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The Case for Permanent Energy Monitoring

By **Bill Holmes, P.E.** November 26, 2012 05:14:32 pm[Email](#)[Print](#)[Like](#)

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Not too long ago, I was honored to be asked by Paul Studebaker, Editor-in-Chief of Sustainable Plant, to prepare a webinar on Energy Monitoring. I had designed, built and installed my first Energy Monitoring system in 1979 and with the recent rising interest in monitoring, Paul asked me if I would be willing to try to pass on some of what I have learned over the years.

Nearly 400 people registered for the webinar, so it appeared that Paul was right; there is a tremendous interest. I have been publishing case studies, articles and making presentations for many years touting the value of energy monitoring but I think the Webinar slides are the best single summary I have ever done. If you like, you can see the slides, which can viewed in five or 10 minutes. The following is essentially the text of the Webinar

I am thrilled at the current level of interest in energy monitoring. It has been nearly 33 years since I built my first monitoring system on my living room floor and used it to save 59% in my first project, a mental health hospital. For years, I had to essentially pay people to let me put my system in their buildings. There has been almost no understanding or acceptance of the value of the information resulting from monitoring during most of the intervening years. Boy, have things changed!

Why are you reading this? Do you want to save energy, save money, increase profits, reduce emissions, slow the use of natural resources, make this world a better place? Do you want to make a difference? Doesn't everybody? Do you want to learn how to manage your energy costs like all your other costs? To keep people comfortable, systems running properly? To fix small problems before they become big problems? Want to simplify your life?

Let me tell you how. No theories; only my experience. I've been doing it for 33 years. In 1979 I developed a unique approach and have used it to create 20% to 67% savings in all types of buildings with no capital projects! How did I discover it? Looking back I think I was just in the right place at the right time; it was a combination of timing and luck.

I was educated as a mechanical engineer and after college I instrumented fighters for five years in the U.S. Air Force. After my discharge, I designed energy improvements for five years with an engineering consulting firm. Then I was a Purdue professor for six years teaching courses in thermodynamics, fluid dynamics, thermal systems and HVAC design. At the same time, I began to manage energy systems in a variety of facilities for a share of the actual, documented energy savings.

I found little similarity between the theory I was teaching for Purdue and the way the actual buildings and systems were operating, and wanted to find out why. I found no energy information in buildings, so I built a monitoring system, installed it in my first project, and found out. The equipment was fine; the problem was operation, maintenance and management. It was a people problem.

I took over operation of the building, installed controls, operated the equipment, managed maintenance and was responsible for comfort. I was on call 24/7 for many years. I used the data from the monitoring system and, with good management of the existing equipment, cut the energy costs 59% in that first project, a mental health hospital. No capital projects.

I found two different worlds, the World of Theory: of preparing to save energy, of audits, studies, designs and capital projects, where people believed that things actually work as designed. And I found the Real World, the world of actually saving energy, of operation, control, maintenance and management – the world of making things work. My company's experience operating buildings was that one-third of our time was spent fixing things that had been working right but people had screwed up the day before.

Sustainability Infographics



We here at Sustainable Plant love infographics. Aside from being easy to read and ingeniously designed, they are also incredible resources to have on hand, ready to share with others. With this in mind we've put together a collection some of our favorites from around the web. Check them out, pass them along and let us know if you have any other infographics you'd like us to share with the community. [View the gallery](#)

Author Bio

**Bill Holmes, P.E.**

Bill Holmes, P.E. founded Holmes Energy LLC www.holmesenergy.com and developed the AutoPilot Monitoring-Based Commissioning (MBCx) System in 1979. He has a B.S. and M.S. in mechanical engineering and has done additional coursework and research for his PhD. He is a former Purdue professor and taught for several years in the Continuing Education in Energy Management Program at the University of Wisconsin.

Bill has produced savings from 20% to, in a few projects, more than 50% from low-cost, no-cost changes in management, operation, maintenance and control alone in all types of facilities including Industrial Plants owned by Fortune 500 Companies.

He is the recipient of a DOE Award for Energy Innovation and was the Indiana Energy Manager of the Year in 1990. He has published

I heard an architect say, "I designed a \$14 million facility and saw it turned over to someone making \$7/hour to operate and maintain." That made no sense.

Let me tell you how you can use energy monitoring to succeed in the Real World. I ran buildings for 20 years and installed monitoring with my own money as the first step in each project. My only fees came from savings. It's not hard. Simply combine the fundamentals of Information Technology, Engineering and Accounting. The first step must always be the information. Without information, it's not valid science or engineering. Imagine medicine or airplanes or automobiles or manufacturing without information. Managing energy requires the right information in the right format at the right time.

The first step in getting the right information is the energy inventory. The energy inventory allows you to select the points to monitor. The right points are the keys to success.

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numerous papers and been making presentations on his projects and methods for more than 25 years. Bill is a sculptor, a writer and a regular contributor to Sustainable Plant.

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