

AIRBORNE KITCHEN GREASE A NEW FRONTIER IN SUSTAINABILITY

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A simple solution saves tremendous water use, labor and dollars.

Capturing airborne kitchen grease is one way for an airport to increase sustainability while improving the bottom line for itself and its concessionaires.

In addition to being a fire hazard, airborne grease is an environmental concern and costly to clean. Local and national regulations require commercial foodservice operations to install a kitchen exhaust system to evacuate heat, grease effluent, moisture and smoke from the cooking area. Typically consisting

of a hood, baffle filters, ducts and exhaust fan, the kitchen exhaust system must be monitored and maintained in accordance with National Fire Protection Association (NFPA) codes. NFPA 96 Section 11.4, page 23, states that any commercial kitchen exhaust system requires that the entire system shall be inspected for grease build-up by a properly trained, qualified and certified person, acceptable to the authority having jurisdiction.

At Hartsfield-Jackson Atlanta International (HJIA), standard practice for the airport's approximately 82 concessionaires includes a water- and labor-intensive nightly cleaning of the baffle filter. The cleaning is costly to the food service operator, as well as to the

environment, as the cleaning agent-laden water is dispensed into the sewer. Chapter 11 of NFPA 96 dictates that all kitchen exhaust systems shall be inspected and tested with a frequency requirement established by Table 11.4 of the code. This maintenance averages \$850 and uses 1,500 gallons of water. The 1,500 gallons of water consumed is a conservative estimate that includes daily baffle cleanings, as well as monthly cleanings.

Recognizing the problem, the airport is promoting use of the Grease Lock Filter (GLF) System produced by Ellis Fibre as an economic, sustainable and convenient solution to addressing airborne grease.

Simple and effective, the GLF system offers an easy-to-install solution for airborne kitchen grease management.





Airborne kitchen grease deposited in kitchen exhaust system



Sheep ready to donate their wool for the filters

Made primarily of sheep’s wool, the patented, disposable filters are placed in front of the baffle filters and capture 95 percent-99 percent of the airborne grease BEFORE it enters the kitchen exhaust system. The National Institute of Fire & Safety Training has produced an informative six-minute video, Introduction to the Grease Lock Filter System, which gives a solid system overview.

With minimal grease entering the kitchen exhaust system, nightly baffle filter cleaning is reduced on average to twice per month; monthly full-system cleaning may be reduced to an annual cleaning. Code-required inspections, costing about \$75 versus \$850 for a full-system cleaning, assess if a cleaning is necessary. Note: A need to “inspect the inspectors” was an outcome of the GLF assessment, as there is often

a financial incentive to determine an exhaust system requires full-service cleaning.

In addition to the labor and cleaning cost savings, the GLF system extends roof life by eliminating kitchen grease deposits from the exhaust system ducts. Atlanta airport facilities management anticipates roof life could be extended by several years, along with substantial savings from avoiding expensive roof repairs required by grease deposit damage. Adding to the cost-savings, reducing the amount of grease ingested by adjacent air-handling units increases energy efficiency.

Fire safety is first and foremost in the GLF’s business case development. GLFs are made from a patented, proprietary blend of natural fibers; the filter is naturally oil absorbent and flame resistant. The foodservice operator’s fire safety is enhanced by reducing grease in

	<p>Hartsfield-Jackson Atlanta International Airport Campus-Wide Annual Associated Cost with Restaurant Airborne Grease</p> <p><i>(includes: metal filter cleanings, water use, 3rd party KEC cleanings, and chemical)</i></p>
<p>Without Grease Lock Filters</p>	<p>\$1,044,602.20</p>
<p>With Grease Lock Filters</p>	<p>\$ 439,446.51</p>
<p>VARIANCE</p>	<p>\$ 605,155.68</p>

the kitchen exhaust system. The GLF system is tested, compliant and/or recognized by the following:

- **Standard UL 1046/ULC-S649 and UL 710** — flame exposure and abnormal flare-up test
- **NFPA 96/IFC** — ventilation control and fire protection of commercial cooking operations
- **NSF 2/ANSI 51** — food equipment and materials-formulation review (sanitation/toxicology)
- **TYCO** — world leader in fire suppression systems
- **IMC/UMC** — protects public health and safety for all building ventilation design

Although GLF is compliant with the aforementioned codes, it is imperative that airports contact their local fire chief and health department prior to installation. With safety being the primary concern, their pre-approval coupled with an implementation plan are key to a successful airborne grease recovery program.

With fire safety addressed, the next GLF business case component is to quantify the airport and the concessionaire cost-savings. HJAIA concessionaire Pei Wei, operated by HMSHost, participated in a three-restaurant, eight-week GLF system pilot orchestrated by an independent engineer. The *Water, Chemical,*

and Cost Savings in Commercial Kitchens by Using Grease Lock Filters: A Report on Restaurant Pilots substantiates the water, cost, labor, and chemical savings experienced by the foodservice operator. The report is available for download on the Elemental Impact Airborne Kitchen Grease page.

“We have had great success using the GLF system. It produces energy and cost-savings and is good for the environment and for us,” said Tim Slaney, senior director of operations for HMSHost at HJAIA. “We are constantly seeking ways to create efficiencies and minimize environmental impact. The GLF system achieves a cleaner system and improves air quality. We use it at several of our restaurants at ATL.”

Further review at HJAIA indicates concessionaires would save an estimated \$7,340 per year by installing the GLF system. Based on 82 concessionaires each with an average of nine metal baffle filters, a campus-wide GLF system installation would reduce Atlanta airport water usage by an estimated 1.1 million gallons per year. In addition, approximately 42,000 pounds of airborne grease would not deposit on the roof or release into the atmosphere.

As the Sustainable Food Court Initiative Airport Pilot, HJAIA works closely with national non-profit Elemental Impact’s GREASE (Grease Recycling and Energy Alternative Solutions for the Environment) Team on a campus-wide GLF installation plan. A metrics collection platform is in the development phase to capture the water, labor, cleaning agent, and cost-savings by individual concessionaire and in the aggregate for the airport. Later, the platform may be utilized to track the savings on a city-wide basis.

While developing the GLF business case, the HJAIA

ROOF THREE MONTHS WITHOUT GREASE LOCK™



ROOF THREE MONTHS WITH GREASE LOCK™



sustainability team worked closely with the facilities and maintenance, engineering and concessionaire operations departments. Synergies are abundant as the capture of airborne kitchen grease before entering the exhaust system would create cost savings across departments.

HJAIA is the first airport to take a leadership role in advocating an airborne kitchen grease recovery plan proactively. Once complete, HJAIA intends to share the GLF experience in a template format easy for airports to implement globally.

In addition to serving as an industry role model, HJAIA's GLF installation is the foundation for a metro-wide water-usage

reduction campaign. As noted in the independent engineer's report, the GLF system makes solid business and environmental sense for single-unit or campus-wide installations.

Dan Hennessy, Applebee's district manager for Southern California, affirmed the sound business case for using the GLF system. "After the simple installation of the GLF, our chain quickly began to see savings in labor, water, and exhaust system cleanings," he stated. "On average, each of the stores uses about 1.5 cases of GLF per month and saves about \$2,000 per year from the ease of use of the Grease Lock Filters."

Airborne kitchen grease is a sustainability frontier with the promise of new standard industry

operating practices in which everyone wins: the airport, the concessionaire, the community and, importantly, the environment. Hartsfield-Jackson Atlanta International invites our colleagues to get the grease out of their ducts and enjoy the many benefits of putting grease in its place! 

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