



**ENVIRONMENTAL
TECHNOLOGY
BEST PRACTICE
PROGRAMME**

ENVIRONMENTAL MANAGEMENT SYSTEM IMPROVES PERFORMANCE

**A GOOD PRACTICE CASE STUDY AT
WOLSTENHOLME INTERNATIONAL LTD**

GC49
FINAL RESULTS

This Case Study demonstrates the economic and environmental benefits of implementing an Environmental Management System (EMS) at a medium-sized manufacturing company.

Wolstenholme International Ltd manufactures metallic pigments and inks, using a foundry and milling operation to produce bronze and copper powders. Wolstenholme developed and implemented an EMS by following a structured approach similar to that detailed in Good Practice Guide (GG43) *Environmental Management Systems in Foundries*. The environmental improvement initiatives identified during implementation of the EMS allowed the Company to achieve significant cost savings and other benefits. Wolstenholme was one of the first organisations in the UK to achieve certification to the British Standard for environmental management systems, BS 7750.

The involvement of all employees in the EMS ensured broad ownership of the system. Strong commitment and support was shown by senior management, led by the Chief Executive and the Environment, Health and Safety Manager. Training and environmental awareness briefings played an important role in convincing employees of the need to change working practices.

The benefits of a systematic approach to environmental management demonstrated at Wolstenholme, include:

- Net cost savings of over £96 000/year (1995)
- Reduced energy and raw material consumption
- Payback of less than five months
- Methods applicable to any manufacturing operation



Design and Implementation

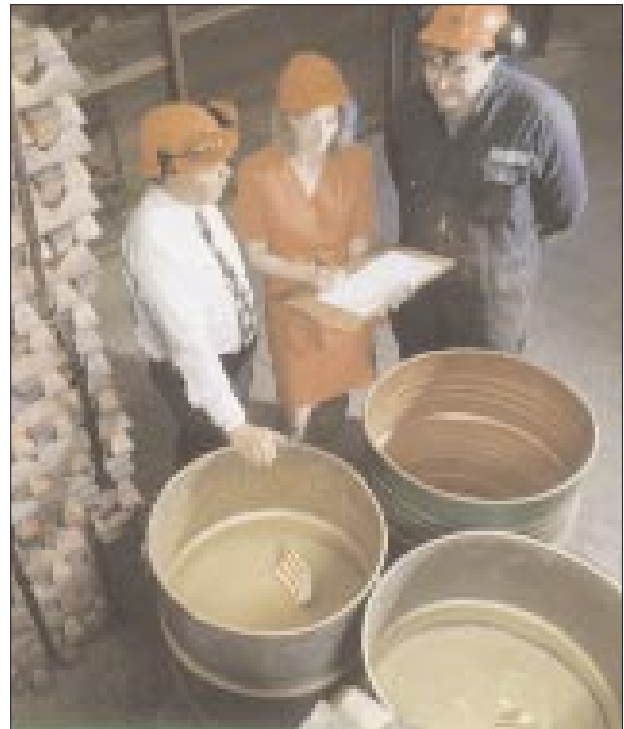
In 1991, Wolstenholme International Ltd set up an Environment Council as part of its commitment to total quality management. One of the Council's first actions was to commission an independent environmental review from a local Groundwork Trust. This review provided useful information about the tasks involved in implementing an environmental management system (EMS). The Council also established employee 'Task Groups' to identify potential environmental improvements in selected areas.

A year later, a full-time Environment, Health and Safety (EH&S) Manager was appointed, and the decision was taken to pursue certification to the British Standard for Environmental Management Systems, BS 7750. Wolstenholme followed a structured approach to EMS implementation similar to that described in Good Practice Guide (GG43) *Environmental Management Systems in Foundries* (available free of charge through the Environmental Helpline on 0800 585794).

The EH&S Manager was responsible for the development of the EMS. He gained the necessary skills and expertise through experience on the job, supplemented by external training. One of his first tasks was to identify key roles and responsibilities within Wolstenholme, eg the Board, for providing resources, and departmental directors, for activities within their departments having environmental effects.

The first environmental policy adopted by the Board was subsequently revised to make it site-specific and then updated to comply with the requirements of BS 7750.

Wolstenholme achieved certification to BS 7750 in March 1995.

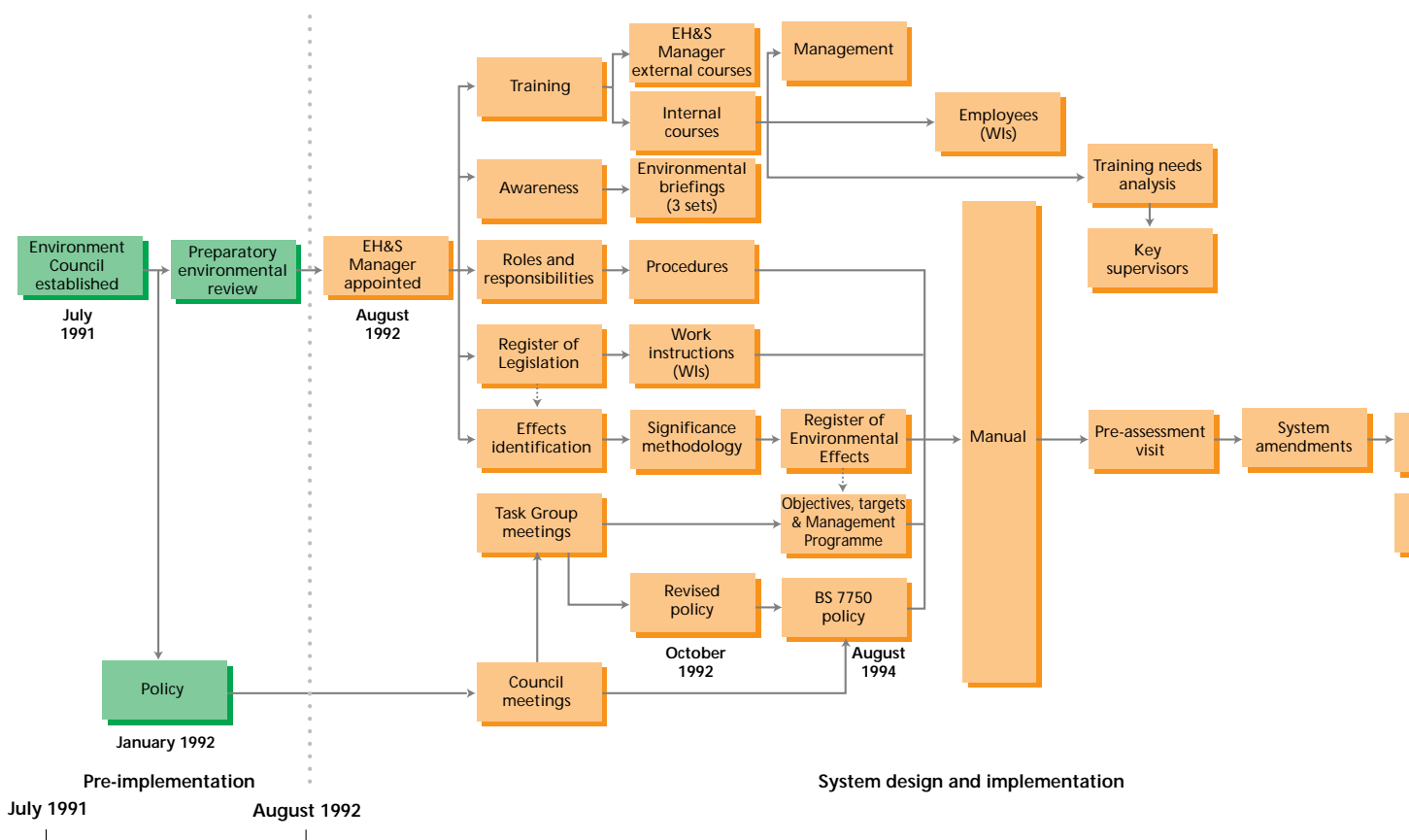


A Task Group at work

Employee Training

Wolstenholme realised that workforce commitment was essential if the EMS was to become fully integrated within the Company. Senior managers therefore presented a series of short awareness briefings to all employees, and individual groups received specific training from the EH&S Manager. Managers met to discuss and agree procedural requirements, while supervisors attended a one-day course designed to address their particular training needs. Selected staff were trained in internal auditing,

The BS 7750 design, implementation and certification process at Wolstenholme International



spill response and emergency procedures.

The Company found that relating current operations to global environmental concerns helped to show employees the importance of changing their working practices. Greater environmental awareness led to some employees forming a voluntary 'Green Group' to carry out local conservation activities.



Environmental briefings

Session 1: December 1992
 Global and local environmental issues
 Using an EMS to control significant environmental effects
 Commitment to continual improvement in environmental performance

Session 2: December 1993
 Progress in implementing an EMS
 Pursuit of certification to BS 7750

Session 3: June/July 1994
 Departmental environmental effects
 Progress to manage and reduce these effects
 Procedures and work instructions



Process emissions are vented to a bag filter

Register of Environmental Effects

Over a nine-month period, the EH&S Manager - in collaboration with departmental managers and supervisors - identified and listed all the environmental effects for each of the site's 12 departments, ranked them according to their significance and recorded the results in a Register. He then held meetings with area supervisors to consider the main causes and agree actions to control and manage the effects. This formed a major part of the EMS design and implementation process. Progress in implementing these actions was reviewed during the following year. Wolstenholme found that many of the effects could be controlled by simple procedural changes or improved housekeeping.

Significance Assessment

The approach used by Wolstenholme was based on a numerical scoring system similar to that described in

Guide GG43. Various direct and indirect effects were highlighted for control and improvement within the EMS, including:

- emissions to atmosphere (particulates and volatile organic compounds (VOCs));
- energy use;
- liquid effluent, solid and hazardous waste disposal;
- raw material consumption (copper, zinc, aluminium, white spirit and other solvents);
- packaging, eg metal drums for dispatch.

The environmental impact of these effects is now controlled by 38 work instructions, which describe the working practices that operators must follow when carrying out specific activities.

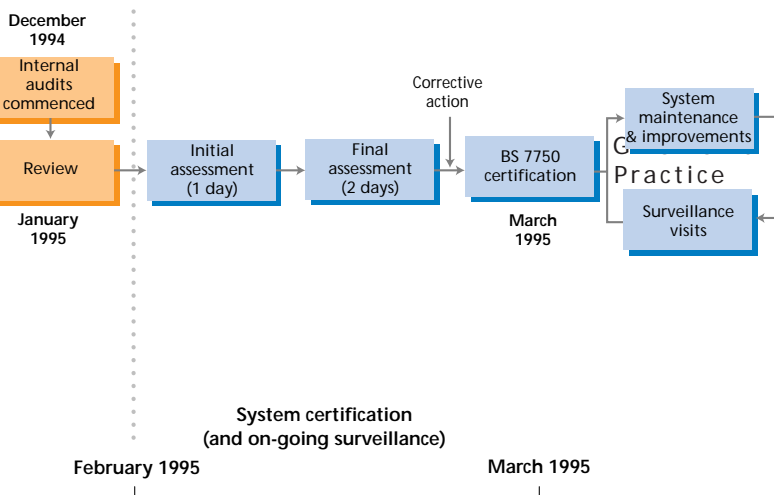
Register of Legislation

The EH&S Manager identified 32 items of relevant legislation when he compiled a list of all relevant environmental regulations based on existing site knowledge, supported by a literature review of specialist journals. He then added a brief description of the relevance of each item to the day-to-day running of the site. Finally, the actions needed to ensure compliance were added and cross-referenced to specific work instructions. This material was used to create the Register of Legislation.

The Register is updated periodically to ensure continuing compliance with all regulatory requirements.

Objectives and Targets

To secure employee ownership of the EMS, the EH&S Manager liaised with the Task Groups to agree



objectives and targets to control and minimise significant environmental effects in their areas of concern (energy use, effluent, waste management and packaging). Similarly, he liaised with departmental supervisors and line managers to set objectives and targets for other significant environmental effects, including raw materials, air emissions and purchasing. These 'brain storming' meetings were focused by using a structured problem-solving technique similar to the approach outlined in Good Practice Guide (GG25) *Saving Money Through Waste Minimisation: Raw Material Use*. This approach helped lead to the identification of other opportunities for performance improvement.

Agreed objectives, targets and timescales are recorded in the Management Programme, which acts as a 'road map' for performance improvement. Actions are prioritised and initiated on the basis of regulatory compliance, potential liabilities, cost benefits, etc.

Management Manual

The Environmental Management Manual provides a central reference point for all EMS elements and contains:

- Wolstenholme's environmental policy;
- responsibilities of key personnel;
- procedures and work instructions;
- Register of Environmental Effects;
- Register of Legislation;
- objectives and targets;
- the Management Programme.

Operational Control

Operational control is achieved through 16 EMS procedures and 38 work instructions. Bureaucracy and paperwork were minimised by modifying existing procedures for the BS EN ISO 9001 quality system to control aspects common to the EMS.

Audits and Reviews

Each department is subjected to an annual internal audit carried out by 12 trained staff, working in pairs according to a schedule prepared by the EH&S Manager. These audits are intended to ensure compliance with procedures, work instructions, environmental policy, etc.

Wolstenholme's environmental management review team meets quarterly, or as required, to monitor progress and to modify the EMS as necessary.

Costs and Savings

As a result of the EMS process, 21 environmental improvement initiatives were implemented in the five areas shown in Table 1, which also gives the costs and savings for these initiatives. Table 2 details the administrative and staff costs for EMS implementation at Wolstenholme. Table 3 shows the net total implementation cost, net annual saving and payback.

Other Benefits

Good housekeeping measures have not only reduced energy and raw material consumption, but also reduced environmental emissions, eg 60% less copper is discharged in effluents and the foundry's VOC

emissions have decreased by over 75%. The Company's profile with its customers, environmental regulators and insurers has been raised and the Green Group's activities have enhanced relations with the local community.

Table 1 Environmental initiatives: costs and savings (1995)

Item	Cost (£)	One-off savings (£)	Annual savings (£)
Waste reduction	5 800	-	39 800
Raw materials and consumables	8 000	25 000	32 000
Energy efficiency	24 000	6 000	31 800
Liquid effluent management	4 100	-	-
Avoided equipment costs	-	4 000	-
Total	41 900	35 000	103 600

Table 2 EMS implementation costs

Item	Cost (£)
Internal staff costs*	19 750
External training courses	870
Groundwork consultancy	3 600
BS 7750 certification costs	5 180
Total	29 400

*181 man days between August 1992 and March 1995 (EH&S Manager 126 man days)

Breakdown of internal staff costs for EMS implementation

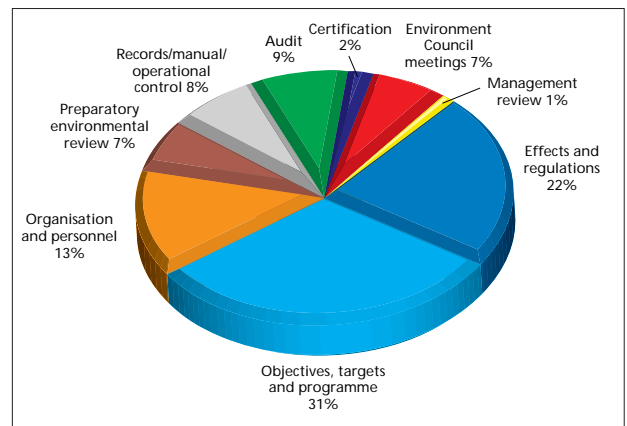


Table 3 Net cost, net saving and payback

	Costs, savings (1995 prices) and payback
Implementation cost (equipment + EMS)	71 300
One-off savings	35 000
Net total implementation cost	36 300
Annual savings	103 600
Annual labour costs (waste reduction)	2 000
Annual maintenance costs (EMS)**	5 500
Net annual saving	96 100
Payback	4.5 months

** 75 man days plus the certifier's annual surveillance fee for BS 7750 of £1 100



Wolstenholme International Ltd

Wolstenholme International employs 260 people at its site at Darwen in Lancashire. The Company produces bronze and copper powders in a foundry and milling operation, and aluminium powder from granulated aluminium foil. The powders are used as a pigment in printing inks, paints, plastics and in lightweight concrete and various other industrial applications. Offset metallic inks for the printing ink industry to create gold and silver effects for packaging and display material are produced by blending the powders with resins and varnishes.

Comments from Wolstenholme International Ltd

Implementing our Environmental Management System and obtaining certification to BS 7750 was an integral part of our drive for continuous quality improvement. As well as cost savings and reduced environmental emissions, we have peace of mind from knowing that we can demonstrate compliance with all relevant environmental regulations. As part of our aim to work with the local community, we take pride in publishing details of our environmental activities and the achievement of our environmental improvement objectives. In July 1996 we achieved registration under the EMAS Regulation and this enables the Company to produce Environmental Statements that have the credibility of being externally verified. EMAS will be used to promote the Company in Europe.

Our EMS is all about people. Our commitment to environmental improvement was led by myself and the Metallic Pigments Divisional Managing Director, Peter Warnes, while the EH&S Manager, John Maynard, was responsible for co-ordinating all aspects of the

EMS. He played a vital role in involving staff and supervisors at all stages of the design and implementation process. Many of our best solutions came from shopfloor staff and supervisors. We harnessed these ideas through training and awareness briefings and by forming employee Task Groups.



Mr P Rink
Chief Executive
Wolstenholme International Ltd

It proved necessary to discard some of our old working practices and adopt new ones. These changes took time to sink in, but the environment is now an integral part of the day-to-day management at Wolstenholme International.

“...we have peace of mind from knowing that we can demonstrate compliance with all relevant environmental regulations.”

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AEA TECHNOLOGY PLC THROUGH ETSU AND THE NATIONAL ENVIRONMENTAL TECHNOLOGY CENTRE



GOOD PRACTICE GUIDE (GG43)



As Chairman of BMCC and its constituent associations and their member companies, I welcome the publication of this Guide, which we recommend to companies that are seeking practical advice on implementation of environmental management systems. The application of these systems will assist in meeting the industry's environmental objectives and improve our image with the public.

Austin W Scott
Chairman, British Metal Castings Council

This document provides useful and down-to-earth guidance for those seeking to inform themselves on BS 7750, EMAS and ISO 14001 and what implementation involves. Although focused on the foundry industry, its contents are relevant to any company considering the implementation of formal environmental management processes – the Guide will act as an excellent launchpad for many future environmental management successes.

Alexander Peckham
Director, Institute of Environmental
Management

ENVIRONMENTAL MANAGEMENT SYSTEMS IN FOUNDRIES

This Good Practice Guide provides practical guidance to foundries wishing to take advantage of the benefits offered by an environmental management system. **The guide explains how to**

- carry out an environmental effects review
- prepare a Register of Environmental Effects and a Register of Legislation
- evaluate the significance of environmental effects
- prepare your environmental policy
- set objectives and targets
- prepare the necessary documentation
- carry out an internal environmental audit

An environmental management system is a practical management tool which if implemented, will give your foundry a **competitive edge** and a possible **trading passport to the world**.

**To obtain your FREE copy of
the Guide, please phone**

0800 585794