

*Furniture essentials:
environmental information for
furniture manufacturers*





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This Good Practice Guide was produced by
Envirowise

Prepared with assistance from:

FIRA International Ltd
BFM Ltd

Foreword

I am delighted to introduce this 'Essentials' Guide to the industry on behalf of the Furniture Industry Environmental Committee (FIEC), which was established in 1999 by the industry's main trade bodies. The remit is to facilitate and promote discussions between industry associations, environmental bodies, various Government Departments and other interested parties. The trade bodies represented on the committee are highlighted on the front cover.

The committee has terms of reference which include the investigation of UK and European legislation, both current and proposed, through open dialogue with the appropriate bodies, the evaluation of new technologies and the promotion of good environmental practices throughout our industry.

Furthermore, the committee has worked closely with the production of the recent 2020 Vision Document (a research and innovation strategy for the UK furniture industry) and its subsequent Action Plan, to identify the environmental issues which affect the industry and to disseminate valuable information to encourage best practice. I see this 'Essentials' document as the first stage in this process.

Although, as with many industries, there are numerous areas of environmental concern, the following appear to have the greatest legal implications and cost-saving potential:

- **Solid waste.** The cost of waste is often underestimated and, consequently, inadequate resources are given to waste minimisation. Section 2 of this Guide shows that waste is not inevitable and that our industry alone could save £60 million/year through simple techniques.
- **Solvent reduction.** The furniture industry spends £50 million/year on wood coatings - at least 50% of which is wasted. See Section 3 for further guidance.
- **Extraction and combustion.** Many companies send a valuable resource to landfill as waste. With the landfill tax rising yearly, consideration should be given to timber re-use and recovery practices as outlined in Section 4.
- **Liquids.** Spillages are the most common form of breaches of environmental legislation. Section 5 gives practical guidance on avoidance of severe fines.
- **Packaging optimisation.** The return of damaged goods has a huge impact on the bottom line of some companies. As demonstrated in Section 6, a review of your packaging could save time, materials and returns.
- **Energy management.** Significant quantities of energy are used by the industry for machinery, heating, lighting, compressed air and drying. Addressing key issues and implementing energy efficiency programmes as discussed in Section 7 will undoubtedly save costs.

Other issues that reinforce the importance of environmental management to the sector are highlighted within this Guide.

Recent surveys undertaken by FIEC suggest that there is lack of knowledge and understanding of environmental concerns and legislation in many furniture companies. The small number of companies that currently take a proactive approach to environmental management are already reaping the benefits. It is hoped that this document is embraced by the remainder of our industry, as a first step to introducing sound environmental practices across the board.

On behalf of FIEC, I am pleased to see the publication of this document and thank the organisations and bodies for their hard work which made this possible. More detailed publications and training forums are planned for the future and I trust that companies, both large and small, will make full use of the information provided to improve the environment in which we work and live.

Alun Watkins
FIEC Chairman

Introduction

This Guide provides an introduction to the major environmental issues facing the furniture industry. It outlines the cost savings that can be achieved through proactive management and signposts publications and organisations that can provide practical advice. It also provides genuine case studies of good practice by well known furniture manufacturers - with details of the actions taken and the amounts saved.

Waste typically accounts for 4% of company turnover in the furniture industry. Relatively simple measures can often reduce this figure by half - leading to significant bottom line benefits for an industry which operates on tight profit margins. Further savings can be achieved in areas such as the management of coating processes, energy minimisation and packaging optimisation. For example, a company with a turnover of £250 000/year would spend around £10 000 on waste. If, as a result of a waste minimisation programme, the company could save half of this expenditure it would save £5 000 straight to the bottom line. In a company making 10% profit, this would be equivalent to increasing sales by £50 000.

Cornwell Parker Furniture Ltd saves money through waste minimisation

The Chipping Norton factory of Cornwell Parker Furniture Ltd has a turnover of £36 million. The company has implemented a number of initiatives which save £530 000/year - equivalent to 1.5% of company turnover.

- £250 000/year saving through removing kilns and standardising billet sizes.
- £100 000/year saving in landfill disposal and heating oil through the installation of a wood-burning boiler.
- £180 000/year via an overhaul of the wood coating operation with a switch to low solvent coatings (which also saves 21 tonnes/year of solvent).

Good environmental practices have other benefits. Reduced solvent use will lead to a better working environment with less fumes, which will also reduce the generation of neighbourhood nuisance. The proper storage of raw materials will lower damage rates and lessen the likelihood of spills and contamination.

As a result, compliance with legal requirements should be easier. Customers should also be impressed, especially if your company has formalised its good practice through a certified environmental management system such as ISO 14001.

Read on to identify benefits that may accrue for your company in the following areas:

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Use this 'Essentials' Guide to access all the relevant information you need to start saving waste, energy and money NOW! The vast majority of the publications listed are free-of-charge and they can be obtained from the publishing organisations whose contact details are in Section 12, pages 25 to 29.

The purchasing of raw materials has numerous potential environmental impacts. The environmental credentials of both the supplier and the raw materials themselves should be considered.

Waste minimisation should start in the design and purchasing departments of any organisation. The correct specification for goods is crucial to ensure that the amount of waste produced during the manufacturing process is minimised. Companies will have to work closely with suppliers to ensure that benefits are realised both financially and environmentally.

During the design phase, identify the type and amount of material that is essential to the product. Look at the reasons for its presence and question whether or not it is necessary. Factors you could use include:

- **Material suitability** - eg cheaper materials may be suitable for internal components.
- **Quality checks** - ensure that checks are relevant to use of product and not too stringent.
- **Material volume** - optimise material used but maintain quality - even small changes can lead to significant savings for manufacturers of large volumes.
- **Rationalisation** - look into the possibility of a reduction in the number of product ranges.

Through more careful design, it may be possible to eliminate certain wastes completely.

Further environmental impacts may occur when timber or wood-based panels are purchased from poorly managed sources. There are an increasing number of furniture buyers asking for independent verification that their product comes from well-managed forests. This proof may only be exhibited through third party certification. This certification is generally regarded as a two-stage process: firstly forest management and secondly wood products certification in the form of a 'chain of custody' system.



FSC Trademark ©
Forest Stewardship Council, AC

The first step, therefore, is to ensure that the timber and wood-based products are purchased with sound environmental credentials, for instance, carrying the Forest Stewardship Council (FSC) logo (see opposite). The FSC is the only international certification and labelling scheme with the support of all the major environmental NGOs, although others such as the Pan European Forest Certification scheme and national schemes also exist.

After the forest has been certified, a chain of custody verification process has to exist from the forest gate to the finished product. This process is available for solid woods, veneers and sheet materials. All of the UK chipboard and MDF manufacturers and numerous timber importers/merchants are now able to offer such goods. This chain of custody gives the customer assurances that the finished product is manufactured from the certified raw material. It may only be a matter of time before the demand for furniture carrying certified logos becomes widespread.

The implementation of such systems need not be expensive or complicated and companies already certified to an ISO 9000 or ISO 14001 management system should have little problem.

For further information contact the FSC Working Group, Unit D, Station Building, Llanidloes, Powys SY18 6EB. Tel: 01686 413916; Web site: www.fsc-uk.demon.co.uk

For information regarding certification of a chain of custody system there are several certification bodies in the UK including:

- BM TRADA Certification Ltd. Tel: 01786 450891; Fax: 01786 451087; Web site: www.bmtrada.com
- SGS Qualifor. Tel: 01865 202345; Fax: 01865 790441; Web site: www.qualifor.com
- Smartwood. Web site: www.smartwood.org

For information regarding implementing a chain of custody system contact Club Green. Tel: 01709 720215; Fax: 01709 720178.

Intruplas benefits from cleaner design

Intruplas was formed in order to recycle mixed and contaminated plastic waste that would otherwise have been disposed of to landfill. Research identified a market demand for sustainable, durable, outdoor furniture as well as a vast, largely untapped, local supply of waste plastic. The products were designed using cleaner design as a means of extending their overall lifespan and reducing their environmental impact. The main benefits are:

- An extremely durable product made from 100% recycled mixed polymer waste.
- Substantial amounts of waste plastic diverted from landfill.
- Provision of jobs for disabled people in supportive workshops where product assembly is carried out.
- Economic benefits for local supplier companies through reduced waste disposal costs.

Cleaner design helps AVAD Furniture

AVAD was established to design and produce high-quality contemporary furniture. The furniture and the manufacturing processes were designed using cleaner design principles achieving a number of benefits.

- Products that have 45% lower environmental impact than that of their nearest conventional rival.
- Products made from 100% sustainable materials.
- Furniture that does not compromise the image of present day contemporary furniture, whilst satisfying a growing consumer demand for sustainable, high-quality furniture.

Further information

Useful publications, available through the Environment and Energy Helpline on 0800 585794, include:

- *Cleaner Product Design: An Introduction for Industry* (GG294) from Envirowise - a Guide introducing companies to cleaner design and how to go about planning and executing a cleaner design programme.
- *Cleaner Product Design: A Practical Approach* (GG296) from Envirowise - a workshop to be used by Champions of cleaner design initiatives in businesses to raise awareness and stimulate action within their company.
- *Life-cycle Assessment - An Introduction for Industry* (ET257) from Envirowise - a Guide introducing companies to the complete analysis of a product from creation to disposal.
- *Increasing Quality and Profits by Designing out Waste* (CH64) from Envirowise - a Case History which details how a caravan manufacturer saved £82 000 by redesigning table tops.

Solid waste

The furniture industry suffers from high raw material wastage rates. Research by FIRA shows that rates range greatly: board materials from 5% to 25%, solid timber from 25% to 60% and fabric from 10% to 40%. Wastage rates from wood coating operations can be even higher, with transfer efficiencies often as low as 25% (meaning that 75% of coating misses the furniture).

In order to achieve successful control of waste, it is necessary to measure and manage raw material usage throughout the process. Without a good system, many areas of waste will go unchecked.

Many sites make the mistake of underestimating the cost of waste, assuming that it is synonymous with the disposal cost. In fact, the real cost of waste is likely to be 5 to 20 times the amount charged by a waste management company.

The real cost of waste includes:

- the cost of all raw materials not contained in the finished product;
- processing labour, time and utility costs associated with this waste;
- waste segregation, storage, handling and administration costs;
- disposal costs.

Research by FIRA has shown that the industry could save up to £60 million/year through waste minimisation initiatives. If your company takes only one action as a result of this document, ensure that it investigates the potential for waste minimisation.

In addition, waste has a significant body of legislation associated with it.

- **Duty of Care** applies to all waste streams, requiring the site to keep waste safe on-site and ensure that it is treated properly by those that collect and handle it.
- **Special Waste Regulations** impose additional controls on more difficult wastes such as oil and solvent.

For advice on legislation call the Environment and Energy Helpline on 0800 585794.

Richard Burbidge Ltd saves money through waste minimisation

Richard Burbidge Ltd processes over 50 000 m³/year of hardwood and softwood. Laser machinery identifies faults in timber and optimises the cutting pattern accordingly. Unavoidable off-cuts are passed through a finger jointing line which creates a re-usable length of timber. Other off-cuts are laminated for conversion into larger components. The company has managed to reduce wastage from 15% to just 10% of purchased timber, saving £350 000/year.

Further information

Useful publications, available through the Environment and Energy Helpline on 0800 585794, include:

- *Savings from Waste Minimisation in Furniture Manufacturing* (GG290) from Envirowise - provides practical advice on minimising waste in all areas of furniture manufacturing operations. Industry Examples are provided to show how companies have achieved actual savings.
- *Waste Mapping - Your Route to More Profit* (ET219) from Envirowise - a Guide to identifying where waste is occurring to help in the process of working out why it is being produced.
- *Furniture Workbook: Cut Waste Cut Costs* (GG308) from Envirowise - a workbook for waste 'Champions' to use to raise awareness of waste minimisation in their company.
- *Cutting Costs by Reducing Waste: A Self-help Guide for Growing Businesses* (GG38C) from Envirowise.
- *Finding Hidden Profit: 200 Tips for Reducing Waste* (ET30) from Envirowise.
- *Finding Hidden Profit for Smaller Companies* (GG253) from Envirowise - waste minimisation guidance specifically aimed at small and medium-sized enterprises.
- *Green Efficiency - Running a Cost-effective, Environmentally Aware Office* (GG256) from Envirowise - looks at the minimisation of waste in the office environment.
- *Saving Money Through Waste Minimisation: Raw Material Use* (GG25) from Envirowise - a Guide to improving raw material yields and reducing waste.
- *Waste Minimisation Interactive Tools (WMIT)* (IT96) from Envirowise - an easy to use software tool on disk to help you find out the true cost of your waste and where it is coming from.
- *WasteWise - Increased Profits at Your Fingertips* (IT313) from Envirowise - an interactive waste minimisation CD-ROM designed to give companies all the information they need to minimise waste and save money. It includes tools to help identify waste minimisation opportunities and measure potential savings. It can also be used as a central resource centre for on-going waste minimisation efforts, with access to publications and tools, and a wealth of advice and information.
- *Waste Account* (IT249) from Envirowise - a software tool to help you build a waste account - with in-built reporting and graphing, comprehensive definitions and information on waste, annual and year-on-year analysis - and all able to link to your company systems.

Another publication which should prove useful is:

- *Benchmarking Waste in the Furniture Manufacturing Sector* from FIRA - waste minimisation benchmarks have been developed by FIRA following research with a cross-section of furniture companies. For contact details, see Section 12, page 25.

Solvent reduction

A company adopting a passive stance on solvent management will be wasting money continuously. Lids left off coating tins allow the evaporation of solvent. Once the contents reach a certain viscosity, fresh thinners will have to be added to compensate. With an average coating cost of £2.50/litre and a typical cost of thinners at £1.30/litre, such practices are extremely costly. They also lead to environmental damage and may affect workers' health.

Perhaps the largest driving force for solvent reduction has been the wood coating process guidance note, PG6/33, which applies to all sites using more than 5 tonnes/year of solvent. All companies above this threshold require an authorisation to operate the process and they must strive to comply with its requirements on issues such as the use of low solvent coatings, the improvement of transfer efficiency and the review of cleaning operations. For advice on legislation call the Environment and Energy Helpline on 0800 585794.

Solvent reduction is a good area to pioneer a waste minimisation initiative. Coating shops are typically relatively compact, inputs and outputs are easy to quantify and simple measures can have large benefits.

The starting point of a solvent reduction initiative will be the solvent inventory - a summary of all purchases for the previous 12 months. As suggested in Good Practice Guide (GG177) *Reducing Solvent Use in the Furniture Industry*, solvent use should be broken down into that accounted for by stains, sealers, lacquers and thinners etc. A comparison of your company performance can then be made with benchmarking data developed by BFM Ltd.

Improvement programmes will typically focus on areas such as thinners reduction, transfer efficiency and solvent recovery.

Savings at Englander Ltd from solvent reduction

Contract furniture manufacturer Englander Ltd implemented a solvent reduction programme which addressed issues such as reduction of thinners usage, improvement of spray efficiency and housekeeping, revision of cleaning procedures and awareness raising. These actions resulted in full compliance with legislation and a significant cost saving due to the 6 000 litre reduction in annual coating volume, an increase in cleaning thinners re-use and a reduction in special waste generation. Total savings were around £15 000/year.

These achievements were recognised by the European Solvent Industry Group (ESIG) of the European Chemical Industry Council. Englander Ltd won the award for best site improvement in Europe.

Further information

Useful publications, available through the Environment and Energy Helpline on 0800 585794, include:

- *Reducing Solvent Use in the Furniture Industry* (GG177) from Envirowise - provides practical advice on a wide range of solvent reduction techniques. Five Industry Examples are included which saved 35 tonnes of solvent and £48 000/year.
- *Solvent Use in Wooden Furniture Coating* (EG130) from Envirowise - focuses on the importance of improving transfer efficiencies through the optimising of spraying techniques and technology.
- *Cost-effective Solvent Management* (GG13) from Envirowise - generic advice on solvent reduction.
- *Good Housekeeping Measures for Solvents* (GG28) from Envirowise - provides a variety of good practice suggestions of relevance to the industry.
- *Reduce Costs by Tracking Solvents* (GG114) from Envirowise - uses a computer-based spreadsheet on a disk to produce a solvent inventory.

Other publications which should prove useful are:

- *Benchmarking Solvent Use in the UK Furniture Manufacturing Sector* from BFM Ltd - shows the levels of solvent reduction that can be achieved in specific sub-sectors and provides advice on best practice. For contact details, see Section 12, page 25.
- *Wood Coating Processes* (PG6/33) from The Stationery Office - this guidance note forms the basis of the legal controls applicable to sites using more than 5 tonnes of solvent in any 12 month period. For contact details, see Section 12, page 27.

Dust extraction and wood combustion

The generation of timber waste can be minimised, but it will never be completely eliminated. Efficient dust extraction is required by health and safety legislation such as the *Control of Substances Hazardous to Health Regulations 1999* (COSHH). Where sites process more than 1 000 m³/year of timber, efficient dust extraction is also a requirement of process guidance note PG6/2 *Manufacture of Timber and Wood-based Products*.

Many sites find that wood combustion is a cost-effective form of waste management. Payback periods have fallen in recent years due to the landfill tax which is levied on every tonne of material sent to landfill. Typical payback periods have fallen to four to five years and they will decrease further as the Climate Change Levy increases the cost of fuel.

Small wood combustion plants (<0.4 MW) are subject to the Clean Air Act which prevents the emission of dark smoke. Plants rated at 0.4 MW to 3 MW (90 to 650 kg/hour feed rate) are controlled more strictly by process guidance note PG1/12. For advice on legislation call the Environment and Energy Helpline on 0800 585794.

Dusty materials pose a particular problem. Welsh Biofuels has secured funding to pelletise waste and make it suitable for handling and combustion. Other initiatives involve composting to produce a soil conditioner. For example, FIRA has conducted work on the accelerated decomposition of sanding powder. For further information contact FIRA (details in Section 12, page 25).

Sources of help include:

- *BIO-WISE Helpline* - Tel: 0800 432100; Web: www.dti.gov.uk/biowise. BIO-WISE is a UK Government Programme funded by the DTI. It aims to improve the competitiveness of UK industry through the use of biotechnology and support the development of the UK biotechnology supplier industry.
- *British Biogen* - the trade association of the UK bioenergy industry. Its mission is to promote and co-ordinate the commercial development of biomass as a renewable fuel resource for energy production. Contact Nikki Kerrigan, British Biogen (details in Section 12, page 27).

Boiler plant at Senator International Ltd provides savings

Senator International Ltd, an office furniture manufacturer, has invested in a wood burning boiler to divert waste from landfill and provide space heating. The 1.4 MW boiler provides space heating for over half of the 19 480 m² factory. Gas bills have fallen by £20 000/year as a result.

However, the savings in waste disposal are much more financially and environmentally significant. It is estimated that there will be a £70 000/year saving in waste disposal costs and the payback period is estimated at four years.

Further information

Publications which should prove useful include:

- *Wood as a Fuel - Small-scale Industrial and Domestic Heating* (ECS14) from the Sustainable Energy Programmes - this extended case study describes three renewable energy schemes. For contact details, see Section 12, page 27.
- *Manufacture of Timber and Wood-based Products* (PG6/2) from The Stationery Office - contains the extraction control legislation applicable to sites which process >1,000m³/year, or in the case of wood mills, sites which purely saw >10,000 m³. For contact details, see Section 12, page 27.
- *Combustion of Fuel Manufactured from or Comprised of Solid Waste in Appliances Between 0.4 and 3 MW Net Rated Thermal Input* (PG1/12) from The Stationery Office - applies controls to boiler plant which handle 90 to 650 kg/hour of timber. Controls include emission limits, monitoring requirements, inspection and maintenance. For contact details, see Section 12, page 27.
- *Everyone's Guide to Saving Energy with Boilers* (FL0069c) from the Energy Efficiency Best Practice Programme - a booklet mainly concerned with boilers using fossil fuels. For contact details, see Section 12, page 25.

Liquid raw materials and waste

Many furniture sites will produce trade effluents such as boiler blowdown (containing corrosion inhibitors), air compressor condensate, vehicle wash-down water, veneer press wash-down effluent and water back booth effluent (from coating booths). In addition, liquid special wastes may be generated such as solvent, oil and separator sludges.

The Water Resources Act 1991 makes it an offence to allow any solid or liquid other than rainwater to enter surface water drains unless the regulator has granted a consent for the discharge. This Act is designed to prevent problems arising from pollutants being discharged into a local stream, pond or to groundwater.

The Act is the most commonly contravened piece of environmental legislation. Common problems include spillages of oil, solvents and sawdust, as well as discharges of wash-down effluents. Companies should also consider the impact of fire and the pollution problems that may be associated with the subsequent run-off.

The Water Industry Act 1991 imposes a similar set of requirements upon foul sewers. A consent from the regional sewerage undertaker is required for any discharge to foul sewer other than human sewage. Therefore, sites should not use sinks as disposal routes for wash-down water or other liquid without the consent of their sewerage company.

The improper storage and disposal of liquids and waste material can also lead to the contamination of land - regulated under the Contaminated Land Regulations 2000.

In addition, most furniture sites have the potential to reduce their consumption of water, eg through controls on vehicle washing and urinals and checking for leaks through monitoring. Leaks are a common problem on older sites and can be very costly. An undetected ruptured 25 mm pipe may cost a site up to £50 000/year. A simple measure that can be used to identify leaks is to turn off all water uses (eg during shutdown) and see if there is any continuing change in the meter reading.

Ducal invests in a special waste store

Pine furniture manufacturer Ducal was concerned that solvent waste could pose a threat to local water resources. Therefore, the company invested in a portable storage unit designed to hold up to 16 drums of 205 litres each. The store is secure, ventilated, lockable and has a false floor to catch any spillage. It allows the company to ensure compliance with water and waste legislation.

Further information

A useful publication, available through the Environment and Energy Helpline on 0800 585794, is:

- *Cost-effective Water Saving Devices and Practices (GG67)* from Envirowise - describes a range of measures, some of which pay back in a matter of days.

Other publications which should prove useful are:

- Pollution prevention guidance notes from the Environment Agency - these provide useful advice on controls to prevent water pollution and are available from www.environment-agency.gov.uk/business/ppg
- A series of furniture sector reference notes from Envirowise, available from www.envirowise.gov.uk

Packaging optimisation

Furniture manufacturing companies typically spend between 0.5% and 3% of turnover on packaging. Research by FIRA has shown a wide disparity in the importance of packaging to different furniture sectors. Due to the nature of their products, some companies can use minimal packaging and suffer negligible returns. For others, packaging and product return rates are crucial factors which decide whether the company makes a profit or loss.

Companies that are unsure of the importance of packaging to their operation should evaluate their site in comparison to the benchmarks developed by FIRA in the guide *Optimising Packaging Use in the UK Furniture Manufacturing Sector*. This guide also contains suggestions for improvements, as do the many publications available from Envirowise.

Companies or groups with a turnover of more than £2 million that handle more than 50 tonnes/year of packaging are subject to the requirements of the *Producer Responsibility Obligations (Packaging Waste) Regulations 1997*. Obligated companies have to take responsibility for the recovery and recycling of an amount of packaging waste which is based on the amount handled and the activity performed.

Bevan Funnell re-uses packaging

Bevan Funnell produces high-quality domestic furniture. Any damage to a finished good would be extremely costly, so the company has invested in re-usable plastic chair covers. These slip over a dining room chair and are removed by the delivery driver on arrival at the retailer's premises. Drivers receive a small incentive (25p) for each bag brought back for re-use. Return rates for damaged goods are negligible.

Further information

Useful publications, available through the Environment and Energy Helpline on 0800 585794, include:

- *Cutting Costs and Waste by Reducing Packaging Use* (GG140) from Envirowise - good practice advice on practical packaging reduction measures.
- *Choosing and Managing Re-usable Transit Packaging* (GG141) from Envirowise - provides good practice information regarding packaging re-use.
- *Furniture Manufacturer Makes Significant Savings from Packaging Rationalisation* (CS299) from Envirowise - this Case Study shows how a company saved money by changing its type of packaging from boxes to a shrink-wrap system.
- *Packaging Redesign Increases Profits and Efficiency* (CH75) from Envirowise - a Case History from the Thames Valley Waste Minimisation Project.
- *Unpack those Hidden Savings - 120 Tips on Reducing Packaging Use and Costs* (ET250) from Envirowise.

Another publication which should prove useful is:

- *Optimising Packaging Use in the UK Furniture Manufacturing Sector* from FIRA - a research project was undertaken to optimise the levels of packaging used by specific furniture sectors. This report summarises typical packaging solutions and their associated costs and return rates. For contact details, see Section 12, page 25.

Energy management

General energy management

Energy management offers all companies the opportunity to save money by reducing energy costs. It will also help the environment by using less power, most of which is derived from the burning of fossil fuels. The financial incentive for energy minimisation has been increased with the introduction of the Climate Change Levy - increasing the cost of each kWh of energy used. Much can be achieved by treating energy as a costly resource and managing it like other raw materials.

Target setting within given timescales will help the workforce to reduce energy consumption, eg as an environmental improvement initiative. Targets should be realistic and achievable, for example, a 10% reduction in electricity use within the next 12 months. Most companies could save 10 - 20% of their energy bills by implementing low-cost good housekeeping measures.

All such targets will be relevant to production and, therefore, record-keeping of power used against production output will be essential. The documents listed below offer a wealth of advice and guidance on energy and environmental management, including audits, team-building and energy information systems. Many savings can be made for little or no cost, while further savings can be made by investment in measures with a potential payback of less than two years.

Further information

Useful publications, available through the Environment and Energy Helpline on 0800 585794, include:

- *Focus: the Manager's Guide to Reducing Energy Bills (FOCUS)* from the Energy Efficiency Best Practice Programme - covers ten areas of energy management.
- *Energy Savings Guide for Small Businesses (ACBE001)* from the Energy Efficiency Best Practice Programme - a simple step-by-step Guide to starting to reduce energy within a small company.
- *EMMA - the Energy Management Advisor* from the Energy Efficiency Best Practice Programme - this is a simple interactive Windows-based software package designed to help businesses reduce energy costs. It is ideal as an introduction to energy management.
- *Energy Management Pathfinder (GIR63)* from the Energy Efficiency Best Practice Programme - a useful Guide for any personnel to use in a company to improve energy efficiency.
- *Maintaining the Momentum: Sustaining Energy Management (GPG251)* from the Energy Efficiency Best Practice Programme - a Guide to help develop a successful approach to sustained energy management.
- *Everyone's Guide to Energy Efficiency through Effective Maintenance (FL0069b)* from the Energy Efficiency Best Practice Programme - a booklet on how regular plant maintenance means more efficient performance.

Motors and drives

Motors and drives are another area where potential savings can be made. These account for two-thirds of electrical energy used by industry. Motors can cost up to one hundred times as much to run over their ten-year life as the initial purchase cost, hence it is worth selecting higher efficiency motors.

As well as taking advantage of the benefits of higher efficiency motors, further savings can be achieved by focusing attention on ensuring that motors and drives are switched off when not in use, reducing the load (eg drive train maintenance) and reducing motor speeds whenever possible - variable speed drives can save 30 - 40% in many situations.

Further information

Useful publications, available through the Environment and Energy Helpline on 0800 585794, include:

- *Energy Savings with Electric Motors and Drives (Revised 1998)* (GPG2) from the Energy Efficiency Best Practice Programme - this Guide is aimed at those interested in reducing the operating costs of electric motors and drive systems. It gives a practical approach to identifying and implementing cost-effective, energy saving opportunities, particularly for AC induction motors up to 300 kW. Case studies are included which provide practical examples of the savings that can be achieved.
- *Energy Savings from Motor Management Policies* (GIL56) from the Energy Efficiency Best Practice Programme - this leaflet looks at why some approaches work better than others.

Compressed air

Compressed air is very expensive to generate. Costs of 50 pence/kWh are not uncommon because compressors are typically only 10% efficient. An independent survey of 47 industrial sites in the UK found an average compressed air leak rate of 39%. At 50 pence/kWh, that is a lot of wasted money.

Many large furniture manufacturing plants operate several compressors - providing excellent money-saving opportunities.

Awareness-raising can be an important contributor to compressed air reduction. People tend to take 'air' for granted and assume that it is virtually free.

Energy savings at Gresham Office Furniture

Gresham Office Furniture fitted a cascade mechanism to its three air compressors at a cost of £800. This unit assesses system air pressures and only brings the second and third compressors on-line when they are actually needed. This avoids running motors unnecessarily with their associated energy costs and maintenance. The mechanism saves around £100/week, giving a two month payback period.

Further information

Useful publications, available through the Environment and Energy Helpline on 0800 585794, include:

- *Compressing Air Costs* (GPG126) from the Energy Efficiency Best Practice Programme - this Guide covers all aspects, including generation, treatment, distribution, control and end use.
- *Compressing Air Costs - Generation* (ECG40), *Compressing Air Costs - Leakage* (ECG41) and *Compressing Air Costs - Treatment* (ECG42) from the Energy Efficiency Best Practice Programme - all three Guides indicate areas where wastage occurs, and highlight good housekeeping and low-cost measures to improve efficiency.
- *Everyone's Guide to Saving Energy in Compressed Air* (FL0069a) from the Energy Efficiency Best Practice Programme - useful for staff awareness programmes and encouraging everyone.
- *The Essentials: Compressed Air* (PLCA) from the Energy Efficiency Best Practice Programme - lists all relevant Case Studies and Good Practice Guides.

Environmental management systems

Since the emergence of the first certified environmental management systems (EMS) in the mid-1990s, there has been an increasing level of interest in their use within the furniture industry. The number of companies implementing such systems reflects a growing awareness of the benefits that EMS can provide in terms of production efficiency, cost savings, marketing potential and reduced environmental impacts.

There are two main environmental management systems in use at present: ISO 14001 (the international standard for EMS) and the European-based Eco-Management and Audit Scheme (EMAS) which incorporates ISO 14001 but goes further. Both have two main aims:

- continual environmental improvement;
- commitment to meet the requirements of all relevant environmental legislation and the company's environmental policy statement.

The concept of continual improvement recognises that no organisation will have a problem-free site. However, good practices, compliance with legislation and less environmental risk are more likely to be achieved in a company which addresses environmental management in a systematic manner.

In order to allow EMS to be applicable to all companies, the standards do not set down absolute performance levels that must be reached. However, they require an on-going improvement on that which existed previously. Therefore, the company needs to be aware of its deficiencies, and to have identified its significant environmental impacts and set realistic targets to improve on these. The company will also be expected to be able to prove compliance with applicable legislation.

More and more companies within the furniture industry are now finding that their customers are asking questions of their environmental performance with regard to production and processes. An EMS such as ISO 14001 is generally sufficient proof that all environmental aspects of the company's processes and activities have been considered and managed.

As a minimum requirement, many customers are now asking their suppliers for environmental policy statements, which outline the organisation's environmental principles and are an integral part of the EMS. The policy is a publicly available document and is defined in ISO 14001 as 'a statement by the organisation of its intentions and principles in relation to its overall environmental performance, which provides a framework for action and for the setting of its environmental objectives and targets'. The policy is seen as a guiding document for all levels of the organisation and is also a useful tool to convey this commitment to others outside the organisation.

To ensure total customer confidence both the policy and the EMS will benefit from certification by an accredited third party, which will undertake regular surveillance visits to ensure that continuing improvement is achieved.

A source of help is:

- Club Green run by FIRA. An industry-specific environmental club which assists furniture companies with knowledge on environmental issues, including legislation, and has an EMS implementation guide available to Stage 2 members. This guide, coupled with the assistance of Club Green consultants, can greatly reduce the time and effort spent on implementing an EMS to ISO 14001.

EMS achieves savings at Layzee Beds

Layzee Beds was one of the first 20 companies worldwide to have a certified EMS. The company identified that it used almost 3 000 m³/year of water. It installed a vehicle wash which recycled over 90% of the water used - leading to a 52% drop in site water consumption.

Further information

Useful publications, available through the Environment and Energy Helpline on 0800 585794, include:

- *How to Set Up Environmental Management Systems in the Textiles Industry* (GG137) from Envirowise - this Guide will give you the tools to set up an EMS to address specific environmental issues and reduce your environmental impact.
- *Environmental Management Systems Workbook for Engineering Manufacturers* (GG205) from Envirowise - companies may find this Guide useful as it includes generic information and worksheets that many companies can use.
- *Waste Minimisation Pays: Five Business Reasons for Reducing Waste* (GG125) from Envirowise and produced in conjunction with the Engineering Employers' Federation and Lloyds Bank Commercial Service - provides middle managers with overhead templates and commentary for the essential first step of making a presentation to the board to obtain top level commitment for the company's waste minimisation programme.

Other publications which should prove useful are:

- *BS EN ISO 14001: 1996 Environmental Management Systems - Specification with Guidance for Use* from the BSI. For contact details, see Section 12, page 27.
- *BS EN ISO 14004: 1996 Environmental Management Systems - General Guidelines on Principles, Systems and Supporting Techniques* from the BSI. For contact details, see Section 12, page 27.

Fuel used for road transport can often exceed the energy consumed by other parts of a business. Fuel is used to deliver the end-product to the customer, during the process of installation and by the sales team when travelling. Because road fuel is more highly taxed than other fuels, its contribution to total energy costs is even greater. Furthermore, transport has many indirect cost implications that will affect the business to some extent, for example:

- increasing congestion - traffic volumes are forecast to double in 20 years leading to longer and less reliable journey times;
- rising fuel costs - set to continue to rise by at least 6% in real terms each year;
- fiscal incentives to encourage the purchase of fuel efficient vehicles;
- introduction of workplace parking charges and road tolls in some local authority regions;
- tighter vehicle emissions standards;
- rising vehicle insurance premiums;
- increasing stakeholder expectations to improve environmental performance;
- damage to goods during transport and delivery.

Furniture companies can take the first steps to improve environmental performance with regard to transport by:

- where possible, reducing journeys or including several customer drops on one trip;
- monitoring fuel consumption against driver performance;
- trying to reduce the number of empty return journeys;
- reducing furniture returns necessitating duplicating journeys;
- ensuring all vehicles are well maintained and run efficiently;
- minimising other forms of environmental damage such as exhaust emissions, leaking oil and fuel tanks, and noise causing statutory nuisance to neighbours.

Further information

Useful publications, available through the Environment and Energy Helpline on 0800 585794, include:

- *A Travel Plan Resource Pack for Employers (GD41)* from the Energy Efficiency Best Practice Programme - a manual to aid the development, implementation and monitoring of a travel management strategy.
- *Benchmarking Vehicle Utilisation and Fuel Consumption (ECG76)* from the Energy Efficiency Best Practice Programme - a Guide for companies with large distribution/logistic activities to help reduce energy consumption, improve vehicle fill, reduce empty running and optimise operations.
- *Efficient JIT Supply Chain Management (GPCS374)* from the Energy Efficiency Best Practice Programme - a Case Study at Nissan Motor Manufacturing (UK) Ltd.
- *Energy Savings from Integrated Logistics Management (GPCS364)* from the Energy Efficiency Best Practice Programme - a Case Study at Tesco plc.
- *Energy Savings through Improved Driver Training (GPCS311)* from the Energy Efficiency Best Practice Programme - a Case Study showing how a driver training programme reduced a haulage company's fuel costs by 8% while halving the number of accidents.
- *Essentials - Transport (PLTRANSP)* from the Energy Efficiency Best Practice Programme - details the Programme's, the Government's and other relevant transport publications and contacts.
- *Fuel-efficient Fleet Management (GPG218)* from the Energy Efficiency Best Practice Programme - a Guide on reducing fuel costs in car and van fleets through the efficient selection, allocation and use of vehicles.
- *Fuel Management Guide (FMG)* from the Energy Efficiency Best Practice Programme - a Guide to help freight transport operators control their fuel costs.
- *The Benefits of Green Transport Plans (GD12)* from the Energy Efficiency Best Practice Programme - a Government Guide on preparing your organisation for transport in the future.

Motivating management and staff to improve performance

The greatest savings for any company are achieved when the entire workforce pulls together. Furniture companies which have implemented ISO 14001 often find it a struggle to ensure that participation in environmental improvement projects is accepted throughout the organisation. Any organisation is only likely to achieve savings in energy, for example, when all of the workforce are 'doing their bit'.

To ensure commitment throughout the organisation, senior management must be involved from the start and should ensure that sufficient resources, enthusiasm and energy are given to the initiative. The introduction of energy groups, a publicity campaign manager, suggestion schemes and the reporting of performance against targets will assist in ensuring reductions.

Perkins Engines reduces its impact on the environment

At Perkins Engines in Peterborough, a team set up a 'Super Savers' project to reduce the impact on the environment. The team was set up by people with a desire to change things, the leaders being two union shop stewards. Even though they were not specifically qualified in environmental matters and did not hold senior positions, as a result of the initiative of the two employees, it is estimated that Perkins Engines has saved up to £100 000 in waste reduction and energy use since 1997. For further details see *Super Savers - A Workforce Initiative to Save Energy and Reduce Waste* (GIL54) from the Energy Efficiency Best Practice Programme.

Further information

Useful publications and ClipArt, available through the Environment and Energy Helpline on 0800 585794, include:

- *Saving Money Through Waste Minimisation: Teams and Champions* (GG27) from Envirowise - guidance on the use of teams to achieve waste minimisation progress.
- *Waste Minimisation Pays: Five Business Reasons for Reducing Waste* (GG125) from Envirowise and produced in conjunction with the Engineering Employers' Federation and Lloyds Bank Commercial Service - provides middle managers with overhead templates and commentary for the essential first step of making a presentation to the board to obtain top level commitment for the company's waste minimisation programme.
- *Workforce Partnerships to Reduce Waste and Save Energy* (ET228) from Envirowise - guidance on the role of teams and workforce involvement.
- *Energy Efficiency Motivation Campaign in a Multi-site Organisation* (GPCS182) from the Energy Efficiency Best Practice Programme.
- *Maintaining the Momentum: Sustaining Energy Management* (GPG251) from the Energy Efficiency Best Practice Programme.
- *Managing and Motivating Staff to Save Energy* (GPG84) from the Energy Efficiency Best Practice Programme.
- *Managing People, Managing Energy* (GPG235) from the Energy Efficiency Best Practice Programme.
- *Marketing Energy Efficiency - Raising Staff Awareness* (GPG172) from the Energy Efficiency Best Practice Programme.
- *The Energy and Environment Collection* (TEEC2) from the Energy Efficiency Best Practice Programme - a collection of ClipArt to be used in promoting conservation measures. The right images can make communications so much more exciting and interesting - your posters will have impact, newsletters will be livened up and your presentations will capture the imagination.
- *Super Savers - A Workforce Initiative to Save Energy and Reduce Waste* (GIL54) from the Energy Efficiency Best Practice Programme - a shop floor-led energy and environment campaign.
- *Everyone's Guide to Saving Energy and Reducing Waste* (SERW) from the Energy Efficiency Best Practice Programme - a booklet for use by all staff.
- *Everyone's Guide to Energy Efficiency Through Effective Maintenance* (FL0069b) from the Energy Efficiency Best Practice Programme - a booklet on how regular plant maintenance means more efficient performance.
- *Action Agenda to Improve Your Working Environment* (FL0036) from the Energy Efficiency Best Practice Programme - a folder containing an introduction to action agendas, action agenda sheets, project example sheets and useful contacts.

Legislation

A significant body of legislation affects the industry - some of the key items currently include (as of 01.01.2001, for more information contact the Environment and Energy Helpline on 0800 585794):

- Environmental Protection Act 1990 Part I: a number of processes are subject to Local Air Pollution Control and must comply with relevant process guidance notes (PGs), for example:
 - PG1/12 *Combustion of Fuel Manufactured from or Comprised of Solid Waste in Appliances Between 0.4 and 3 MW Net Rated Thermal Input* (90 to 650 kg/hour feed rate);
 - PG6/2 *Manufacture of Timber and Wood-based Products* for sites processing more than 1 000 m³/year of timber;
 - PG6/33 *Wood Coating Processes* applicable to sites using more than 5 tonnes/year of solvent.
- Pollution Prevention and Control Act 1999: introducing a system to replace EPA Part I.
- Environmental Protection Act 1990 Part II: Duty of Care imposes legal responsibility for companies to ensure that their waste is disposed of properly. This duty extends to the control of carriers and treatment by subsequent parties.
- Environmental Protection Act Part II: statutory nuisance controls, eg regarding noise, dust and odour.
- Producer Responsibility Obligations (Packaging Waste) Regulations 1997: certain companies must register and meet recovery obligations.
- Special Waste Regulations 1996: imposes additional controls on difficult wastes such as solvent and oil.
- Water Industry Act 1991: places controls on discharges to public sewers. A consent to discharge trade effluent to sewers from the sewage undertaker (ie one of the water companies) is required. This may be issued subject to the conditions on the rate and nature of the effluent discharged.
- Water Resources Act 1991: regulates discharges to controlled waters (ie virtually all waters including groundwater and coastal water) through a system of consents from the Environment Agency. It is an offence to cause, or knowingly permit without consent, a discharge of polluting matter into any stream, river or body of water.

Failure to comply may result in fines, imprisonment, remediation costs and adverse publicity.

Penalties

Legislation	Offence	Magistrate's Court	Crown Court
Environmental Protection Act	Authorisation breach	£20 000 fine and/or three months in prison	Unlimited fine and/or five years in prison
Water Resources Act	Unconsented discharge to controlled waters	£20 000 fine and/or three months in prison	Unlimited fine and/or two years in prison
Special Waste Regulations	Breach of requirements	£5 000 fine	Unlimited fine and/or two years in prison

Sources of information include:

- Envirowise: a series of furniture sector reference notes - visit www.envirowise.gov.uk, or call the Environment and Energy Helpline on 0800 585794.
- BFM Certificate in Environmental Management: a three-day training course with an associated manual concentrating on legislation and best practice in the furniture industry. For contact details, see Section 12, page 25.
- *FIRA Club Green Guide to Environmental Legislation*: an industry-specific guide to legislation with regular updates. For contact details, see Section 12, page 25.

Contact details

Envirowise and the Energy Efficiency Best Practice Programme

Harwell International Business Centre
156 Curie Avenue
Didcot
Oxfordshire OX11 0QJ

Both accessed through the Environment and Energy Helpline on 0800 585794

Fax: 01235 433961

Web sites: www.envirowise.gov.uk
www.energy-efficiency.gov.uk

Envirowise is a Government initiative promoting the use of better environmental practices that reduce costs for UK industry and commerce.

The Energy Efficiency Best Practice Programme is Government funded to advance and spread good practice in energy efficiency by providing independent, authoritative advice and information on good energy efficiency practices.

Trade bodies comprising FIEC

BFM Ltd - The Association of British Furniture Manufacturers

30 Harcourt Street
London W1H 2AA

Tel: 020 7724 0851

Fax: 020 7706 1924

E-mail: info@bfm.org.uk

Web site: www.bfm.org.uk

BFM Ltd provides a variety of environmental management services for the furniture manufacturing industry including site reviews, policy representation, advice line, guidance notes and sector-specific environmental training such as the three-day BFM Certificate in Environmental Management.

FIRA International Ltd

Maxwell Road
Stevenage
Hertfordshire SG1 2EW

Tel: 01438 777700

Fax: 01438 777800

Web site: www.fira.co.uk

The industry's research association, FIRA, provides environmental services through its Club Green initiative including guides on environmental legislation and environmental management system implementation, seminars and an advice line. FIRA also provides the Secretariat for FIEC.

Association of Master Upholsterers and Soft Furnishers Ltd (AMU)

Francis Vaughan House
102a Commercial Street
Newport
Gwent NP20 1LU

Tel: 01633 215454
Fax: 01633 244488
E-mail: amu@easynet.co.uk
Web site: www.upholsterers.co.uk

British Contract Furnishing Association (BCFA)

Suite 214
Business Design Centre
52 Upper Street
Islington Green
London N1 0QH

Tel: 020 7226 6641
Fax: 020 7288 6190

Office Furniture and Filing Manufacturers' Association (OFFMA)

Russell Square House
10-12 Russell Square
London WC1B 5EE

Tel: 020 7331 2030
Fax: 020 7331 2040

National Bed Federation Ltd (NBF)

251 Brompton Road
London SW3 2EZ

Tel: 020 7589 2888
Fax: 020 7823 7009

Kitchen Specialists Association (KSA)

12 Top Barn Business Centre
Holt Heath
Worcester WR6 6NH

Tel: 01905 621787
Fax: 01905 621887

GMB Union

22-24 Worple Road
London SW19 4DD

Tel: 020 8947 3131
Fax: 020 8944 6552

Other organisations of relevance to the furniture industry

The Stationery Office

PO Box 29

Norwich NR3 1GN

Tel: 0870 600 5522

Web site: www.thestationeryoffice.com

BSI

Customer Services Department

389 Chiswick High Road

London W4 4AL

Tel: 020 8996 9001

Fax: 020 8996 7001

Sustainable Energy Programmes

Enquiries Bureau

Harwell International Business Centre

B168

Didcot

Oxfordshire OX11 0QJ

Tel: 01235 432450

Fax: 01235 433066

E-mail: NRE-enquiry@aeat.co.uk

Web site: www.dti.gov.uk/renewable/index

BIO-WISE

BIO-WISE Helpline: 0800 432100

Web site: www.dti.gov.uk/biowise

British Biogen

British Biogen

Rear North Suite, 7th Floor

63-66 Hatton Garden

London EC1N 8LE

Tel: 020 7831 7222

Fax: 020 7831 7223

E-mail: nikki@britishbiogen.co.uk

Web site: www.britishbiogen.co.uk

Timber certification

FSC Working Group

Unit D

Station Building

Llanidloes

Powys SY18 6EB

Tel: 01686 413916

Fax: 01686 412176

Web site: www.fsc-uk.demon.co.uk

BM TRADA Certification Ltd

Office 30
Stirling Business Centre
Stirling FK8 2DZ

Tel: 01786 450891
Fax: 01786 451087
Web site: www.bmtrada.com

SGS Qualifor

58 St Aldates
Oxford OX1 1ST

Tel: 01865 202345
Fax: 01865 790441
Web site: www.qualifor.com

Pelletisation**Welsh Biofuels Ltd**

Unit 28
Brynmenyn Industrial Estate
Bridgend CF32 9TZ

Tel: 01656 729714
Fax: 01656 729714

Noise issues**Institute of Acoustics**

77a St Peters Street
St Albans
Hertfordshire AL1 3BN

Tel: 01727 848195
Fax: 01727 850553

Regulators in England, Scotland, Wales and Northern Ireland

Environment Agency

Contact details on the Web site at www.environment-agency.gov.uk

To reach your local office call 08459 333111

Scottish Environment Protection Agency (SEPA)

SEPA Head Office

Erskine Court

Castle Business Park

Stirling FK9 4TR

Tel: 0131 273 7258

Fax: 0131 449 7277

Environment Agency Wales

Rivers House

St Mellons Business Park

Fortran Road

St Mellons

Cardiff CF3 0EY

Tel: 029 2077 0088

Fax: 029 2079 8555

Department of the Environment (Northern Ireland)

Environment and Heritage Service

Natural Heritage

Commonwealth House

35 Castle Street

Belfast BT1 1GU

Environmental Helpline

Tel: 0800 262227

Fax: 01232 254793

Envirowise - Practical Environmental Advice for Business - is a Government programme that offers free, independent and practical advice to UK businesses to reduce waste at source and increase profits. It is managed by AEA Technology Environment and NPL Management Limited.

Envirowise offers a range of free services including:

- ✔ Free advice from Envirowise experts through the Environment and Energy Helpline.
- ✔ A variety of publications that provide up-to-date information on waste minimisation issues, methods and successes.
- ✔ Free, on-site waste reviews from Envirowise consultants, called Fast Track Visits, that help businesses identify and realise savings.
- ✔ Guidance on Waste Minimisation Clubs across the UK that provide a chance for local companies to meet regularly and share best practices in waste minimisation.
- ✔ Best practice seminars and practical workshops that offer an ideal way to examine waste minimisation issues and discuss opportunities and methodologies.



Harwell International Business Centre | 156 Curie Avenue | Didcot | Oxfordshire | OX11 0QJ
E-mail: helpline@envirowise.gov.uk | Internet: www.envirowise.gov.uk



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Helpline
0800 585794**