



Building Environment Solutions – Commercial Building Case Study

Background

In an effort to improve the indoor air quality (IAQ) in its prestigious headquarters building, a large petroleum manufacturer installed a high-level filtration system. Whilst the company felt that the air quality was improving they had no benchmarking data to share with employees who remained sceptical about these 'improvements'.

Nalco representatives studied the building and the needs of the customer. They presented a Building Environment Solutions (BES) package which offered a complete filter management program including:

- 3M Filtrete™ F6 indoor air quality filters
- COIL FLO®
- Labour
- IAQ Testing and documentation

In adopting the Nalco BES program the customer hoped to be able to demonstrate substantive IAQ improvement to its employees whilst making energy savings from reduced static filter pressures.

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Results

Indoor Air Quality – total particulate counts reduced by 94% to an average of 300 0.3 micron particles after filtration.

Improved IAQ has an indeterminable value. However a reduction in sick time due to the reduction in bioaerosols (airborne bacteria etc) and allergens (e.g. pollen and dust) should be seen.

The building itself remained cleaner with less dust accumulation. This result was confirmed by air and surface testing within the offices.

Filtration Costs Reduction – the cost of the 3M filters was incorporated into the BES service contract saving £6,690 per year from the previous filtration costs due to longer filter life cycles.

Indoor Air Quality Monitoring – IAQ testing forms part of the BES package and its incorporation into the service contract resulted in savings of £2,069 per year from previous costs.

Labour Costs – The BES program resulted in the elimination of the labour costs associated with both heat exchanger coil cleaning and filter changing. Filter changing alone used to take 200 hours per year. These labour service costs were incorporated into the BES contract and resulted in savings of £2,345 per year.



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Filter Disposal Costs – filter disposal was incorporated into the BES contract saving £1,483 per year due to the reduced number of filters to be disposed of each year.

Energy Savings – energy was saved from the reduction in the static pressure differential across the filters when using 3M Filtrete™ filters. This gave a decreased load on the AHU fan motors resulting in savings of £28,690 per year.

Technical Issue	Customer Benefit	Cost Saving
3M Filtrete filters are guaranteed for 12 months.	Fewer IAQ filters are needed to be bought each year	£6,690
	Less labour is required because fewer filter changes are needed	£2,345
	Fewer filters to dispose of each year	£1,483
3M Filtrete filters have a lower static pressure drop than ordinary filters	Energy saving from reduced AHU motors workload	£28,690
Reduced airborne particulates	Reduced employee sickness rate	??
IAQ testing is incorporated into the BES contract	Reduced cost of IAQ testing	£2,069
Heat transfer improved in AHU cooling coils	Energy saving from reduced cooling load	£6,552

Heat Transfer Costs – heat transfer across the AHU cooling coils was improved by 1.1C resulting in energy savings of approximately £6,552 per year.

Conclusions

The Building Environment Solutions program of 3M Filtrete™ filters combined with the COIL FLO® coil cleaning technology made savings for the customer of £47,829 per year whilst helping to improve indoor air quality and employee satisfaction.

These numbers were based solely on information provided by the customer. Energy savings were based on £/kWhr.

Building Environment Solutions is a program of indoor air quality and energy improvement services offered by Nalco.

For further details of Building Environment Services contact your local Nalco representative.

