



## **Back to basics: Implementing a preventative HVAC maintenance program saves on costly repairs**

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We in the HVAC industry pride ourselves on staying on top of all the latest technology-solar, geo-thermal, high-efficiency RTUs and chillers, VFDs, web-based controls, on and on. All these technologies are exciting to learn about and more exciting to apply. Some of them even fit into the "wow" category!

These technologies come with different prices and often with attractive rebates and incentives from your friendly utility. And, without a doubt, they all have their place and are worth studying and seeing if they have a fit on your project or in your facility.

Most of these technologies are only considered if their payback or return on investment (ROI) is reasonable. What is reasonable? Most owners/managers want, or expect, a ROI of three years or less. Maybe an owner occupied property will accept a five year or less ROI, but that is not often. I think the three years or less was born in the time when one could get 10% to 12% on their money in an investment. But, that is for another article.

With the application of rebates and/or tax credits we often struggle to get the ROI to the point that the owner/manager agrees to move forward. To the credit of the local utilities, their rebates often make these projects happen. Unfortunately, oftentimes these projects are not well thought out and result in disappointment for a variety of reasons. But, that is for another article, as well.

So, that leaves us with an often overlooked and under estimated opportunity. That opportunity has a ROI of less than one year. Less than one year? No, I really meant less than six months. That opportunity is operation and maintenance. Before you stop reading this article, you should know that studies done by the U.S. Department of Energy have measured results of numerous facilities and the "average" ROI for an aggressive preventative maintenance program had a, are you ready, 0.26 year pay back!

Yes, preventative maintenance, not reactive maintenance. Reactive maintenance, sadly, is the "run till it breaks" approach. Even sadder is the fact that about 55% of facilities today take the reactive maintenance approach, compared to 31% using the preventative maintenance approach. U.S. Department of Energy studies have documented between 3% and 40% energy savings, with an average energy savings of 15% when an aggressive maintenance program is employed.

There are other benefits of a well designed and executed preventative maintenance program. Some of these benefits are: Increased occupant comfort, reduced chance of sudden equipment failure, Scheduled equipment down time, extended equipment life, to name a few. Repairs to equipment that suddenly fail are far more costly than normal scheduled repairs because of expedited parts delivery, repairs made on overtime, loss of production or loss of product being stored, inefficient use of staff resources, and the list goes on.

It is estimated that preventative maintenance costs 12% to 18% less than reactive maintenance.

This alone should be enough to encourage a well planned and executed preventative maintenance program.

Then there is predictive maintenance. Basically, predictive maintenance differs from preventative maintenance by basing maintenance needs on the actual condition of the equipment rather than on a preset schedule. Preventative maintenance is "time-based;" predictive maintenance is "condition-based." Studies show that predictive maintenance savings over reactive maintenance can be as high as 40%. Other reported advantages are: return on investment - 10 times, 25% -30% reduction in maintenance costs, 70%-75% reduction of breakdowns, 35%-45% reduction in downtime and 20%-25% increase in productivity, all of which is documented and published by the U.S. Department of Energy.

There are a number of very informative websites that offer help and guides on maintenance programs whether performed by in-house staff or outsourced. Take advantage of these guides and stop procrastinating, start your program and your savings today.

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