Module 11/15
Electrical Installations

Sustainable Building Design

Achieving sustainability requires us to live within the limits of the earth's capacity to provide the materials for our activities and to absorb the waste and pollution which our activities generate.

The construction, fit out, operation and ultimate demolition of buildings is a huge factor in human impact on the environment both directly - through material and energy consumption and the consequent pollution & waste - and indirectly - through the pressures on often inefficient infrastructure.

There is already a significant amount of information available to all professions on how to design buildings which are attentive to the needs of sustainable construction. But most practice still falls radically short of implementing even easily applicable principles in the majority of projects. Opportunities which could bring real advantage are being missed every day. The result is that buildings and the industries which supply building designers with products, materials and services are less efficient, less economical and more polluting than they might otherwise be.

Sponsored by
The Ecology Building Society
and the DTI

This module aims to investigate issues concerned with electrical energy and how careful design of electrical installations can contribute to achieving sustainability objectives.

There is real and justifiable concern about the rate at which we are utilising non-renewable fossil fuel resouces and generating pollution to meet our electrical needs. There are also concerns about the unacceptable risks and cost of nuclear energy and about our ability to develop adequate sources of clean renewable technologies.

Although recognised as an issue for many decades, there is still far too little attention given to the development of techniques, technologies and, importantly, to the appropriate behaviour and usage patterns which could deliver much needed efficiencies.

Other modules in this series have dealt with aspects of electricity:- lighting (2), ventilation & cooling (6), renewables (7) and some technologies were covered in heating (4). However electricity was felt to be of significant importance, and insufficient attention, to justify focus in its own right. Repetition has been avoided as far as possible and other modules are required to fully cover the subject.

We hope that the information provided will be valuable to all designers eager to know about the issues and the questions to ask in order to deliver more sustainable buildings.

Continuous Professional Development

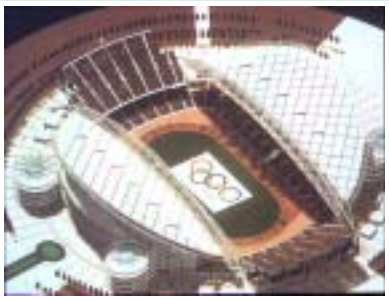
This CPD module is the eleventh of a series which summarises the existing sources of best practice guidance on sustainable building design. These modules do not attempt to repeat what other documents contain, except to summarise the most important environmental issues.

Each module provides information on critical aspects of a particular topic and directs the reader to the contemporary tools and guidance which will assist in implementing best practice. A range of case studies cover some of the important issues to assist in moving forward best

Objectives

By the end of this module the reader should be able to:

- Respect the fact that design of electrical installations has wide ranging impact;
- Understand the issues concerned with electrical system design and their relevance throughout the building life cycle and beyond;
- Appreciate that careful selection of electrical equipment can contribute significantly to reduction in pollution of the local and global environment;
- Make informed decisions to assist in designing more sustainable electrical installations, without excessive cost and maintenance implications and without detriment to fitness for purpose;
- Communicate to clients the importance of careful design in electrical installations;
- Understand that there are no magic solutions;
- Understand and be able to access the guidance, tools and techniques available for staying abreast of choices and issues in electrical design.



Top left, Today computers typically operate at a power rating of 50 watts or less - but attention to standby losses is a serious requirement.
Bottom left: CHP, District Heating and Energy Strategy - Perthshire (33 flats) & Servite Housing Association (30 unit sheltered housing) Stevenson F., Sustainable Housing Guide Scottish Homes 2000