

## QUICK WINS FOR ENERGY SAVINGS IN BUILDINGS

Choosing low energy air filters for both optimised energy performance and indoor air quality

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### Executive Summary

HVAC systems heat cool and clean the air distribution within some 200,000 buildings in the UK. That's approximately 7,300 organisations consuming 35% of the UK's energy consumption. The Federation of European Heating, Ventilating and Air-Conditioning Associations have estimated that within the EU there is a potential annual saving of 5TWh available by switching to Low Energy Air Filters. This would equate to **£500 MILLION ENERGY SAVING IN THE UK.**

In the average commercial building, 50% of the energy bill is for the HVAC system. 30% of that is directly related to the air filter yet the filtration part of this is substantially and invariably overlooked. Procuring the right filter can be a huge benefit to an organisation's energy saving strategy. A badly selected filter can cost over £500 per year. Low Energy Air Filters typically save 30% in energy consumption.

Camfil know that saving energy is one of the most challenging tasks facing the built environment today. Our low energy air filter products provide the highest indoor air quality, with the lowest pressure drop, which deliver the biggest energy savings to customers, without compromising air quality.

Property, Estates, FMs, Building and Energy Managers are realising the substantial financial and energy saving opportunities that exist by replacing existing air filters with our award winning filters. In 2013 we delivered 'identified energy savings' of over £1 million to UK sites by installing low energy air filters in HVAC systems and our low energy air filters were installed in the world's most environmentally friendly building.

## Business Challenge

Many multi-site organisations and Estates Departments at larger organisations are committed to developing and implementing energy plans, involving strategy and policy on energy & sustainability. One of the main aims of these plans is to strive to balance the key principles, those of sustainability, financial viability, environmental enhancement and social responsibility.

Large land owners, building management and insurance companies are waking up to the huge value of the potential savings that can be achieved from effective air filtration systems. With soaring energy prices and new energy directives and mandates, it truly pays to save energy in air filtration systems. Camfil offer low energy air filter products which provide the highest indoor air quality, with the lowest pressure drop, delivering the biggest energy savings to customers, without compromising air quality.

The effective management, maintenance and procurement of air filtration systems can allow managers to quickly see a reduction in energy bills. Paybacks within revenue budgets are typically less than 3 months.

## The Solution

Air filters are hidden in various plant rooms within the air handling unit, they significantly contribute to the resistance of the fan motor. Air filters are designed to be changed unlike other components within the ventilation system, and consequently do not put any pressure on capital budgets when upgrading to a low energy filter.

Would you spend a pound to save £5 or £10? Camfil can demonstrate how better air filters will lower Total Cost of Ownership (TCO). Low cost filters clog quickly, causing a higher resistance to the airflow which results in an energy cost penalty. Camfil air filters capture particles and maintain the proper airflow two to three times longer than low cost filters, and require less frequent filter changes. Fewer filters, less labour, reduced waste...AND the biggest savings is energy costs. How? By selecting filters designed for lower average lifetime resistance, the HVAC unit doesn't work as hard to pull air through the system.

***'Camfil's Low Energy Air Filters delivered identified energy savings of over £1 million to the UK built environment in 2013'***

## (LCC) Life Cycle Cost Analysis

In the average commercial building, 50% of the energy bill is for the HVAC system and 30% of that is directly related to the air filtration, so it always pays for you to choose the best low energy air filter combination for the right filtration application. We'll show you how and we'll prove it in the lab, on your site, or in Life-Cycle Cost (LCC) analysis calculations.

We identify actual savings, by evaluating current HVAC systems using our Life Cycle Cost (LCC) software that leverages over 20 years of experience and data analysis. We can demonstrate through a number of [high profile installations](#), how air filters directly influence energy consumption within air handling units that heat, cool and clean the air in the building. We prove it to clients with a free LCC analysis report. Our trained evaluators enter the current filter brand, type, operating parameters and filter costs to generate a customised analysis. We then quantify the energy savings and total cost of ownership advantages from switching to installing low energy filters. Camfil filters are an important part of an energy plan, total cost saving strategy and commitment to sustainability. In

terms of installation, these low energy air filters in 90% of cases can be retro fitted in the existing framework which means that payback is usually 1-3 months. In other cases, new framework may need to be installed with the low energy air filters and the payback is extended but always within a 12 month revenue period. In our experience, these upgrades are resourced within the revenue budget with no need for capital expenditure.

Placement of low energy air filters in air conditioning systems enhance the system efficiency by maintaining the heat transfer efficiency of the heating and cooling coils over an extended period. Low Energy Air filters, such as the HiFloM7F7 Bag filter are designed to optimise all the available surface area, thereby creating a lower pressure drop across the filter. This has a direct impact on the fan motor in terms of energy consumption. Over the life of the filter the pressure drop increases due to the loading of particulate on the filter and consumes more energy. Because the average pressure drop of the low energy air filter described above is much lower than any other product on the market, it consumes much less energy. Estimate of possible savings can be as high as £300 per filter 10p per KW/hour to optimise each F7 grade filter.

We work with Sustainability Directors, Energy Consultants, FM Service Providers, CIBSE Building Services Engineers, Building Occupants, Health & Safety Departments and Plant Maintenance Teams to deliver our programmes to their Estate. We have their corporate sustainability objectives in mind from the outset. Working with Consultants and Building Services Engineers, our Life Cycle Cost Analysis shows that air handling optimisation in air conditioned buildings is very often the most cost effective way to achieve no/low cost energy efficiency. The energy savings and benefits are achieved and sustained for our clients in the UK and identified and verified by our Life Cycle Cost Software.

Our filters were installed in the 'world's most environmentally friendly building' in Manchester. The filters were selected using our LCC software to ensure minimum running costs with consistent high lifetime particle removal efficiency. This selection process was done in conjunction with the Design Engineers on this project.

The Life Cycle Cost for a filter is the cost of the:

Filters

Labour (installing and replacing)

Energy consumption

Cleaning of ventilation system

Disposal of used filters

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= LCC

### The cost saving example

In a typical building, for example a hotel, containing 20 air handling units (AHU's) installed with 10 filters in each (200 pre and secondary air filters) energy savings can typically amount to £14,000 per year, every year, simply by upgrading to low energy air filters.

Other savings include

- 50% labour time (you only change half as many filters)
- 50% waste costs (you only dispose of half as many filters)
- Nearly 1 tonne of CO2 for each upgrade.

[Case studies](#) can be found for the following sectors:

- Commercial Buildings
- Food & Beverage
- Gas Turbines
- Hospitals and Healthcare Estates
- Industrial & Manufacturing
- Molecular Filtration
- Museums
- Pharmaceutical Estates
- School & University Estates



### **No compromising on air quality**

The function of an air filter in air conditioning applications is to clean the air that we breathe to a prescribed level. (F7: minimum class filters to EN779:2012) In order to achieve this, the air filter must perform at this level throughout its installed lifetime. Only filters that are manufactured using fine fibres can reliably perform at this level as the interstitial holes between the fibres are smaller and will trap smaller particles. It is this balance of fine fibres and engineered construction that allows a low energy air filter to deliver optimised energy performance and good indoor air quality.

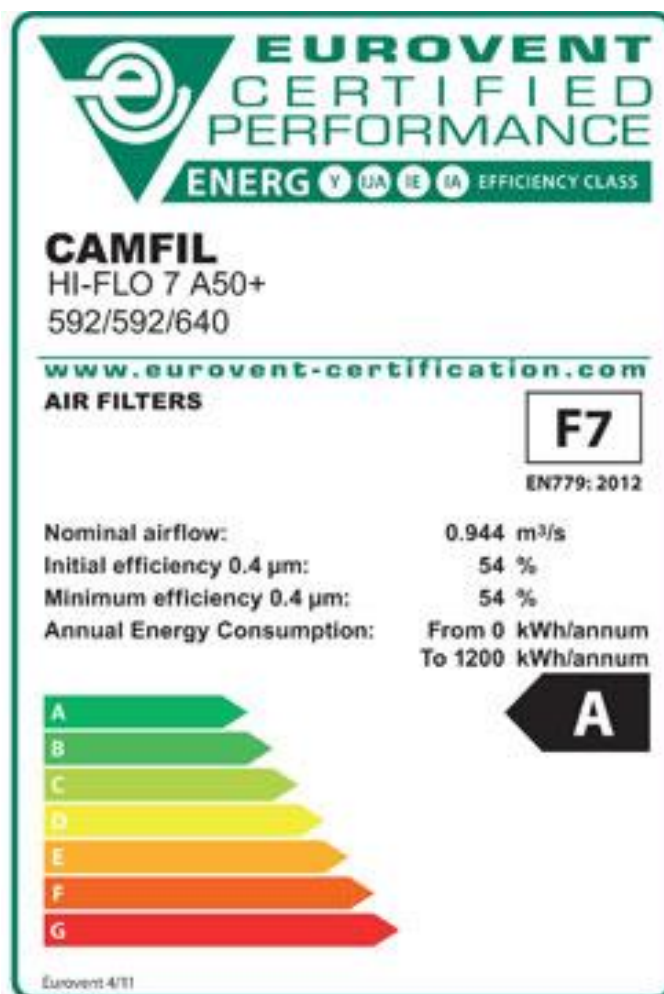
### **Eurovent energy classification facilitates filter comparisons**

European purchasers of air filters are finding it much easier to select the right air filter for energy efficiency and indoor air quality (IAQ), thanks to a new energy efficiency classification system introduced by Eurovent Certification\*. Filters are now graded from A to G, with “A” standing for the lowest energy consumption and “G” for the highest.

The new classification, based on EN779:2012\*\*, gives customers a clearer understanding of a filter’s annual energy consumption, initial efficiency and minimum efficiency. To reflect this new classification system, Camfil is now changing the labels and product names of filters to include the new A to G energy rating. This information clearly points out the difference between our filters and competitor products, making it easier to select the right filter for the right application for the best energy efficiency and filtration.

This will become more and more important as EU directives require public and commercial buildings to improve their energy efficiency. Ten to 20% of all electrical power in buildings is consumed to operate heating, ventilation and air conditioning systems. In addition to reducing energy

consumption and environmental impact for sustainability reasons, building owners also need to cut operating costs as power prices increase. Selecting the right quality air filters with the lowest energy consumption can boost their energy efficiency and also increase IAQ for a better and healthier work environment. European buyers of filters should check that their supplier is Eurovent-certified. There should be Eurovent labels on all filter boxes and filters should have test protocols based on EN779:2012.



\*Eurovent Certification Company is the representative of the refrigeration, air conditioning, air handling, heating and ventilation industry in Europe. [www.eurovent-certification.com](http://www.eurovent-certification.com)

\*\*EN779:2012 is the new European standard for air filters.



## Summary

With 50 years of experience in air filtration products and solutions, Camfil delivers value to customers all over the world while contributing to something essential to everyone – clean air for health, well-being and performance.

Our products address the energy considerations that all organisations face. In 2013 we supported site and energy teams, in estates across the UK, presenting opportunities for Engineers to deliver identified energy savings (Over £1million) for clients and stakeholders. This is supported by high profile case studies.

Our filters deliver the required air quality, clear of particulates, for people to safely inhale, using the minimum amount of energy. Estimates of savings can be as high as £300 per filter 10p per KW/hour to optimise each F7 grade filter. They offer high efficiency grade filtration to address indoor air quality problems. No other air filter matches this optimised performance combination.

With superior materials and a proven engineered design, our low energy air filters offer the lowest energy cost throughout their installed lifetime. Balanced with this, they also provide protection against potentially health damaging pollution, by providing independently guaranteed certified performance. Choosing the right air filter can be a big part of your company's energy saving strategy. With soaring energy prices and new energy directives and mandates, it truly pays to save energy in your air filtration systems.

[www.camfil.co.uk](http://www.camfil.co.uk)

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### About Camfil

The Camfil Group is a world leader in the development and production of air filters and clean air solutions. Camfil is also one of the most global air filtration specialists in the world with 23 production units and R&D centres in the Americas, Europe, South East Asia and the Asia-Pacific region. The Group, headquartered in Stockholm, Sweden, has 3,428 employees and sales in the range of SEK 4.9 billion. International markets account for almost 90% of sales. The company's business is to provide customers with sustainable best-in-class air filtration products and services through four main business units: Filters, Power Systems, Air Pollution Control (APC) and Airborne Molecular Contamination (AMC).

### Camfil Air Filters Reduce Energy Costs



#### [VIDEO: Premium Air Filters & Lower TCO](#)

Camfil 5-Star air filters can save your company up to 30% of your total HVAC energy spend and last twice as long as traditional air filters. Also your company will benefit from significantly reduced installation labour costs and waste disposal costs. *Watch the video to learn how.*

#### Read more about:

[Energy & Air quality rating](#)

[Energy saving software](#)

[Case studies](#)

[LCC-Life cycle cost](#)

[The cost of clean air](#)