

## Utilities Manager: Big Money Talks-Life-Cycle Costing & Energy Costs

Written by William C. Livoti, Baldor Electric Company  
Friday, 01 August 2008 00:00

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William C. Livoti, Baldor Electric Company Life-cycle costing (LCC) is an often-used term in the pump industry, but one that rarely is implemented at the end-user level. Industry continues to use the same design criteria and specifications that have been in place for years—*specifically, over-sizing of pumps, motors and valves*. Energy costs won't allow us to continue down this expensive path. LCC will become the rule rather than the exception around companies that want to remain profitable—or in business.

Interestingly, LCC is one of the most effective tools you can use to justify—*and convince management to pursue*—energy savings projects. Sometimes called Total Cost of Ownership (TCO), this methodology takes into account the following items when evaluating equipment and/or projects:

- Purchase costs
- Installation & commissioning costs
- Energy costs
- Other operating costs
- Maintenance costs
- Downtime costs
- Decommissioning costs
- Environmental costs

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(More information on conducting LCC analyses is available online through any number of Websites. For example, to calculate the LCC of a pump, visit [www.pumpsystemsmatter.org](http://www.pumpsystemsmatter.org) )

On the other hand, you can't get your arms around LCC without fully understanding your utility costs— *and you can't measure them unless you know how to calculate your true cost of energy.*

A typical U.S. industrial electric bill will include the following information required to calculate an operation's true cost of energy:

- **Electric Usage History**—Allows you to compare your electric usage over the past 13 months.
- **Power Factor Adjustment**—A "billing adjustment" that applies if the power factor for the metered service falls below 85% (or predetermined percentage) during the billing period. There is typically a large penalty for power factor deviation.
- **Usage Information**—Includes the meter number for the point of delivery (POD), meter readings, days in billing period and total kWh usage.
- **Demand Information**—Includes actual peak kW demand, on-peak and off peak demand and peak reactive power (kVAR).
- **Additional Facilities Charges**—Indicates charges for additional facilities or non-metered services for specific account.

$$\frac{\text{On Peak Kwh} + \text{Off Peak kWh} + \text{Demand} + \text{Facilities Charge}}{\text{Total kWh Usage}} = \text{Cost per kWh}$$

The following equation can be used to calculate most any U.S. industrial electric bill:

Incorporate this equation in your LCC analysis. Don't forget to take into account non-energy benefits:

- Increased productivity
- Reduced costs of environmental compliance

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- Reduced production costs
- Reduced waste disposal costs
- Improved product quality
- Improved capacity utilization
- Improved reliability
- Improved worker safety

### **Capturing the benefits**

You can learn a lot through an LCC analysis (and the analysis of your true cost of energy). Use it for the good of your operations. Learn and speak the language of management. Appeal to management's profit motive. Relate savings to the plant's bottom line. Whatever you do, remember that big money really talks!

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