



HVAC OPTIMIZATION

AN INTRODUCTION TO MECHANICAL OPTIMIZATION

Most buildings waste a minimum of 10% (or more) of energy due to inefficient Heating, Ventilation, and Air Conditioning (HVAC) systems. Some of these inefficiencies are from the original installed system and the energy losses are included in the baseline consumption operating costs. Other inefficiencies are due to reduced performance from repair modification made over time.

In many buildings, especially larger structures, the payback or return on investment sometimes can be realized in a short period of time. Evaluation of your mechanical systems to identify power consumption reduction opportunities can translate into significant cost savings. This optimization audit involves a systematic collection of information from the facilities staff and energy data collected from the mechanical equipment prone to highest energy consumption.

We can have licensed professionals perform studies and energy audits to identify necessary and financially attractive infrastructure upgrade opportunities. Common mechanical retrofit and consulting services include:

- HVAC System Evaluations
- HVAC Equipment Upgrades
 - Air-cooled / Water-cooled Chillers
 - Cooling Towers
 - Fan Coil Units / Heat Pumps
 - Boilers / Water Heaters
 - Circulation Pumps
 - Piping Insulation
 - Waste and Potable Water Piping Replacement
 - Filtration Systems
 - Ventilation Systems
 - Variable Frequency Drive (VFD) Modifications
 - Controls / Graphical User Interfaces
- Chiller Plant Optimization
- Non-Chemical Water Treatment System Conversion
- Building Automation System Integration
- Commissioning and Retrocommissioning (RCx)

As utility costs increase, it is imperative that owners and operators implement energy reduction strategies to reduce power consumption.

State of the art technology in mechanical equipment and control systems dictates retrofitting or replacement of mechanical systems to obtain the highest operating efficiencies and least life cycle investment.

HVAC system upgrades often result in significant rebate opportunities from local utilities. Our experienced staff will assist you with securing the greatest savings available to building owners.



We can have professionals analyze your existing building mechanical systems and provide energy conservation retrofit recommendations. Mechanical engineering design services will include:

Energy - In the current environment of high energy prices, rising atmospheric air pollution rates and the increased concern for global warming caused by human activity, energy conservation has become a top priority issue for building owners, property and facility managers. Most conventional mechanical systems that heat or cool buildings, pumps that circulate fluids or fans that ventilate air, are powered by non-renewable energy sources including electric power, natural gas or heating oil. The use of any one of these energy sources can potentially contribute to high energy costs, air pollution or global warming.

We offer full building energy use analysis, conservation measure recommendation and retrofit design services. The following are some examples of energy conservation opportunities in building mechanical systems:

- Central chiller plant control optimization
- Conversion of constant flow systems to variable flow systems
- Heat recovery of exhausted air
- Indoor temperature control optimization



About Us

Allana Buick & Bers, Inc. is an architectural engineering and forensic consulting firm. We have over 34 years of experience making building enclosure, roofing, and waterproofing systems perform better. We have 16 office locations nation-wide ready to deliver a locally managed streamlined response for new construction, renovation, and repair projects.

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- Tulsa, Oklahoma
- Portland, Oregon
- Coppell, Texas
- Chesterfield, Virginia
- Seattle, Washington

HVAC - Typically, the heating, ventilating and air conditioning systems in buildings are only noticed when comfort conditions are not met. Many HVAC system defects exist that are not readily observed by the building occupants even though indoor temperature conditions seem normal. Hidden within the air handling equipment and within the air distribution ductwork are sites for potential supply air contamination. Minimum fresh air requirements can not be easily verified. Common issues include:

- Corroded and dirty interior duct walls and equipment casings, contaminated cooling coils provide breeding grounds for microbial and fungal growth.
- Poorly draining condensate pans further contribute to unhealthy conditions within the air stream of the system.
- Malfunctioning outside air dampers and controls can result in deficient supply of fresh air to the building occupants or excessive fresh air that increases the energy load.

Pipe Insulation - Pipe insulation provides two important tasks: thermal heat loss or heat gain protection and avoidance of condensation on chilled water pipes. Since most piping runs in buildings (including chilled water pipes) are routed through concealed spaces, the accumulation of condensation and the resultant damage to surrounding construction materials generally continues unabated for extended time periods before being discovered. Therefore it is critical to install a reliable, condensate free pipe insulation system. We have the expertise and experience necessary to survey and identify problematic pipe insulation locations and to specify appropriate pipe insulation technologies.

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