

# CASE STUDY 4

## THE WESTIN PEACHTREE PLAZA HOTEL

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4 THE WESTIN  
PEACHTREE PLAZA HOTEL



### ABOUT THE PEACHTREE PLAZA HOTEL

Standing 73 stories above Peachtree Street, the Westin Peachtree Plaza Hotel is a striking and dramatic member of Atlanta's progressive skyline. It boasts 1,704 guest rooms and suites, nine restaurants, and two ballrooms.

The hotel is an Atlanta landmark and one of America's tallest hotels. Visitors can view the entire city from the hotel's revolving Sun Dial Restaurant, located on the 72nd floor.

### THE PROBLEM

Providing a comfortable indoor environment for hotel guests is a top priority at the Westin Peachtree Plaza Hotel. This includes maintaining a comfortable room temperature and ensuring that the indoor air is free of odorous gases. The hotel achieved these objectives by exhausting air from the kitchens, bathrooms, guest rooms and laundry rooms to the outdoors. The increasing demands on the hotel's HVAC system to heat and cool the intake ventilation air resulted in tremendous energy costs.

### PURAFIL PROVIDES THE SOLUTION

Purafil gas-phase air filtration systems, housing Purafil Chemisorbant Media, were installed on each of the hotel's two tower ventilation units. Purafil Chemisorbant Media removes gaseous contaminants via an irreversible chemical reaction process known as oxidation. The adsorbed gases are converted to non-toxic solids which remain on the media pellet. Unlike activated carbon media, Purafil Chemisorbant will not desorb. In addition, Purafil Chemisorbant Media does not support bacterial growth and is UL Class 1 rated for non-flammability.

Purafil Chemisorbant media removes a wide range of odorous gases, including those associated with cleaning compounds, detergents, disinfectants, food, and bathrooms.

The exhaust capacity of the Plaza's total system is approximately 80,000 CFM. Approximately 96,000 CFM of supply air is required. Additional supply air is provided to the system through minimum outside dampers.

Industry standards set by the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) allow for recirculation air to be substituted for outside air, so long as it is cleaned of gaseous pollutants using a gas-phase air filtration system.

The conditioned air from each of the guest rooms is no longer exhausted through the roof, but routed through Purafil's systems to remove common odors and gaseous pollutants – tobacco smoke, cleaning aerosols, and bioeffluents from guests. The recirculated air is cooler and drier than the outside air in the cooling season and warmer and more humid in the heating season.

The purified air passes through the hotel's air handling equipment to the supply ducts. By using Purafil, the Plaza saves more than 14 billion BTUs of energy each year, cutting the energy load on the original system by ten percent.

Plaza management says that modifying their old system to a closed-loop air filtration system was simple, and the effects on energy bills grow more noticeable each month. Management reports total savings of \$25,000 annually with Purafil's gas-phase air filtration media.

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# CASE STUDY 4 THE DUTCH STATE ARCHIVES



## PURAFIL PROTECTS PRICELESS PIECES OF HISTORY 4 THE DUTCH STATE ARCHIVES



### ABOUT THE DUTCH STATE ARCHIVES

For the past 13 years, the Dutch State Archives and Purafil, Inc. have aggressively researched the real effects of air purification on the degradation of paper. As the chief source of historical research for the Netherlands, it is the responsibility of the Dutch State Archives to manage and preserve all state records, including charters (sealed certificates on parchment) and maps. To date, the Dutch State Archives manages a total of 88,000 charters and 525,000 maps with more than 1,500 new maps added annually.

### THE ABCAM AND STEP PROJECTS

The results of two major research projects forced the Dutch State Archives to improve the air quality in museum repositories. The first project, entitled "Degradation of Cellulose containing materials in Libraries, Archives and Museums" (ACBAM), was launched in 1985. As a result of the ACBAM project, researchers concluded that air purification was a necessity in storage rooms housing paper and other cellulose-based materials. The second of the two projects, entitled "Science and Technology for Environmental Projection" (STEP), was initiated in 1992. The STEP project was funded by the European Commission, with Sweden, France and the Netherlands as supporters.

As part of the STEP project, the Dutch State Archives selected the General State Archives in Hague as the site for a real life study of paper degradation and the first pilot study of gas-phase air filtration. Two repositories within the General State Archives were selected for the study; both would store a wide selection of paper grades (softwood, groundwood, cottoncellulose, acid, deacidified, old and new), but only one would be filtered of airborne contaminants. Scientists from Purafil, Inc. were asked to provide the necessary dry-chemical media and air filtration system for removal of corrosive gases, including: sulfur dioxide (SO<sub>2</sub>), nitrogen dioxide (NO<sub>2</sub>) and ozone (O<sub>3</sub>). The result was a gas-phase air filtration system which contained two beds of Purakol and Purafil Chemisorbant media.

The air-aggressivity of both environments is monitored using Purafil's OnGuard Atmospheric Corrosion Monitors. The OnGuard calculates real-time corrosion in Angstroms. The classification used for the safe storage of archival materials is 2 Angstroms per day with a limitation of 40 Angstroms in 30 days.

### PROJECT RESULTS

After three years of continuous monitoring, the first measurable differences in paper samples appeared. Papers stored in the repository without Purafil's gas-phase air filtration system showed significant discoloration or yellowing. "On the one hand we are glad with Purafil's results," states Theodore Steemers, Preservation Policy Officer for the Dutch State Archives. "On the other hand it is rather frightening that visual signs of degradation show up in a period of three years."

Direct gas monitoring of both repositories also revealed higher levels of airborne contaminants in the non-filtered repository. Recorded figures of airborne contamination levels are shown in Table 1 at left.

### CORRECTIVE ACTION

The results of these studies were presented by Theodore Steemers, Preservation Policy Officer for the Dutch State Archives, to the 80 attendees of the 1998 Nordic Conference at the Royal Library in Stockholm. Museums, libraries and archives in various countries around the world were represented, including: Norway, Finland, Italy, Sweden, Denmark, Portugal, Belgium, the United Kingdom, Iceland, Estonia, Germany, France, Lithuania, Mongolia and Trinidad.

As a result of the ACBAM and STEP projects, the Dutch State Archives is conducting a damage survey. Of the papers dating from 1800 - 1990, more than 7.8% were found to be endangered (brittle or weak) and subject to conservation treatment. At present, papers are being randomly sampled and classified according to their level of degradation. By prioritizing the damage, the Dutch State Archives will be able to cost-efficiently preserve those documents in greatest need.

TABLE 1

NON-FILTERED REPOSITORY	FILTERED REPOSITORY
30ppb with peaks of 250 ppb	0-5 ppb