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High-End Homes With High-End Air Purification Systems

The demand for 'particle-free' living spurs some luxury developers to install elaborate filtration systems.

By Candace Jackson

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Alongside infinity pools and gourmet kitchens, more high-end developers and luxury-home builders are pitching a new amenity: freshly circulated, highly scrubbed air.

Developers of 155 East 79th Street, a condominium under construction on Manhattan's Upper East Side, boast that its ventilation technology first cleanses air via a hospital operating-room-grade purification system and then brings the fresh filtered result into each unit. In San Francisco, luxury developer Troon Pacific says it has built several speculative homes in the \$5 million-plus range that fully exchange their indoor air at least three times a day.

In New York's Hamptons, developer Peter Sabbeth installed a \$5,000 air-ventilation system with a heat-exchange feature into his speculatively built home that not only exchanges air—it also uses heat from the outgoing stale air to warm fresh air coming in and maintains a comfortable level of humidity as well. The home also includes low-VOC (volatile organic compounds) paints that emit fewer chemicals—he estimates they probably cost a couple thousand dollars more—and other chemical-free building materials. The 5,500-square-foot, six-bedroom, five-bathroom home is listed for \$5.95 million.

Fed by such concerns as the occurrence of indoor mold and the growing prevalence of asthma, demand for such systems has grown. Barry Stephens, business development and technology director for Zehnder, a Switzerland-based company that sells energy-efficient ventilation systems, says sales have nearly doubled every year for the past several years.

"There's a real big conversation in the building industry and building-science community about these things," he says. "Things are changing rapidly." Prices range from about \$4,500 for a typical apartment-size system and ductwork to about \$10,000 for a very large home. A similar system for a large condominium or apartment building can cost more than \$1 million, though Mr. Stephens says once such a system is installed, bathroom vents are no longer needed and a smaller HVAC system can be used, offsetting much of the cost.

In large Asian cities like Beijing, where outdoor air pollution is a major health concern, wealthy expat buyers and renters commonly purchase their own filters, spending a couple thousand dollars to do so. According to James Macdonald, head of research for [Savills](#) SVS.LN 0.00%China, more new high-end developments are installing building-wide air-purification systems.

Developers and home builders say the growing prominence of green building is also bolstering demand, as energy-efficient buildings are built so tightly they sometimes offer very little natural ventilation when windows are closed. Though draft-free homes use less energy to heat and cool, they can lack the natural coming and going of air and in certain conditions (like use of exhaust fans) can result in a depressurization if a proper ventilation system hasn't been installed. Mr. Stephens says this can sometimes result in compromised indoor-air quality.

In the U.S., a number of the new developments are in densely populated Manhattan. Though the New York metro area's air quality has improved in the past 10 to 20 years, according to the American Lung Association, it still gets an "F" grade when it comes to high-ozone days and particle pollution.

Giselle Martin-Kniep, an education consultant who lives in New York, purchased a 1,750-square-foot, three-bedroom condominium at the Visionaire in Battery Park City in 2009. It was one of the city's first residential buildings to circulate fresh, filtered air to each apartment. That, along with the building's environmentally sustainable design, were key selling points for Ms. Martin-Kniep, who declined to say how much she spent on the condo. (Listings in the building today range from \$825,000 for a 600-square-foot studio to \$4.25 million for a corner three-bedroom unit on a high floor.)

Ms. Martin-Kniep says she feels better and notices that she really only feels she needs to open the windows on the nicest days when conditions are perfect outside. She says she has also noticed that friends with cat allergies no longer react to her cat when they come over. "I actually think we take for granted that air quality is good until we somehow don't have it," she says.

In suburban areas, a handful of high-end developers of single-family homes are promoting their project's indoor-air quality. In Westport, Conn., a 5,800-square-foot Colonial-style house that will soon list for \$2.8 million was built using "passive house" building methods that minimize energy usage with a mathematically precise, airtight building technique, and the strategic placement of high-performance windows to take advantage of daylight and shade. Inside, the air will be filtered through a two air-exchangers, says Douglas McDonald, the founder of the Pure House, the company that built the home. Pollen-free fresh air will circulate into living and sleeping spaces; other air will be removed from kitchens and bathrooms, where odors tend to accumulate the most.

"The air quality is amazing," says Mr. McDonald. Paint, flooring and cabinetry will be made from chemical-free materials to eliminate what Mr. McDonald describes as harmful off-gassing. He estimates that the speculatively built home, slated to be completed in September, is priced about 10% higher than a traditionally built house.

Troon Pacific, the San Francisco-based developer, has an eco-minded home on the market for \$13 million that is built with a focus on air quality, among other things. In the garage, an exhaust fan minimizes the home's exposure to carbon monoxide, says Gregory Malin, the company's chief executive officer. To mitigate potential toxins in the ground underneath the home, an impermeable membrane is installed with PVC piping to bring air from underneath the home out from above the roof. There are even vented shoe cabinets near the entrance, which Mr. Malin says helps prevent further contaminants from entering the house.

Selling something as immaterial as air can be can be tricky. "It's not really a sexy topic," says Stephen Glascock, president of Anbau, the Manhattan-based developer that is

building 155 East 79th Street. Prices in the seven-unit building range from \$9 million for a three-bedroom duplex to \$17 million for a penthouse. Mr. Glascock says he has spent about \$2.3 million on the building's filtered fresh-air HVAC system, compared with about \$1.55 million for an average condo building without fresh-air ventilation.

Brett Singer, a scientist in the Indoor Environment Group of Lawrence Berkeley National Laboratory, says his research has found that indoor-air pollutants often exceed the standards set by the Environmental Protection Agency for acceptable outdoor-air quality, and that indoor air is often worse in densely populated multifamily buildings in low-income urban areas. While air-purification systems and the like can be helpful, he says, fairly basic, energy-efficient ones are typically sufficient. "Most people don't need to live in a particle-free environment." Mr. Singer says that research also shows many people forget to change the filters regularly enough for some systems to be very effective.

Installing such systems can require considering a building's design from the earliest stages. Rick Cook, a New York architect who specializes in "biophilic" design, which is focused on designing buildings with a strong connection to nature, says for his latest residential project, 301 East 50th Street, he oriented the building to take advantage of natural air quality and daylight. "Most design has been kind of obsessed with the two-dimensional pictures and glossy magazines," he says. "But we experience our indoor environment and spaces with all our senses." The 29-story limestone building has a fresh-air filtration system that removes 95% of the particulate matter and costs about \$500,000, according to the building's developer, Scott Shnay. Units are priced between \$1.7 million and \$10.5 million.

In some buildings and homes, air quality is just a small part of the wellness pitch. Paul Scialla, founder and CEO of Delos, a wellness-focused building company, says his firm's latest residential project in New York has more than 50 different wellness-centered features, including vitamin C-infused shower heads and ultraviolet lights that "aid in sterilizing harmful airborne microbes and irritants." Prices range from \$15 million to \$50 million.

Jan Flanzer, a former psychotherapist in the New York area, says mold and air-quality issues forced her out of her 1920s-era Tudor home several years ago. About three years ago she founded a company called Healthy Home Builders that focuses on building nontoxic, eco-minded homes with better air quality.

She and her contractor, Pete Donovan, with whom she co-founded the business, recently listed a six-bedroom Colonial-style home in Scarsdale, N.Y., for \$3.45 million that uses recycled denim as insulation, which they say contains fewer toxic chemicals. Formaldehyde- and chemical-free materials were used throughout the home, as were

reclaimed oak floors with a UV-cured finish they had tested for indoor air quality by an environmental consulting company. An energy-recovery ventilator brings in fresh air from the outside, filtering it with carbon on the way in.

Mr. Donovan says the 6,950-square-foot home's air supply can be changed over in less than an hour. He says the home, which was also built with energy efficiency and water conservation in mind, probably cost about 10% more to build than a regular house.

"Although we would like to emphasize and lead off with the clean-air stuff," he says, "you gotta still lead with the fact that it's got a beautiful gourmet kitchen."

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