the filter media lower the pressure drop and hence save fan energy, it also kills living organisms, such as viruses, bacteria, and mold, by literally shocking and breaking down the organisms’ cell walls to achieve a germicidal effect.

As organisms are captured on the filter, they are trapped in the electrostatic field and are exposed to both the field and the ion current from the ionization array. The combination of electrical stresses on the microorganism has been shown to effectively inactivate the organism and in some cases rupture the cell membrane.

Condensed from Healthcare Design, December 2007

¹ Raydel M, Rota PA, McKinney P, et al. Inactivation Potential of Filter Immobilized Airborne Mammalian and Avian Viruses in Weak Electric Fields. Centers for Disease Control and Prevention; StrionAir Corporation; Department of Infectious Diseases, College of Veterinary Medicine, University of Georgia; Department of Civil, Environmental and Architectural Engineering, University of Colorado at Boulder, 2007.



StrionAir, Inc.
410 South Arthur Avenue
Louisville, Colorado 80027
303.664.1140
866.840.5872 (toll free)
Fax: 303.664.1210

© 2008 StrionAir, Inc. All rights reserved.