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ORIGINAL ARTICLE

"LIFE CYCLE COSTING – A TOOL FOR STRATEGIC MANAGEMENT ACCOUNTING" – A CASE STUDY

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Abstract:

Life cycle costing is a system that tracks and accumulates the actual costs and revenues attributable to cost object from its invention to its abandonment. Life cycle costing involves tracing cost and revenues on product by product bases over several calendar periods. The Life Cycle Cost (LCC) of an asset is defined as "The total cost throughout its life including planning, design, acquisition and support costs and any other costs directly attributable to owing or using the asset". Life cycle cost of an item represents the total cost of its ownership, and includes all the cost that will be incurred during the life of the item to acquire it, operate it, support it and finally dispose it. Life cycle costing is a means of estimating all the costs involved in procuring, operating, maintaining and ultimately disposing a product through out its life.

KEYWORDS:

Life Cycle , Strategic Management , acquisition , cost analysis.

INTRODUCTION

Life cycle costing is a three staged process. The first stage is life cost planning stage which includes planning life cycle costing analysis, selecting and developing life cycle costing model, applying life cycle costing model and finally recording and reviewing the life cycle costing results. The second stage is life cost analysis preparation stage followed by third stage implementation and monitoring life cycle cost analysis. The life cycle costing analysis is a multi-disciplinary activity. An analyst, involved in life cycle costing, should be fully familiar with unique cost elements involved in the life cycle of asset, sources of cost data to be collected and financial principles to be applied. He should also have clear understanding of methods of assessing the uncertainties associated with cost estimation. Number of iterations may be required to perform to finally achieve the result. All these iterations should be documented in detail to facilitate the interpretations of final result.

CASE STUDY:- LIFE CYCLE COSTING FOR A PAINTING SYSTEM

The SUS-Power Plant is situated in a corrosion conducive moderate industrial environment just 100 kms from the sea. The area receives approximately 132 cm of rain each year in a climate where temperatures range form the sea. The area receive approximately 132 cm of rain each year in a climate where temperatures range form 8 Farenheit to 104 Farenheit (13 V to 40 C). Sulfides and other corrosive chemicals will be prevalent in the facility's microenvironment. The newly designed coal-fired boiler is surrounded and supported by appprodimately 3,175 tonnes of structural steel and related structures.

Currently being detailed for fabricationand crection the original specification called for the steel to be commercially blast cleaned to SSPC-6 painted with a tow coat paint system o finorganic zine primer of three mils (76microns) dry film thickness (dft) and polyurethane topcoat of four mils (102 microns) dft.

In the meantime the company was informed that according to the Battelle Memorial Institute annual corrosion of steel in the United States infrastructure and industry had direct costs estimated $ 350 villion. That figure represented about 4 per cent of the gross national product. Additionally another recently completed study , Corrosion Cost and Preventive Strategies estimated the indirect costs for specific market sectors to be as much as much as 11 times the direct costs. It was estimated that 35 per cent of those corrosion costs both direct and indirect could be prevented with the use of exsting technologies and best available practices. So the question was whether to utilize proven corrosion control technology like hot dip galvanizing.

The power plant manager was asked to gather some more information on the matter before finalizing on the two coat paint system of inorganic zinc primer of three mils(76microns) dry film thickness (dft) and polyurethance topcoat of four mils(102 microns) dft. The power plant manager gathered the following information on the alternative galvanizing paint system

'The National Association of Corrosion Engineers 'Ppaper // 509 states that a recent study of the initial and life cycle costsof four distinct and commonly specified paint systems as compared to hot dip galvanizing indicates exactly what proponents of hot dip galvanizing have known for many years galvanizing saves taxes and increases profits. For a normal mix of structural steel (250sqft/ton) on a project expected to perform for 30 years in a moderately industrial environment galvanizing is not only competitive on an initial cost basis but anywhere from 63 per cent to 284 per cent less expensive on a life cycle cost basis. In one example corrosion prevention provided by hot dip galvanizing costs about $0.055/sq ft/yr. For the same project an acrylic water borne primer with acrylic water borne topcoat system would cost $0.14/sqft/yr-almost three times more expensive that hot dip galvanizing.

This information is the cause or all taxpayers to demand that public entities use fife cycle costing on public projects. Many authorities by law are required to but rarely practice what is on the books. For private companies that are responsible for future maintenance on facilities that that they own a own term approach to profitability shourl be taken and if so a proven corrosion prevention method such as galvanizing would be chosen more often. For design construct operate companies not in an ownership position life cycle costing make perfect sense.

For all of these entities there would be little or no maintenance costs to chip away at operating profit. Besides the obvious economic benefits galvanizing keep our bridges sage protect ship bulls and safeguard bandrail eliminates lost productivity due to manufacturing downtime menas less time in bumper to bumper traffic because galvanized roads/bridges need little or no repair for generations and uses zinc in its process. Zinc is a naturally occurring metal representing 0.4 per cent of the earth itself is used in a variety of health and beauty aids and is a part of our recommended daily allowances for minerals.

After careful consideration of the above information about the technology and life cycle costing the plant manager calculated 35 year life cycle costs for both hot dip galvanizing paint system an the proposed two coat inorganic zinc (IOZ) primer and polyurethane paint system .

The result is the following analysis.

	Hot Dip Galvanizing	2-Coat IOZ Polyuretbane
Initial material and application cost	$0.90/sq.ft	$1.50/sq.ft
Touch-up year 18	0	0.60/sq.ft
Maintenance repaint year 24	0	105 /sq.ft
Full repaint year 33	0	2.02/sq.ft
Total	0.90/sq.ft	5.17sq.ft
Total cost of maintenance per yea for 35 yrs	0.028.sq/tr	0.148/sq.ft/yr

From the above analysis it is very that hot dip galvanizing is the right choice in view of the fact that it requireds no maintenance for the useful life of the project. The useful life of hot dip galvanized steel of verying coating thickness in a wide variety of environments is now possible to calculate with the help Zinc Coating Life Predictor software developed with funding from the International Lead and Zine Research Organisation. The date input required are temperature annual precipitation relative humidity sulphur dioxide concentration and airborne salinity . Once these values are input the software calculates and reports a corrosion rate and gives the option to either calculate the predicted life given the zinc coating thickness or the coating thickness required to achieve specified life. From the above case on life cycle costing the following is recommended :

When the initial investment cost is very high it is useful to compute the cost over the life of the asset and compare it with alternatives.
When the life expectancy of the asset is very high costs incurred after acquisition are very significant.
When the operating and maintenance costs are very high life cycle costing is effective in order to reduce these costs.
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When energy costs are very high life cycle costing I effective.
Disposal Cost : In the case of equipment whose net disposal cost is significant life cycle costing is effective.

SUMMARY

The Defence Department of the United States has been using the concept of life cycle costing for a long time. The practice goes by the name of design to cost. Design to cost establishes the life cycle cost during a systems design and development phases. The cost includes development production operation support and when applicable disposal. The practice has spread to other countries such as Japan that have aligned with the US defence establishments. However the way life cycle costing is practiced in the Us today is entirely different from that of Japan. As earlier mentioned the American life cycle costing practice considers trade offs among the costs and targets at the lowest possible life cycle cost. On the other hand the Japanese life cycle costing practice considers that the costs involved in life cycle costing are simply estimates therefore targets at further reducing these costs.

Life cycle costing is conceptually well developed but in practice is applied in a small number of cases even in the United States (Adamany and Gonsalves 1994) . The same is true with Japan. One reason for its limited application is that it is an expensive activity. Therefore it is not generally applied in developing a product or acquiring an asser. It is believed that it should be applied only when the cost of its analysis is less than the business firms show in using life cycle costing can further be explained in terms of the problems with business firms themselves and problems peculiar to life cycle costing . Business firms are yet to accept life cycle costing .

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