

Where there's muck, there's brass ...



Freshfields Bruckhaus Deringer LLP is a multinational law firm that takes its environmental commitments seriously. Headquartered in London, Freshfields has 28 offices located across Asia, Europe, the Middle East and North America and employs over 2,500 legal advisors that work with governments, multinational corporations and financial institutions. One of the company's goals is to improve its environmental performance in a cost effective way. Each office has clearly defined responsibilities aimed at lowering its carbon footprint and adapting working practices to minimize waste and resources by investing in energy efficient technology.

Richard Betts/RAB Specialist Engineers, with over 30 years' experience in the air-handling industry, recommended they test washable polypropylene air intake filter screens at the New Bridge Street headquarters in Blackfriars, London. The aim was to reduce energy consumption and ensure the building's HVAC equipment worked effectively. To prevent airborne debris from clogging filters and potentially damaging cooling coils, Stacey Collins, health, safety and environment manager for Freshfields, required a solution that would ensure the fresh air supply, which is drawn in through external weather louvers, was maintained at optimum levels and prevented the HVAC equipment from having to draw more energy than was necessary due to restricted airflow levels.



Disposable white polyester filter media tested on the left, PreVent® washable electrostatic Model R filters on the right.

John Nicoll, contract manager with Norland Managed Services commented: "We were also interested in trialling these particular air intake filter screens because the existing filters were becoming clogged with debris very quickly and required changing every 14 days. The initial trials have performed very well and are helping us to maintain efficiency and reduce maintenance times, in addition to protecting the cooling coil from airborne debris."

The original filter media had failed to prevent debris from passing through to the coil. As the existing media became contaminated (muck) the system was requiring more energy to draw the air supply into the coil (brass) resulting in a site engineering team having to change the media every two weeks. As the saying goes, 'Where there's muck, there's brass,' only in this situation the muck wasn't generating money, it was wasting it due to the cost of frequent maintenance schedules and energy inefficiency.

To prove the effectiveness of the polypropylene air intake filters a comparison test was conducted. Half of the cooling coil was protected using the original polyester filtration media, while the other half used the new PreVent® screens manufactured by Permatron in the US. An airflow test, carried out by Stacey Collins, recorded the existing filter media at 0.5m/s; PreVent Model R2 air intake screen at 0.7m/s. This difference of 29% meant that the fan speed could be significantly reduced to achieve the same air volumes through the coil, and with a speed reduction of only 20%, a 50% reduction in energy demand can be achieved. After two weeks the original media was clogged and required replacement. Although this was a low cost product, the additional labor and waste disposal costs meant that this was proving to be an expensive operation to maintain. The new filter screens were also very dirty, but the innovative magnetic fixings allowed them to be easily removed, cleaned and reused. Furthermore, the screens provided improved particle retention and increased efficiency.

Return on investment

The Freshfields trials have further proved the cost effectiveness of lowering energy demand, reducing expensive maintenance costs and optimizing HVAC equipment. For more information on air intake filtration call 1-800-882-8012.

	Polyester Pad		PreVent Model R2	
	Year 1	Year 2	Year 1	Year 2
Material cost	\$3,841	\$3,841	\$5,761	\$0
Labor cost	\$800	\$800	\$800	\$800
Energy cost*	\$1,936	\$1,936	\$968	\$968
Total costs**	\$6,577	\$6,577	\$7,529	\$1,768
Annual savings			(\$952)	\$4,809
5-YR Cumulative savings				\$18,284

* Energy cost estimates based on 2,000 hours at 5.5kW.

Savings based in increased airflow and reduced speed.

** Annual cost of filter change (estimated) based upon only 12 changes annually.

