Energy Analysis

An Energy Analysis is a study of building's energy usage. The analysis looks at every aspect of the building including the performance of the windows, the amount of wall and roof insulation, people schedules, heating and cooling equipment efficiency, the indoor air quality and the lighting systems. The purpose of the energy analysis is to find how the building uses energy and implement a strategy to reduce energy usage.

A building that is more than 20 years old is typically due for heating, cooling and ventilation equipment replacement. Much of the equipment installed 20 or more years ago is unnecessarily oversized due to arbitrary safety factors and a lack of building modeling. Waiting until a piece of equipment fails does not leave the building owner with enough time to have the replacement choices analyzed. The equipment is usually replaced with one of equal capacity. A piece of equipment that is not sized correctly will not perform to the highest efficiency level.

The Energy Analysis helps the building owner create a plan to implement before a piece of equipment fails. The process of the analysis is as follows:

1. We meet with the building owner and maintenance personnel to discuss the building history. Secure at least 13 months of utility bills.
2. We perform an onsite Audit of the building construction including the windows and insulation, lighting system, heating, cooling and ventilation equipment. We also look at the occupancy schedules.
3. We create a sketch of the building or use existing floor plans to identify the floor area, window sizes and building orientation.
4. We take the data from the onsite audit and drawings and enter it into building modeling software. The software is able to model and simulate the energy usage based on the building construction, the solar gain, occupancy schedules, building usage, heating, cooling and ventilation equipment. The results from the model tell us the ways the building is using energy. We validate the computer model against the actual utility bills.
5. We compare the building energy usage to a national database of buildings of the same square footage, usage, and climate. This

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database is used to determine whether a building can be Energy Star rated. Once we have a model that simulates the building energy usage we modify the window, insulation, lighting, heating, cooling and ventilation equipment, and occupancy schedules to see how it impacts the energy usage.

6. From the building model we create ECMs (Energy Conservation Measures.) Each measure is modeled and the amount of energy reduction it produces is recorded.

7. Each ECM is then entered on a spreadsheet with the estimated cost to implement and the calculated savings the ECM will produce. This determines the payback period.

8. We create a plan. Using the costs of the ECMs and the paybacks we create a plan the building owner will use to implement the ECMs before equipment breaks. This plan enables the building owner to raise capital, find incentives, rebates and even grants.

Typically implementing an ECM such as insulation will reduce the required size of a boiler or air conditioner replacement. The building owner and tenants will then be in a win-win situation. The building owner will have less to pay for capital expenditures while the tenants will have lower utility bills. A building that uses less energy protects its tenants from the volatility of coal, oil and natural gas prices. The building is more environmentally friendly which is more attractive to more tenants.

Currently Xcel customers can receive the utility's payment for up to 75% of the cost of the Energy Analysis. Now is the time to have an Energy Analysis performed on your building. Do it before your equipment breaks and the utility no longer offer's this incentive program.

Contact us at DMA Engineering to discuss your Energy Analysis without obligation. Call Steven Forrester, PE or Paul Lind, PE CEM at (303) 732-5559 or contact us using **info@dma-eng.com**