Costing lives

Rarely, if ever, is an energy-consuming building, system or product more expensive to buy than it is to run over its lifetime. That’s why it makes perfect sense to calculate the cost of ownership by using whole life costing. But what exactly is it and how does it work? John Grenville, MD of ECEX, explains

A builder and client are in conversation: “Would you like an estimate?” asks the builder. “No, I’d like to know how much it’s going to cost,” answers the client.

This exchange neatly sums up why whole life costing (WLC) is so important. Rather than simply approximating the cost of a building, WLC enables you to get a precise handle on your total expenditure over its entire lifetime – from cradle to grave, so to speak.

Put simply, WLC of a building takes into account not only the cost of design and construction, but also its operational costs.

These include energy (consumed for heating, lighting and cooling); maintenance (to preserve, or even improve, initial performance), and might also embrace so-called ‘embodied energy’. This is the energy consumed by all the processes associated with the building’s construction, from the mining and processing of natural resources to manufacturing, transport and delivery.

Then, of course, there is the cost of knocking the building down at the end of its life.

The costs of running and maintaining an office building have been estimated at about 200 times the cost of building itself. That’s why it’s important to take all these elements into consideration when making procurement decisions.

The Building Engineering Services Association, a trade body for companies that design, install, commission and maintain heating, ventilation and air conditioning equipment, reckons that 10 per cent of the total lifetime cost of the average commercial building is invested in its construction, 80 per cent is spent operating the building while it’s used, and the remainder is dismantling and demolition.
Unfortunately, the experts disagree about the true definition of WLC, which tends to rather muddy the waters. Some, for example, believe it is interchangeable with lifecycle costing, others that there are profound differences between the two.

There is an international standard – ISO 15686-5 – that sets out the meaning, rather clumsily, as “an economic assessment considering all agreed projected significant and relevant cost flows over a period of analysis expressed in monetary value. The projected costs are those needed to achieve defined levels of performance, including reliability, safety and availability”.

I would say though that, in essence, WLC is a calculation of the financial costs for the purchase, operation, maintenance and repair (and, sometimes, disposal) of an asset over its life.

But, whatever its meaning, WLC can be a valuable weapon in an energy manager’s armoury. In fact, WLC doesn’t have to apply only to buildings. The same principles can be employed to discover the cost of systems and even individual products or components. Research has shown that the purchase cost of equipment tends only to be a small proportion of the costs of operating it. So, for example, it might be worth paying extra at the outset for more expensive LED lighting

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**Winning the power game**

It’s a no-brainer – energy efficient buildings lead to lower operating costs. Indeed, energy appraisal is probably the most important facet of whole life costing because energy constitutes such a high proportion of a building’s operating costs.

However, the costs aren’t just financial. They can be non-monetary too, such as the carbon emissions associated with the production, transmission and consumption of energy.

As with all energy saving ideas, you need to look at the whole life energy cost of a particular scheme (not just the headline figure), to get an accurate picture of its true cost. For example, it has been argued that hybrid cars are actually less cost-efficient and environmentally friendly than many diesel engine cars that don’t have a 500kg battery being carried around that needs replacing every three to five years.

Whether or not this is true, it does hammer home the point that it pays to think more deeply about energy efficiency. That should strengthen your case when you go to the Board requesting investment in your latest energy conservation scheme.
because it consumes less power and lasts considerably longer than conventional lighting, saving you energy and money in the long run.

The same applies to an investment in pre-filtration for air handling units and air conditioning systems. This has been proven to save 5% in power consumption, reduce maintenance requirements and extend the life of a HVAC system.

A similar argument applies to the heating, ventilating and air conditioning systems themselves. Choosing the most energy efficient system when a building is constructed is all very well, but if it’s poorly maintained then its efficiency will deteriorate over time and it will cost more to operate than it should.

WLC offers a host of benefits for clients. For example, it:

- Provides data on actual performance to enable you to create a benchmark for future improvement.
- Encourages the analysis of business needs to give you a clearer picture of where you stand.
- Promotes realistic budgeting for energy management, operation, maintenance and repair.
- Helps you to balance the initial capital expenditure and running costs.

ECEX supplies and installs energy saving, ECEX Air Intake Screens, which improve the efficiency and lifespan of HVAC equipment. For more information, visit www.airintakescreens.co.uk.