

Preserving the Masterpiece in the Sistine Chapel

VATICAN CITY, ROME, ITALY

Known for their beauty and delicacy, Michelangelo's stunning frescoes line the walls and ceiling of the famed Sistine Chapel in Vatican City. The priceless works of art draw in millions of visitors each year, which exposes the art to a wide array of airborne pollution. Engineers from the Vatican worked with Carrier to develop a custom environmental control system to preserve Michelangelo's masterpieces for generations to come. They partnered with Purafil and our local representative, E.T.T., to provide insights and a gas phase solution that traditional filters simply don't address.

Painted in 1512, Michelangelo's works have been exposed to airborne pollutants and gaseous contaminants for centuries. To restore the frescoes and prevent further degradation, the masterpieces underwent extensive restoration efforts. Engineers at the Vatican also established the need for a discrete air filtration system that would eliminate the gaseous contaminants from the air inside the Sistine Chapel. The solution needed to fit into the new air handling system and be easy to service.

Together, E.T.T., Carrier and the Vatican engineers designed a system that was hidden from view, directing air through discrete channels in the chapel. The contaminated air now passes through the HVAC system and Purafil PuraGrids®, resulting in purified air that is recirculated throughout the chapel.

A very low velocity flow of purified air is directed over the surface of the frescoes while a slightly higher velocity flow showers visitors. This new system works successfully behind the scenes, silently helping to preserve Michelangelo's artwork so it can continue to inspire millions who visit the Sistine Chapel each year.

"Together, we developed an environmental control system that now works behind the scenes, protecting Michelangelo's delicate work for future generations." – Representative



Motorstudio Makes Air Quality a Work of Art

BEIJING, CHINA

Designed to encourage creativity and collaboration, the Hyundai Motorstudio Art Center is a two-story art exhibition in the heart of downtown Beijing. Its goal is to merge environmental sustainability education with contemporary art and advanced technology. Being in Beijing, however, posed the issue of heavy air pollution, nuisance odors and potential health hazards.

Hyundai's Motorstudio Art Center was receiving complaints of a formaldehyde smell throughout the entire building, which was negatively affecting the overall guest experience. The source of the smell and the poor indoor air quality was from ambient and indoor air quality (IAQ) pollution.

Hyundai wanted to create a clean and comfortable environment for visitors but were struggling to do so because of the high levels of pollution. After receiving multiple complaints from guests, they decided to install an air filtration system that attached to the fresh air inlet of the building. This would allow for quick removal of a variety of pollutants, including PM_{10} , $PM_{2.5}$ particulates, and gaseous contaminants (VOCs, formaldehyde and toluene). Because the recently installed furnishings emit unpleasant gases as well, the center wanted a filtration system to recirculate the air for a better visitor experience.

The center chose to install Purafil's canister filters filled with Purakol and IAQ media with pre- and final filters for particulate removal. The studio housed the canisters in a glass display for a stunning and functional display that fit right in with the center. The Hyundai Motorstudio Art Center noticed a significant drop in the formaldehyde smell, lower levels of VOCs and a more pleasant guest experience. Since the installation, there have been no more odor complaints. They continue to monitor quality with their air monitoring system, which shows how effective Purafil's system has been at keeping smells at bay and exceeding IAQ standards.



The Legacy Lives On: Protecting Books from Deterioration

BEIJING, CHINA

Preserving history is no easy feat. It requires careful planning and the proper systems to make sure artifacts or decades old books don't decay over time. When building the beautifully designed Peking University Library in Beijing, the project owner took special care to research ancient book storage, so these precious books would last for generations to come. Purafil worked with the library to install a custom filtration system that would preserve these books.

The high levels of outside air pollution in Beijing made the books especially susceptible to corrosion. To combat this, Purafil installed an air filtration system, connected to the fresh air inlet of the building. Another concern was the mold, bacteria and volatile organic compounds (VOCs) that ancient books emit. The owner wanted to protect the collection, employees and visitors by removing these as well other harmful contaminants. We installed 11 units of passive PSAs, with each holding a prefilter, PuraGRID-IAQ, PuraGRID-PCB and a final filter with Puraward anti-bacterial media. Because space was limited, Purafil customized the unit with a vertical in, vertical out design.

The air is now safe and comfortable, so patrons and staff alike can enjoy and preserve the collection. Purafil will continue to provide coupons for monitoring, so students can enjoy the ancient books the Peking University Library is trying to preserve. The owner is happy with the installation, and with the coupons, will know when to replace the media to maintain a preservation environment safe from corrosion.



Preserving Rare Art: Warding Off Odors & Corrosion

XI'AN, SHAANXI, CHINA

One of the largest museums in China, the Shaanxi History Museum, houses nearly every form of art as well as historical artifacts. When not on display, they place items in their rare arts storage rooms. These rooms had been facing strong odors and airborne molecular contamination (AMC) in addition to poor ventilation, temperature and humidity control—all of which can accelerate the deterioration of the art. Staff was also complaining about the strong smells and irritating gases coming from a lab near the storage rooms.

We worked with the museum to remove these odors and filter the air properly to protect the art and prevent degradation. To maintain the integrity of the artifacts and showpieces, Purafil needed to remove AMC and meet Reactivity Monitoring Standards for the Protection of Cultural Heritage. To achieve this, Purafil set up an 18-day AMC treatment plan, which reduced contamination levels from C5 and S5 to C2 and S2 levels respectively. C5 and S5 levels indicate very polluted air, while C2 and S2 levels indicate pure air.

Staff can no longer smell odors and the museum is satisfied with the AMC removal. By partnering with Purafil, the Shaanxi History Museum has preserved priceless pieces of history for all to enjoy.

