USING WHOLE OF LIFE COSTING TO

SPECIFY QUALITY

PLUMBING PRODUCTS IN AUSTRALIA

ENWARE

INTRODUCTION

Quality and performance should be the priority for the building industry. It is crucial that professionals strive to question whether a product or material will maintain optimum performance levels for the entire lifecycle of a development, and that decisions are based on informed cost and quality analysis. Unfortunately, as Governments increasingly try to save money on public infrastructure projects, a highly competitive tender market has produced unintended negative consequences. The tendency for the construction supply chain to be incentivised to reduce costs and time of project delivery can lead to decisions being based on upfront costs, instead of long-term costs. Surveys of recently completed buildings have regularly revealed substantial shortfalls between client and design expectations and delivered performance. This is fuelled by the focus of contracts on builders and architects achieving practical completion, with obligations post-practical completion focussed only on the defects liability period.[1]

The current market conditions have also led to a tendency for projects to be specified to meet only the minimum performance standards, which often later prove insufficient; even though a product is deemed to be compliant, the materials may not last the life of the development or project. This results in sub-standard projects that check out on paper, but in reality over time will fall below a fit-for-purpose solution.[2] The responsibility of designing and specifying quality, fit-for-purpose, and cost-effective projects lies with building professionals. It is essential that professionals take into account that although cheap products may have an appeal due to a low initial output, their operational inefficiencies will quickly become evident when they fail and need to be replaced or require repairs. Cheap products may come at the expense of quality, safety, and performance. To ensure quality, long-term, and demonstrably cost-efficient solutions are provided, a whole of life cost assessment must be conducted.

WHAT IS WHOLE OF LIFE COST?

Whole of life costing is a form of investment analysis. It can be used as a tool to assist in making decisions between options with different cash flows over a time period. It takes into consideration all relevant costs associated with the ownership of an asset and is relevant for considering whole estates, whole facilities, individual buildings, or structures and when comparing alternative investment scenarios. It is defined by the draft International Standard as "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." Whole of life costing has a range of benefits for companies, such as encouraging analysis of business needs and communication of these to the project team; optimising the total cost of ownership/ occupation; promoting realistic budgeting for operation, maintenance, and repair; and facilitating informed decisions about the materials and components used.[3]

Whole of life costing helps to facilitate operational excellence and efficiency. Operational excellence/efficiency is a philosophy that aims to execute operations in an efficient and effective manner across the value chain with a focus on delivering value to customers.[4] Whole of life costing calculates and presents which options will provide this value across the life of a project.

FACTORS INFLUENCING WHOLE OF LIFE COST

The whole of life cost of a project and a professional's ability to calculate it is influenced by several factors. Contributing to the level of complexity is the cost-driven construction industry, which is underserving architects in terms of their focus on, and ability to deliver, operational excellence.[5] The issue is exacerbated by the links in the supply chain providing inadequate support and not sufficiently emphasising whole of life costing.[6]

Product quality is a defining factor in calculating whole of life cost. If a low-quality product is specified, the owner will later be slugged with the cost of replacing it with a fit-for-purpose product. This is particularly crucial in large commercial projects as they use a high number of different products, meaning the cost of replacing each is magnified. Central to whole of life costing is encouraging analysis of the potential operational efficiency burdens through product failures. If a product fails, it can create significant operational efficiency burdens as it may require a facility to be closed while it is being fixed. in the instance of public infrastructure, this is unfeasible and unacceptable. Maintenance costs are a central part of whole life costing and must be factored in to accurately understand the full expense of a product. It must be considered that cheaper products may be of a low quality and require repairs or additional ongoing maintenance.[7] This cost can quickly add up in big facilities and greatly outweigh the initial cost benefit. It is also important to factor in planned maintenance, which reduces the need for costly reactive maintenance.

The non-financial costs of public projects, although sometimes less visible than the financial costs, are incredibly important. Particularly in public projects, which may have the sole purpose of improving the health or safety of a community, it is crucial that an accurate balance is struck between health and safety risks.[8] For example, in a healthcare environment there is an increased need to manage the risk of microbial growth by providing clean, safe temperature water. Unfortunately, the healthcare market is not immune to specification of products that are engineered for cost reduction at the expense of quality, performance, and safety. For example, one prominent Australian public hospital has seen a 30% failure rate within two years of opening on critical plumbing fittings that has resulted in closed wards, higher risk to patients and staff, and excessive maintenance costs.[9]

ASSESSING WHOLE OF LIFE COST

The algorithm to assess the whole of life cost is a contentious point. It has proved difficult to establish standards that yield quantitative information regarding the life expectancy of one product versus another. In 1998, the UK Royal Academy of Engineering suggested a 1:5:200 ratio, whereby for each £1 of a building's capital costs, its building maintenance and operation-related costs over 20 years could be £5, and the occupying business' operating costs £200.[10] The ratio is not supported by any research, information, data, or analysis, and has since been debunked by researchers.[11] Constructing Excellence has proposed that it is at least likely that many organisations will be in the range of a ratio of 1:4:10-30. This means the long-term cost of operating a built asset greatly outweighs its original capital cost. A fourth number can be added to the ratio to account for the added value a built asset can provide during its operational phase, for example by improving organisational outcomes. A more specific ratio should be derived for a client at the outset of any investment.

Whole of life costing is particularly crucial in commercial buildings and public infrastructure, where large numbers of products are specified which are required to perform under heavy use and for prolonged periods. In fact, under Australian law, an accountable authority of a Commonwealth entity must govern an entity in a way that "promotes the proper use and management of public resources for which the authority is responsible" and "promotes the financial sustainability of the entity". Whole of life costing can be used to plan and test a project to meet these objectives. It can be used throughout the entire lifecycle of a project, including when comparing competing products to identify areas for improvement and to achieve optimal long-term performance.

Building professionals vying for Government projects are bound by the updated Commonwealth Procurement Rules, which took effect on 1st March 2017. The rules specify that an official conducting a procurement must consider the relevant financial and non-financial costs and benefits of a submission, including the quality, fitness for purpose and whole of life costs, including initial purpose costs, maintenance, transition out costs, licensing costs, costs of additional features procured after the initial procurement, and consumable and disposable costs.[12]

WHERE TO FROM HERE?

The complexity of assessing whole of life costs needs to be simplified. The first step is involving the construction industry and supply chain in discussions about whole of life and operational excellence. It is essential that professionals and the building industry work closely with suppliers to supply durable, long-lasting products which benefit them in the long term, helping ensure repeat customer business. This is particularly relevant where a client is a big public body and providing a quality, cost-effective project positions a company to win further, large-scale projects.

Suppliers must also work to gather information that is useful in determining whole of life cost by keeping accurate records of asset information during construction and refurbishment cycles. This allows easy tracking of performance, which must then be benchmarked against competing products to allow professionals to make informed decisions.

KEY CONSIDERATIONS WHEN SPECIFYING PLUMBING PRODUCTS

Plumbing products have a special set of considerations when it comes to whole of life costs. Alongside the initial cost of the product and installation costs, there are numerous qualities that affect the whole of life cost of plumbing products. For example, for a product to deliver water quality over time, it should be fabricated from material that will not deteriorate with age or contaminate the water supply. Water flow and pressure over time is also important and the product should deliver optimum water flow over its full lifespan with minimal maintenance. Hygiene is another top priority, and a suitable product should not promote microbial growth or pose any other potential risks to health.

CONCLUSION

For any project, it is vital that building professionals consider costs holistically and not just in terms of initial output. By considering cost implications of products at all stages of the project life cycle, architects, builders, specifiers, and other building professionals could save their clients a lot of unexpected costs further down the track. Mobilising whole of life assessments and ensuring they are accurate relies on the construction industry and suppliers involving themselves in the discussions of whole of life and focussing on delivering operational excellence through their product and after-sales service. One supplier who is achieving just that is Enware.

ENWARE

Enware is an Australian-owned and based manufacturer with experience in meeting the safe water delivery demands of large public infrastructure projects. It understands the needs of the cost-conscious client, and offers a suite of efficient, high performance products with unrivalled operational efficiency, safety, and whole of life cost.

Enware Australia has three clear goals. It aims to deliver a clear whole of life cost benefit in Public Infrastructure Projects through:[13]
1. Providing product longevity, leading to increased economic value.
2. Offering tested, safe solutions backed up by adequate monitoring and the appropriate controls for improved user health and safety.
3. Improved overall performance of plumbing infrastructure.
Specify Enware's plumbing products to future-proof your next project, or contact their team of experts, who can assist you in calculating "whole of life" costing.
See www.enware.com.au.

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