

## How to Get the Best Deal in Energy Efficiency©

By Joseph Blecker

As energy costs increase, more building owners are becoming concerned about figuring out how to address all the issues to maximize energy efficiency. Twenty-eight years of locating energy savings has given me some insights to consider the issues involved. The best answers are in response to the best questions. My experience indicates the first set of questions apply to the board room not the boiler room. They are:

1. Is there a policy that directs operating management and staff to operate at maximum energy efficiency, as directed by equipment manufacturers? If you have accepted 80% combustion efficiency for boilers, then make sure you get 80% combustion efficiency. This is a problem because few service providers make the effort to verify all the conditions needed to obtain an accurate combustion efficiency report. I have many typical reports that show 80% when it is doubtful that the efficiency was anywhere near 75%.
2. Is there a policy that directs a set of comfort standards, now known as Indoor Air Quality, which reduces the exposure for excessive heating, cooling, ventilation or lighting, but certainly provides a comfort range?
3. Is there a policy that requires that all equipment maintenance and repairs be done in accordance with the manufacturer's written instructions. This requires the staff or service contractor to have a copy of all such instructions and the facility staff to maintain such instructions to review the work and insure its proper completion. In many cases I see water heaters installed without dielectric fittings, or older water heaters that have the original anodes in place, or what were the original anodes, since they are fully eaten away.
4. Is there a policy that requires an audit of the closed loop water treatment? The most critical concern for all owners with space heating and chilled water systems should be an independent audit of the closed loop and cooling tower water treatment at least once every three years on older buildings. Without this verification you may have a huge, unfunded liability that will become present at the most unlikely time. It may involve major pipe and equipment replacement. It may also demand the shut down of the heating and cooling system when it happens. Suddenly, there is lots of money to address the lack of heat or cooling at overtime and non-competitive installation costs. The management company should not be considered a resource for such an audit.
5. Is evaluation of existing infrastructure every ten years required? As buildings age, the infrastructure that consists of the piping, wiring, and all the attached devices: heating, cooling exchange surfaces such as fancoils, plumbing or electrical devices and related equipment, reach the end of useful life. The electrical and water pipes that feed the heat exchange surfaces, plumbing fixtures or electrical devices on a vertical plane are referred to as risers. On steel heating/cooling pipe, the external, vulnerable area is usually the threads used to screw: fittings, valves or added pipe. Loss of insulation or moisture shield can cause rust and eventual HVAC pipe failure. Internal corrosion can be caused by poor water treatment, or erosion caused by particulate matter "sandblasting" away the interior over twenty or thirty years. There may be galvanic corrosion caused by screwing copper pipe into steel pipe. Galvanized pipe has its own particular vulnerability. I have seen twenty seven-year old copper pipe serving fancoil units leak, due to excessive erosion. Condominium unit owners that failed to address the pipe issue paid for damaged floors and other property of the unit owners. Should this occur when an owner was away, water could leak down to the next floor or other floors adding to the damage costs. Repetition of this repair expense, finally led to the inescapable decision to address the re-piping.
6. Hydronic or water medium heated and cooled buildings use pumps to deliver heated or chilled water to fancoil units throughout the building. At construction, there may have been "balancing" work to insure the flow met the design criteria of the mechanical engineer. This may have included the building risers, but not the flow to individual fancoils on the riser. Fancoil units closer to the main heating / cooling pump(s) will get significantly greater flow than those farther or higher up. This also depends on the piping system. There could be significant costs in operating a building without proper flow balancing, along with discomfort induced by excessive heating / cooling or in the same building by inadequate heating or cooling. Since air-conditioning requires far greater chilled water flow than heating, the best time to determine flow problems is during very hot weather. Please note, no air-conditioning system can overcome the solar load of a south or western exposure, during a sunny day without window treatment such as: solar film, drapes, blinds or shades.

## How to Get the Best Deal in Energy Efficiency©

By Joseph Blecker

7. Is there a policy that requires at least a bi-monthly reading of the energy /water meters to verify that use for the time period is in line with proper operation? This policy would also direct that a process be used to evaluate the efficiency of the HVAC system bi-monthly, to minimize the chance for a huge energy / water bill.

8. Is there a policy that requires the board of directors to verify that the policies, related to the questions described above, are properly executed by concise regular reports and some form of board verification?

The execution of the policies listed above are vital before considering new or replacement HVAC systems. Any HVAC system will constitute a major investment. In addition to the cost of design, labor and materials other less defined costs are involved. These include the time required to administer the contract, provide guidance to the building employees and occupants, the temporary inconvenience due to the lack of heating, cooling or domestic hot water, and a new set of operating and maintenance procedures that will require some adjustments before the routines and comfort levels become normal.

One of the main reasons for making any HVAC investment is to obtain the best return on the owner's capital. Without following the previously described procedures, it would be very difficult to determine the real benefit of the investment. If ten to fifteen percent of energy was wasted before an HVAC modification, the return on the investment might look very attractive. On most occasions, much more effort is spent on attempting to reduce the contractors projected costs, by so called, "Value Engineering," then on maximizing efficiency before the work is considered. A good "tightening up" one or two years before construction can save costs of unexpected repairs and insure that the owner has a high regard for his mechanical systems, not just the décor in the front lobby. A clean mechanical room invites the best effort of mechanical engineers and contractors.

The tragedy of Value Engineering is that no effort is usually made to define the loss of efficiency and resulting higher costs provided by the elimination of item(s) from the construction project, and the cost of making an installation of the same items as a retrofit, after some time when the building is finished. This normally results in an immediate cost savings of \$50k to \$75k on a \$1 million project, while the energy loss amounts to \$15,000 to \$20,000 annually, due to this "Value Engineering." The cost of this retrofit becomes \$150,000 to \$250,000, so the savings are lost until the next 25 year rehabilitation cycle. Assuming zero energy cost inflation that becomes \$375,000 over the life cycle. More realistically the loss would be more like \$600K. Why is the cost of the retrofit so high, deploying the work force, breaking into walls, ceilings and now areas that once were open are filled with insulated pipes, conduit and other supports or items not present when rehab construction was under way. The work becomes incredibly difficult, then there is the: re-insulation, patching, painting, clean-up and special start-up or commissioning effort. There is also a disproportionate management and overhead relating to this type of project. After two or three years, some other improvements or changes may have been made to further challenge installation of the originally designed technology or system.

One moral of the story is to work with engineers that have the skill to project, with some accuracy, the savings contribution of each component of the HVAC rehabilitation program that is being planned. Now refer to items #1 through #6 above. If these items are documented, the mechanical engineer will be able to assess the savings potential of the proposed design and construction with far greater accuracy and reliability. What are some other practical applications of EXCEPTIONAL RECORD KEEPING?

This year in the Washington DC area, the outside air reached 105 degrees F. or more, with elevated humidity. The maximum heating load was probably reached about 3:00PM during that day. If a facility engineer took the temperatures of the chilled and condenser supply and return water, along with the amperage draw of the chiller, the maximum load on the chiller would be documented. If the water temperatures were within the range specified by the chiller / cooling tower manufacturer, it would indicate that the chiller was considerably oversized since the design condition for the area is 96 degrees dry bulb, and about 77 degrees wet bulb. This means that there would be a range of operating strategies to take advantage of this sizing. The chillers size and cost would be reduced by smaller models. This would not necessarily reduce the excessive capacity, if a range of other energy efficiency strategies were employed. A good mechanical engineer can recognize the benefits of exceptional record keeping and will use it to confirm his calculations.

Joseph Blecker T.A.  
Conservatron Company  
31352 Campana Way  
Laguna Niguel, CA 92677

Phone 949 487-9898  
Fax 949 218-8450  
email [joblecker@cox.net](mailto:joblecker@cox.net)

Dwight Clark  
✓ Brian Larkin

Mr. John M. Filice,  
2nd Vice President  
The Lauren  
1301 20<sup>th</sup> St NW Suite 813  
Washington, DC 20036

9/16/06

RE: Preparation for HVAC Changes

Dear Mr. Filice,

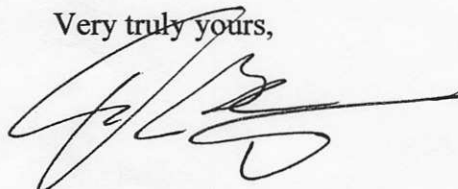
Following our phone conversation I am enclosing a resume and a partial outline entitled, "How to Get the Best Deal in Energy Efficiency." My efforts have been to assist building owners and managers to obtain the greatest energy efficiency in the least amount of time and at the least cost. I have served as a consultant for over twenty-eight years.

Recently I have received a US Patent Pending for an innovation that permits two pipe buildings to switch from heating to cooling in a matter of two to three hours. While I have organized a team of recognized mechanical engineers, contractors, specialists and architect, for this technology, the main effort is to assist me in implementing a wide range of savings, starting with those that involve no up front costs.

I currently serve a range of clients in the Washington DC area. You may recall I commented that your existing boiler probably has a combustion efficiency of 85% to 87% when firing on natural gas. The thermal and seasonal efficiency may not be that great, but if the boiler has been maintained and operated properly it may still have some life left. One of my clients has kept a 56 year old Kewanee three-pass boiler for use with # 2 oil. Inspection has indicated there is still many years of effective life left.

I will plan to call you to see if you and your colleagues are interested in meeting me while I am in the Washington area from 9/26 through 9/29. The information that I have found on your website has permitted me to call you and learn about your concerns.

Very truly yours,



Joseph Blecker

enc.

## RESUME

Joseph G. Blecker

### AREAS OF EXPERIENCE

Business operation as CEO of a 50 unit leased department business, spread over 14 states and employing 140 individuals with an executive and office staff. Sales background includes telephone, life insurance, and energy conservation equipment. Developed technology for Multi-Stack chillers to reduce maintenance on condenser side of chillers, novel sailboat mast, and currently developing a novel HVAC technology. Self employed since 1984 as a consultant in energy efficiency, enhanced policy and administration, mechanical design review, construction management, maintenance operations review, emergency service restoration and specific project design and utility efficiency report formats.

2005 – 2006

Founded CONSERVATRON COMPANY, LLC. Provided consulting, operating, and maintenance recommendations to Hagner Management, Corp. Initiated design and work on novel HVAC concept. Reviewed potential mechanical system for CO client.

1979 – 2005

Founded and operated Joseph Blecker T.A. CONSERVATRON COMPANY  
Sold boiler and chiller optimization technology. Installations include: Grady Management, Inc. U.S. Post Office, AFL /CIO, and Radix II computer systems at Lord & Taylor. Just Right Lighting ( Flexiwatt ) at RM Thornton. Served as an energy savings consultant, of electricity, fuel and water in over 200 facilities around the DC area and other locations. Savings were generated at organizations such as, ACPS, the Mayflower, Jefferson, Latham, hotels, The Tides Inn, Quality Inn Capitol Hill and many others. Served as business and sales consultant to Thermo Engineering, Radix II, TRIAD Boiler Sales, Vapormid Corp., Flexiwatt Corp., and EKA Systems.

Project mechanical management includes revision of domestic hot water heating for the systems Quality Inn Capitol Hill, emergency restoration of heating at 1833 "S" Street NW, and the Latham Ave., NW., and Taft Towers, also chiller, Arlington VA. Design and rehabilitation: Rockville Housing Authority, Oxon Terrace Apts., addition to boiler at OXON PARK Apts., emergency restoration of boiler operation at Tides Inn Irvington, VA, due to timely consulting advice. Hagner Management, Corp. a client for over 22 years. Served architect for mechanical systems for thirteen years.

Served as consultant to ACPS identified savings, served as boiler and plumbing consultant, created novel maintenance and rehabilitation contract, served as contract administrator, reviewed new construction provided recommendations for adoption of construction standards. Saved ACPS tens of thousands of Dollars annually, in different categories, of energy use, in facility maintenance, facilities automation and cost control procedures.

1977 – 1980

Sales experience: Independent Order of Foresters, Life Insurance, Phoenix, AZ agency with a contract for Junior Chamber of Commerce, telephone sales of household and commercial items, and energy efficiency devices for Electrolok, a local franchise.

1958 – 1977

President and Director of Blecker Beauty Shops, Inc., Operated leased beauty shops in department stores until department stores (lessors) went bankrupt.

Personal

Citizen, USA, discharged, captain U.S. Army, ASA, Georgetown University BS/SS 1956, married, four adult children. Resides in Laguna Niguel, CA. Radiant health. Does charitable work. Enjoys golf, gym, travel, sailing, cooking and military history.