

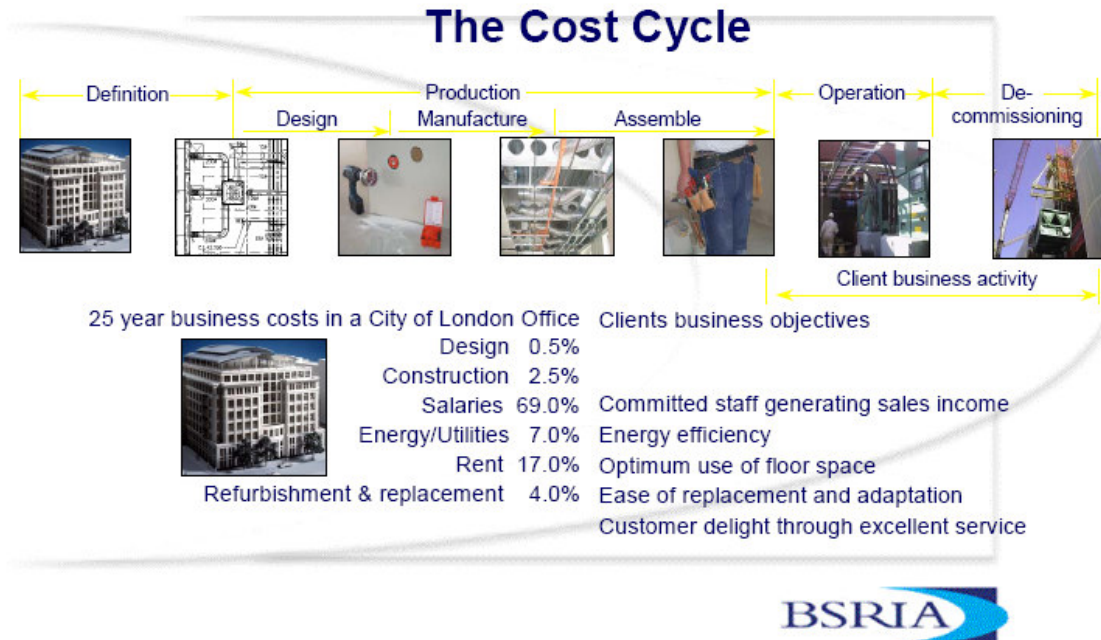
BUILDING DESIGN AND BUILDING SERVICES

The design of a building has an influence on the costs incurred during the life of the building. Building services can account for between 20% and 60% of the capital cost of a building and 50% of the operating costs for a typical office (source; BSRIA, 2002).

It is therefore important that the services form an integral part of the overall building concept to help ensure that they operate efficiently. Involving engineers from John Packer Associates at an early stage in the design process can help to achieve this objective.

If the services are not considered until a later stage, problems which could have been overcome by simple measures may require a more complex technical solution. A well designed building may cost a little more initially, but the overall cost of ownership will be reduced.

The following diagram shows how the lifetime cost of energy for a typical office is nearly three times the capital cost of the building, and fourteen times the professional fees associated with the original design.



It is not always possible to design a building that can utilise all possible energy and environmentally friendly measures. Urban noise and pollution may dictate the need for sealed buildings incorporating a mechanical ventilation or air conditioning system.

Energy Efficient Strategies:

- In cold weather heat gains should be maximised and heat losses kept to a minimum, whilst ensuring adequate ventilation
- Correct orientation external shading and fenestration can all reduce unwanted heat gains.
- Natural ventilation should always be used where possible. Where this is not adequate for cooling, a mixed mode system is preferable as opposed to a complete air conditioning system
- Maximum use of daylight should be made to reduce the energy used by artificial lighting

The amount of space taken up by the services is among many criteria upon which a well designed building can be judged. Project specific factors such as the amount of servicing required, means that it is not possible to lay down specific guidelines on the spatial requirements for building services.