



August 2006

Fan Manufacturers Association Energy Group

Energy Strategy

Executive summary

Fans in Heating, Ventilating, Air-Conditioning and Process systems represent 22% of the energy consumed by motor driven systems. Motor driven systems are recognised as the prime consumer of energy in the UK. Fan Manufacturers Association members are actively involved in developing, manufacturing, supplying and supporting energy efficient fans. The Fan Manufacturers association supports these activities with active involvement in a number of activities that is leading to the reduction of energy consumed by fans.

FMA Energy Group

The Fan Manufacturers Association (FMA) Energy Group was established in 2001 in reaction to a number of issues. The launch of Enhanced Capital Allowance (ECA) scheme generated discussions regarding possible inclusion of fans on the ECA technology list. There was contact from the Market Transformation Programme (MTP). The European Commission published a study into improving energy efficiency for fans.

The FMA are a professional body of fan manufacturers that work together to promote high standards of quality, design, safety and workmanship in the industry. They ensure that national and international technical standards and publications reflect the requirements of the industry as a whole. The FMA are part of the Heating, Ventilation and Air Conditioner Manufacturers Association (HEVAC), part of the Federation of Environmental Trades Association (FETA).

Most FMA members develop, manufacture and supply energy efficient fans and provide advice on application and installation to optimise the fan installation.

The FMA Energy Group is a working group of the main FMA.

Market Forces

Our climate is being affected by increasing Carbon emissions. In 1997 the global Kyoto agreement set a target to reduce green house gases by 5% of the 1990 levels by years 2008-2012. The European Union agreed to a 12% reduction to met the global target and the UK set its own higher figure of 20%.

The UK government has establish a number of bodies to establish measures to meet its commitment, the Energy Savings Trust (EST), The Carbon trust and The Market Transformation Programme (MTP) to name a few. The Carbon trust manages the ECA scheme. The MTP has been set up by the Department for Environment Food and Rural Affairs (DEFRA) and its aims are to develop policy strategy for advancing the resource efficiency of trade goods and services.

Two measures to help meet the UK target were the introduction of a climate change levy and the creation of ECA's for specific energy using technologies. The climate change levy is a tax on energy usage. The ECA's provide a tax advantage on



August 2006

specific equipment that meets a requirement and has been accepted on the technology list. The objective is to encourage use of more energy efficient products.

More recent events have brought the need and demand for more energy efficient products. The European Union has produced new Directives setting new standards that will affect product efficiency, the Energy Performance of Buildings Directive and the Energy Using Products Directive.

The UK Government has transposed the requirements of the Energy Performance of Buildings Directive into UK law through Part L of the building regulations. The new revision sets a lower Carbon emission rating and maximum Specific Fan Powers (SFP). It has also had an effect on the revision of part F of the building regulations.

The Energy using Products directive sets a framework for Member States to introduce measures to set minimum environmental performance for energy using products. It is anticipated that the environmental performance of the product will consider the impact on the environment during the following phases; raw material acquisition, manufacturing, packing, transport, distribution, use and end-of-life. The following are considered as impacts on the environment during each phase; consumption of material, energy, water, emissions to air, water and soil, noise vibration, and radiation. Furthermore the environmental performance is likely to consider the re-use, recycling and recovery of materials. Implementing measures are hoped to be in place during 2008.

Fan Systems

The Market Study for Improving Energy Efficiency for Fans (Radgen, 2001), often referred to as the SAVE study, identified that fans consumed 28,626 GWh of electricity in 1997 compared to a total energy consumption of 309,251 GWh; fans consume 9.3% of energy within the UK. A more recent study by Future Energy Solutions identified that in 2003 19,719 GWh was consumed by fans in Heating, Ventilating and Air-Conditioning systems and 13,807 GWh was consumed by fans in process systems. This is 13% and 9% respectively of the total energy consumed by motor driven systems. The survey also identified the populations by motor size as 70% <1kW, 20% 1-10kW and 10% >10kW.

The Market Study for Improving Energy Efficiency for Fans (Radgen, 2001) identified that there is a realistic potential energy saving of between 3.5 and 8.3% by improved fan efficiencies. Interestingly it identified greater saving by improved system efficiencies of 17.5%. The system being the installation into which the fan is installed.

Fan manufacturers have long argued that the fan installation is more critical and often provides greater efficiency benefits than small increases in fan efficiency. The fan manufacturer can make a very efficient fan, but if it is not operated at its optimum duty point the efficiencies will not be realised. Furthermore system losses consume energy as energy is required to overcome the resistance to flow. Improvements to the fan system by minimising the system resistance requires less power providing energy savings without the need for more efficient fans and motors.

The ECA list encouraging the use of high efficient motors is creating pressure to use EFF1 motors on fans. This is not a practical solution with some fans. For example with an axial fan the EFF1 rated motors are not readily available in the required



August 2006

construction layout. Fan manufacturers also use the air-stream cooling to increase the output of the motor and can generally affect a more efficient solution than using EFF1 motors.

The EFF1 rating is only for motors greater than 1.1 kW, but as the above market data states 70% of the installed population is less than 1 kW in size. EFF 1 motors are in a construction layout that is not suitable for a number of fan manufacturers.

Strategy

- 1. Improved system efficiencies by correct selection and application of fans.**
 - a. The SAVE study gives a clear message that the largest opportunity for saving Carbon emissions is through improved fan systems, that is improved application and installation of fans in air movement systems.
 - b. Action Energy (now part of the Carbon Trust) has produced a Good Practice Guide on energy savings in fan systems (Action Energy, 2004). The FMA energy group has promoted the launch of GPG383 with organising and providing presenters for a seminar in March 2004.
 - c. The FMA has revised the Fan Application Guide in association with CIBSE. This guide includes good application and installation practice.
 - d. The new Fan Application Guide is being promoted with a CIBSE seminar organised by members of the FMA in September 2006.
 - e. The FMA Energy Group has produced Guidance note 4 to clarify some misconceptions of fan efficiency.
- 2. Improve the fan standards to define fan efficiency and to make it easier for end users to understand.**
 - a. The FMA has participated with MTP initiatives to identify and resolve issues with existing standards.
 - b. The Energy Group has proposed an additional Annex to the revision of ISO5801, performance testing. An FMA member has organised through the ISO working groups that Annex E, electrical power input consumed by a fan installation, to be added to the final draft for approval. Currently at DIS stage and likely to be published at the end of 2007.
 - c. The FMA Energy Group has produced Guidance note 4 to complement Annex E and to clarify issues often raised with fan efficiency
 - d. The FMA energy group promotes ISO5801, Annex E and the guidance note.
- 3. Work with the Government and other bodies to increase the use of more efficient fans.**
 - a. The revised Part L and F of the building regulation that came into force on 6th April 2006 sets slightly lower maximum SFP's and introduces new SFP figures for specific applications. The FMA provided members to work on Industry Advisory groups and other such groups in the revision of these documents.
 - b. The FMA is a stakeholder in the current EuP Lot 11 study and its members are actively involved with various studies.
- 4. Set an efficiency rating for an 'efficient fan'.**



August 2006

- a. The FMA energy group has worked with FES to produce policy statements for MTP and provided data via the MTP UKepic scheme of fan performance and efficiency laying the foundations for future energy rating schemes.



August 2006

References

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August 2006



THE FAN MANUFACTURERS' ASSOCIATION is the specialist fan group within the HEVAC Association. By insisting on FMA companies when choosing your fan systems, you can be confident that you are getting the best service available.



WHAT CAN FMA COMPANIES DO FOR YOU?

The range and quality of fans and other products that are available to buyers from the FMA, together with the technical expertise in applying those products that is available from members is widely respected by specifiers and installers.



Members are committed to producing quality products, and offering clients expert advice on the application and installation of fan systems.



The FMA are a professional body of fan engineers and by working together, member companies promote high standards of quality, design, safety and workmanship in the industry. They ensure that national and international technical standards and publications reflect the requirements of the industry as a whole, and through their regular exchanges, members are kept up to date with the ever changing legislation and standards, which has an affect on their products. By using FMA fans, clients can be confident of getting a professional service.

Insist on fans from the FMA - www.feta.co.uk/fma/index.htm

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