

Module 2: A Strategic Approach to Energy Management

As in any important organisational undertaking, implementing energy management requires strategic thinking along with an understanding of how to achieve change in “business as usual” practices. In this module, the energy manager develops an understanding of organisational style and culture and the means of effecting change. The “target” for change is defined in terms of the attributes of effective energy managing organisations. Finally, the strategic phases of implementation and the activities associated with them are developed.

Module 2 Learning Objectives

After completing this module you will be able to:

- ◆ Describe the organisational culture that prevails in your company;
- ◆ Contribute to change in the organisation towards effective energy management;
- ◆ Approach the implementation of energy management practices strategically.

2.1 Understanding Organisational Change

Energy management may require changes to the normal way of doing business in the organisation. Effecting change usually involves significant challenges that are based in part in the organisational culture.

Typically, appeals to control energy consumption do not directly motivate most managers or end users. Most **senior managers** in an organisation are not immediately concerned with conserving energy. Their main priorities are the organisation's **efficiency and profitability**.

The responsibilities of those who are accountable for energy management in the organisation—energy managers or co-ordinators, or line managers responsible for the overall efficiency of their departments (for the purposes of discussion, let's refer to all of these as **energy managers** to represent either their exclusive function or that part of their jobs)—include:

- ◆ monitoring consumption,
- ◆ setting targets,
- ◆ identifying and correcting faults,
- ◆ motivating staff to conserve energy and identifying
- ◆ and implementing energy saving measures.

These two sets of aims—of **senior managers** on the one hand and of **energy managers** on the other—are not necessarily in conflict with each other. Indeed one key to successful energy management is to develop ways that, as far as possible, allow these two sets of aims to overlap. This can be achieved by:

- ◆ providing appropriate management information on energy consumption to senior managers.
- ◆ demonstrating effective performance of the energy management function to senior and top managers, budget holders and end users.

If **senior managers** are provided with information they can use to achieve their aims, and if they are convinced that energy management will produce significant benefits for the organisation, then they are much more likely to support energy management activities.

2.1.1 Changing the organisation

Organisational change tends to follow a fairly predictable cycle; in the case of energy efficiency, these steps typically include:

- ◆ a desire to improve energy performance stimulates action
- ◆ uncertainty about the effectiveness of measures or actions leads to creative insights into the situation
- ◆ rethinking the problem allows you to change the approach
- ◆ and, improved control can finally become part of the routine.

The initial phase of the change process for energy efficiency often begins when people in the organisation want to improve performance, perhaps to meet competitiveness objectives or to address environmental concerns. Making the commitment to action may involve some risk, and this produces uncertainty that in turn can result in misgivings and abandoning the initiative.

But if the people involved are able to persevere, they will begin to re-frame the problem and enter a phase of creative insight in which new solutions are discovered. The new way of doing things can become routine as people adapt to the change. The organisation may then stagnate until someone initiates new changes and the organisation begins the cycle again. In a climate of continuous improvement, this cycle becomes a constant characteristic of the organisation.

A major challenge is to move peoples' attitudes and behaviour in the direction of energy saving. The kinds of questions that should be asked are:

- ◆ to what extent can the existing culture of the organisation be exploited?
- ◆ are there ways around organisational constraints that impede progress?
- ◆ can or should the organisation be changed?

2.1.2 Corporate Culture

Not all companies are the same. Figure 2.1 summarises corporate cultures into four categories.

Some companies are highly **entrepreneurial**; they are characterised by innovation and rapid growth, and often have leadership provided by a charismatic CEO. Change is a constant process in many aspects of their operation and, therefore, change related to the management of energy may occur more easily--given the commitment of key decision-makers. However, because of rapid change, these organisations often plan only in the short term, and quick returns are usually expected on investments.

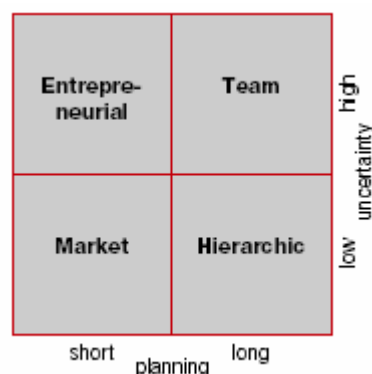


Figure 2.1: Classification of Corporate Cultures
(Source: Good Practice Guide 186, UK Department of the Environment)

Entrepreneurial organisations:

The implications for energy management are the importance of gaining the support of the CEO, and of demonstrating that quick returns are possible.

Some are “**team oriented**”. Such organisations are characterised by wide participation and co-operation in operations, planning and decision-making. Energy efficiency teams fit naturally with the usual way of doing business in these organisations. As well, planning is long-term and there is less pressure to demonstrate a short-term return on investment.

Team-oriented organisations

In this kind of organisation an energy efficiency committee will likely be instrumental in moving forward; such a committee should be broadly representative of the organisation--plant, human resources, finance, etc.

Still others are **hierarchical**. These organisations tend to be more conservative in terms of risk-taking, have more formal accountability structures that follow organisational lines of authority. There is a special need in hierarchical organisations to provide solid and comprehensive management information, but it typically takes longer to institute a new information-gathering system.

Hierarchical Organisations

There may be a need to clearly establish responsibility for energy management in this kind of organisation, even to create an energy management department.

Finally, some organisations exhibit a **market** culture. They are characterised by productivity and achievement, tend to be outward looking, and, in order to be responsive to market forces, tend to plan mainly in the short term. While there is a vesting of authority in a “boss”, the level of decentralisation is usually high.

Market Organisations

In terms of energy management strategies, the creation of “energy accountability centres”, discussed later in this course, may be a natural step.

2.1.2.1 Identifying the corporate culture of your organisation

Good Practice Guide 186, *Developing an Effective Energy Policy*, a publication in the UK Best Practice Programme, provides a structure for clarifying what culture (or cultures) is prevalent in an organisation. Figure 2.2 is a matrix that lists several key functions of organisational life, and relates them to the four cultures described above.

By choosing the option that best describes the organisation for each function, and adding up the selections in each column, you can determine the dominant culture in your organisation, and any other secondary cultural styles that come into play.

Most organisations have a mixture of cultures that come into play depending on the circumstances. In order to effect change, it is important to understand as much as possible about these cultural traits and the dynamics of decision-making.

Figure 2.2: Organisational Culture Matrix

	Entrepreneurial	Team	Hierarchical	Market
Characteristic	innovation growth <input type="checkbox"/>	participation co-operation <input type="checkbox"/>	structure control <input type="checkbox"/>	productivity achievement <input type="checkbox"/>
Focus	outward-looking <input type="checkbox"/>	staff-oriented <input type="checkbox"/>	organisation-oriented <input type="checkbox"/>	towards competitors <input type="checkbox"/>
Planning	very short-term <input type="checkbox"/>	long-term <input type="checkbox"/>	medium-term <input type="checkbox"/>	short-term <input type="checkbox"/>
Risk Tolerance	tolerate high risk <input type="checkbox"/>	tolerate uncertainty <input type="checkbox"/>	needs certainty <input type="checkbox"/>	prefer predictability <input type="checkbox"/>
Leadership	charismatic <input type="checkbox"/>	supportive <input type="checkbox"/>	conservative <input type="checkbox"/>	managerial <input type="checkbox"/>
Structure	flexible <input type="checkbox"/>	co-operative <input type="checkbox"/>	rigid <input type="checkbox"/>	cost centres <input type="checkbox"/>
Authority	leader - concentrated <input type="checkbox"/>	meetings <input type="checkbox"/>	rules <input type="checkbox"/>	delegated <input type="checkbox"/>
TOTAL				

2.2 Characteristics of Energy Managing Organisations

Some organisations have saved 20 to 40% of their energy costs through management—why doesn't it happen everywhere?

One might think that, with the potential for energy savings being well demonstrated in so many organisations, all industrial companies would do what was necessary to achieve the same reductions. And yet, energy waste continues to be common in industries everywhere in the world.

When we try to understand why so many companies do not manage their energy, we find the following reasons, among others:

- ◆ They cite the absence of an “energy efficiency culture” and awareness of the need and potential for efficiency improvement as major barriers;
- ◆ Many do not have policies that specifically address energy management;
- ◆ Many do not have an energy management plan;
- ◆ Some companies lack the skills in their personnel to do energy analysis and to identify and implement energy management measures;
- ◆ Energy use data is usually collected, but many industries do not exploit the full potential of the management information that can be derived from that data;
- ◆ Many do not have detailed energy use inventories for their plants;
- ◆ Many have good knowledge of efficient technology that can be applied in their processes, but lack the business processes to implement energy management as “business as usual”.

Conversely, when we look at companies that are effective at doing energy management, the following characteristics are commonly found. Typically they:

- ◆ exhibit a broad **awareness** of the benefits of energy efficiency throughout the organisation;
- ◆ **collect and analyse information** to manage their energy use;
- ◆ have an **energy management plan**--short term and long term;
- ◆ integrate the task of managing energy into the **overall management structure** of the organisation;
- ◆ provide **leadership** for energy management through a “champion” or group of committed staff—an energy management team—and, perhaps have top-down commitment expressed in the form of an **energy policy**.

2.3 A Strategic Approach to Energy Management

Planning for the implementation of energy management is an essential strategic business process for industrial organisations, having as its goal the improvement of energy efficiency and the reduction of total operating costs. An “**energy master plan**” links energy management with an organisation's overall business strategy and incorporates financial, business management, and communications concerns along with technical considerations.

The planning process encompasses traditional analysis, system design, and installation of energy efficiency measures. However, unlike other energy strategies, it starts before, and continues after, the implementation of measures as an ongoing management process.

The process begins with identification of the opportunity to reduce energy consumption and costs, and gaining senior management commitment to pursue it. The analytical phase calls for an assessment of internal energy-related business processes and resources, including personnel, information, equipment, contracts, and existing strategies. The process extends through all phases of standard energy management but reaches beyond the boundaries of traditional engineering to include measurement and verification, commissioning, energy procurement, energy-related equipment purchasing, staffing and training, communications, and business target setting. The process also creates feedback loops to improve operations through continuous monitoring and enhancement.

2.3.1 Three Critical Elements

Energy master planning addresses three inter-related elements:

- ◆ It is based on a **strategic approach** to implementation of energy management practices: as described in the following sections and subsequent modules, it is useful to think of these phases as
 - Gaining control
 - Investing
 - Maintaining control
- ◆ It ensures that the required **management practices** are entrenched in the organisation's management system; these practices include technical assessment and process management.
- ◆ It provides for energy **information management** processes, both to support the planning process itself, as well as to sustain the energy management practices that are implemented.

This course develops principles and methods related to all three of these critical elements.

2.3.2 A Strategic Approach

Organisations can adopt a variety of approaches to energy management. Where the responsibility for energy management is located, how it is staffed and funded, and how it relates to other parts of the organisation—these are questions to which there is no single answer, but a range of options. The strategy you adopt will depend on your individual situation; particularly on the corporate culture of the organisation you are working in, and on the level of maturity it has reached in energy management.

However, there are some common themes in how energy-managing organisations implement these practices. One of these themes is a sequence of phases for implementation:

- ◆ **Phase 1:** gaining control over energy consumption
- ◆ **Phase 2:** investing in energy saving measures
- ◆ **Phase 3:** maintaining control over consumption.

Figure 2.3 presents this approach graphically.

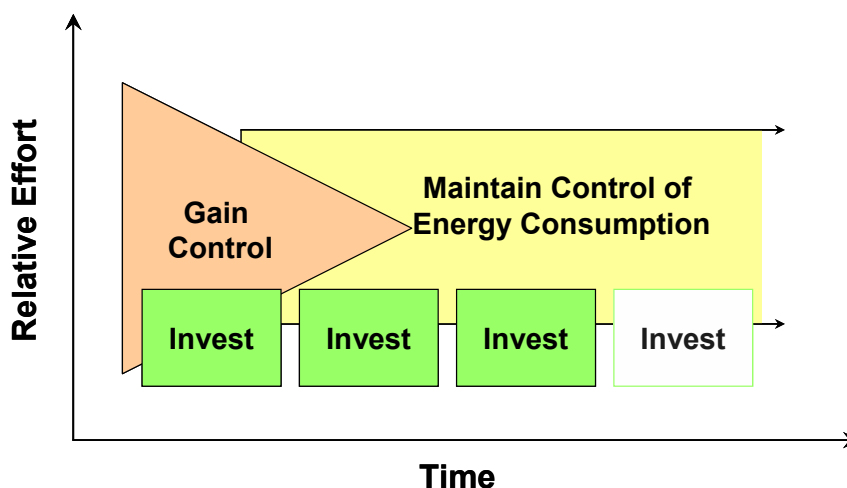


Figure 2.3: Strategic Phases of Energy Management

As the figure illustrates, there is a period of preparation in which the organisation explores the possible merits of energy management in view of its corporate priorities, addresses the external circumstances such as utility issues and government regulations, and seeks at least a preliminary commitment from the senior management and/or Board.

This leads into the three strategic phases; most organisations begin by gaining control of their energy use; the effort involved diminishes over time as subsequent phases begin. Soon after the process begins, investments in measures, whether operational, technological or focussed on human resources issues, will need to be made. And finally, even while these first two phases continue, initiatives designed to maintain control of the energy saving process begin.

2.3.3 Gain Control

The first aim of energy management should be to **gain control** of consumption and costs by assessing current use, and by taking steps to incorporate energy efficiency into the corporate culture. This often involves:

- ◆ Identifying, and quantifying, your organisation's major users of energy
- ◆ Reviewing energy purchasing strategies—the fuel and billing rate structure choices—to make sure that the most appropriate energy sources are being exploited and that they are being bought at the right prices.
- ◆ Assessing operating practices—your heating plant, lighting and ventilation control strategies to ensure that existing plant and equipment is being operated at maximum efficiency.
- ◆ Motivating and training practices—energy awareness-raising campaigns and training programs for all individuals and groups whose actions can affect

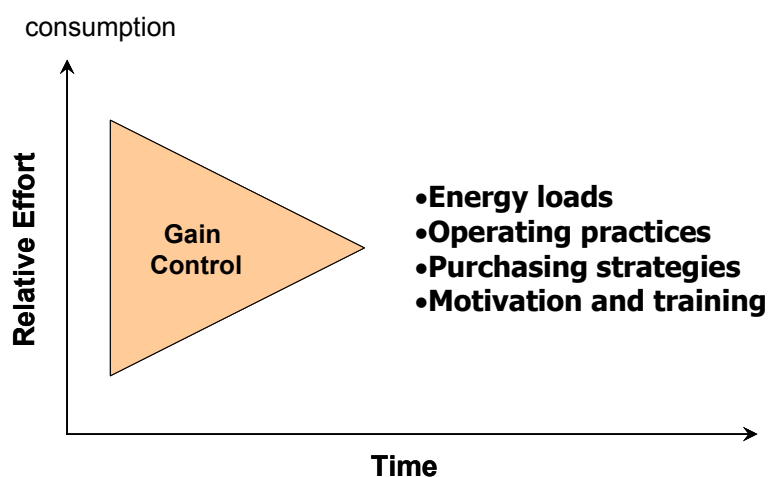


Figure 2.4: Gaining Control

2.3.4 Invest

Once the operation of existing plant has been brought under control, and obvious excess consumption has been eliminated, you can turn your attention to investing in energy saving measures that cost money. This phase involves a review of the opportunities for investing in increased energy efficiency and ranking these in terms of the capital expenditure required and their predicted rates of return. It also involves the application of corporate investment policies and practices to energy management investments—creating a “level playing field” in terms of other investment priorities.

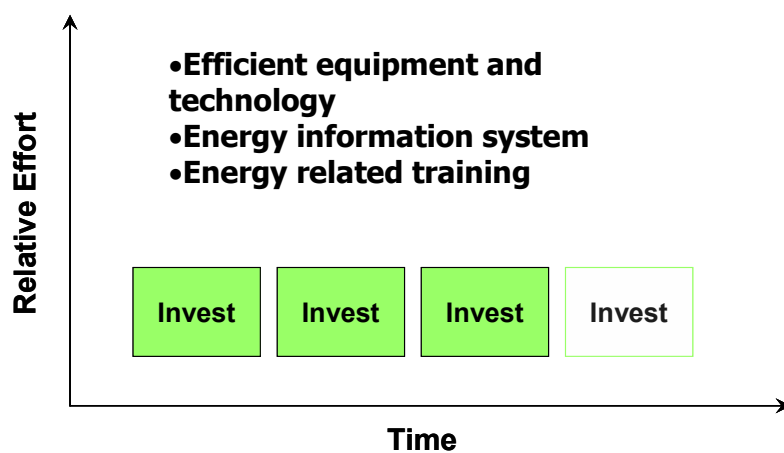


Figure 2.5: Investing

2.3.5 Maintain Control

As soon as Phases 1 and 2 are under way you will need to act to maintain control and protect your investment. This means establishing and operating an effective energy management information system which is often referred to as a monitoring and targeting (M&T) system, or what we call Energy Monitoring, Targeting & Reporting (MT&R – See Module 7).

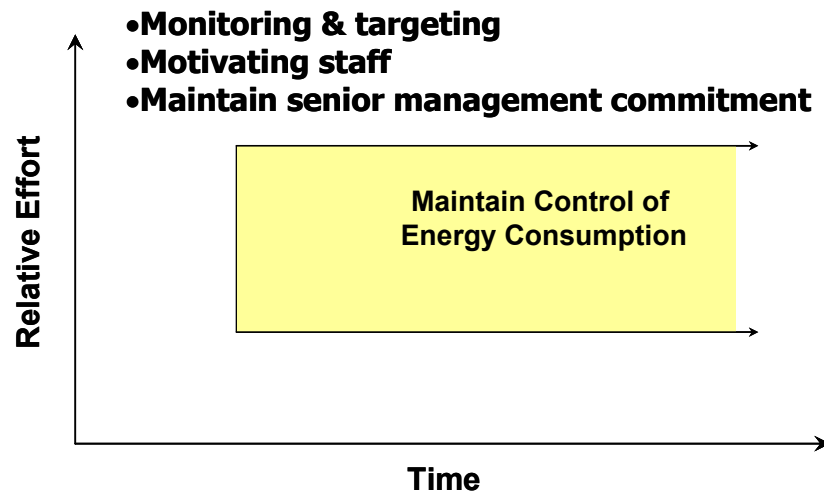


Figure 2.6: Maintaining Control

The ultimate goals of phase 3 are to:

- ◆ maintain control over energy consumption in the long term
- ◆ to sustain energy savings
- ◆ and to protect existing energy saving investments.

2.3.6 An ongoing process

The time taken over Phases 1 and 2 depends on the extent of the problems you face and the resources your organisation is willing or able to devote to them. If insufficient expertise and money are invested, then an organisation is likely to fail to reduce or gain control of its energy consumption. In some cases, it may even slip backwards.

Without continual support from senior and top management, adequate funding and a vesting of responsibility in the right staff, control will be lost. If this happens, then an organisation may slip back to a position worse than it occupied before it started trying to save energy. For, having once experienced failure, it will be more difficult a second time around:

- ◆ to convince senior management to make the further investments of time and money required for energy management to succeed
- ◆ to motivate other staff to treat energy saving seriously.

In practice Phases 1 and 2 are never entirely completed. Gaining and maintaining control is a dynamic process. Over time, you will find that you regularly have to re-establish control as users become less energy conscious or control systems need re-setting. Likewise, as technology changes, the benefit of investing in new measures needs to be reappraised continually.

This reasoning is consistent with the view that energy management is an element of continuous improvement. In simple terms, it is useful to think of this as a “Measure-Analyse-Act” cycle, as illustrated in Figure 2.7.

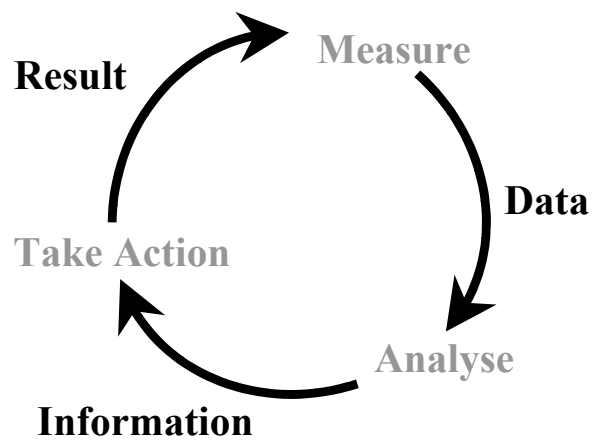
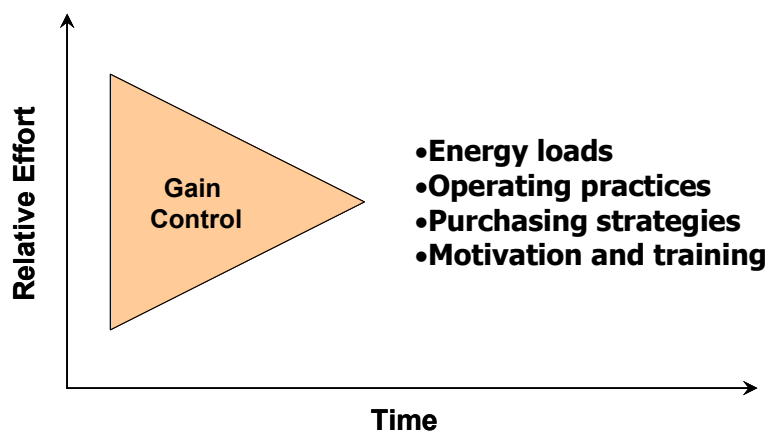


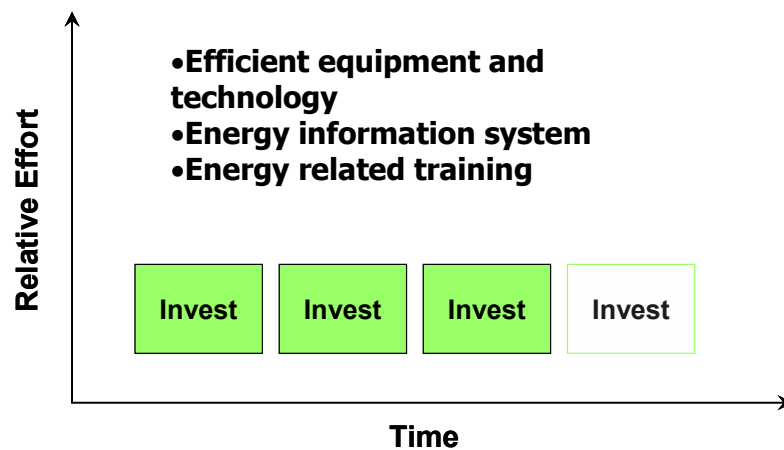
Figure 2.7: Energy Management and

Worksheet 2-1: Action Planning - Gaining Control



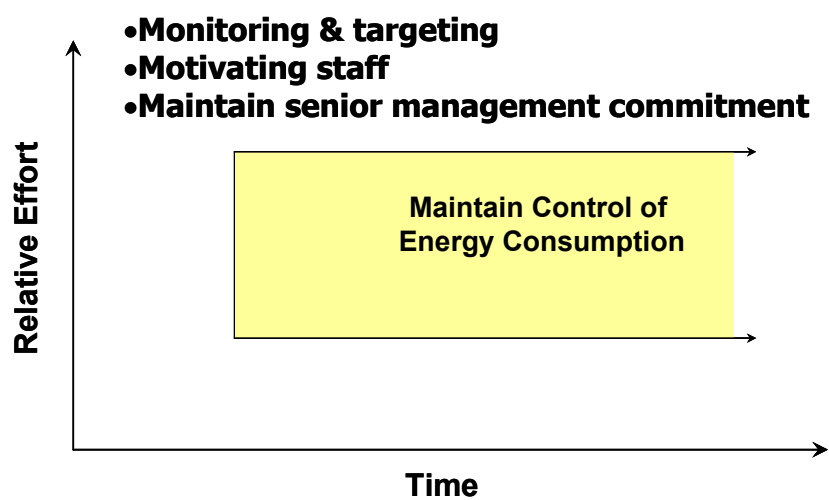
Action	Accountability

Worksheet 2-2: Action Planning - Investing



Action	Accountability

Worksheet 2-3: Action Planning - Maintaining Control



Action	Accountability