



Retro commissioning: What is it, how can it benefit owners and is it worth the investment?

December 11, 2012 - Long Island

In order to answer the question "retro commissioning is it worth the investment," we need to understand what retro commissioning is. Along with how it can benefit the building owner, save energy and provide a Return on Investment (ROI). Retro commissioning involves the inspection and validation of systems in a building such as lighting, HVAC, access control and life safety. Retro commissioning is performed on existing building and systems identifying anomalies in their performance and deviation from the original Basis of Design (BOD). You may have also heard the term "energy audit" don't be confused between the two. An energy audit will identify where energy is being consumed however doesn't go into the depth of "retro commissioning" as where energy consumption will be identified but more importantly why it's being consumed and how to correct the issues.

The retro commissioning process generally will start by gathering as much information about a building as possible. This may include the original engineered drawings, model and sizes of equipment, sequence of operation, essentially taking an inventory as to the systems that need to be evaluated. The retro commissioning process needs to be as transparent as possible so it's best to have the managers and building engineers involved. Let's face it, they have been in the building, in most cases, for years and may have some valuable information to offer.

At this point we have gathered as much information as possible performed a basic walk thru of the property and interviewed the staff. Now it's time to develop a scope of work based on the information that we have gathered. Although all systems are important, economics push us to focus on the low hanging fruit that can return the biggest bang for the buck.

With regard to HVAC, we generally want to look at the following systems.

- * How engineers operate the systems;
- * Time of Day (TOD) Schedule;
- * Variable Air Volume (VAV) boxes and zone control function;
- * How AHUs respond to increase and or decrease in static pressure requirements;
- * How Variable Frequency Drives (VFD) function and throttle back;
- * Night Set Up/Set Back. (NSU/NSB) (Offset of set points at night);
- * Intelligent set point recovery known as optimal start stop;
- * Economizer, free cooling and demand control ventilation;
- * Positive and or negative building pressure; and
- * Lighting control systems, time clocks, motion sensors.

You need to think of a building as a living breathing organism and its imperative that all systems work in synergy with each other. As part of a retro commissioning project maybe you have discovered that 30% of the VAVs on a system don't function and or have the wrong parameters programmed in them. It may sound like a local issue however they will have a great impact on all systems up stream of them. Because the VAV boxes aren't functioning correctly and in response to space temperature, changes in the following can occur. The AHU may never develop static pressure resulting in the VFD, originally installed to save energy, running at 100 % of its speed. Cooling and or heating valves may open too much and or remain closed, incorrect system demand signals may be sent to the mechanical plant resulting in additional load on chillers or boilers. So by just looking at this one small example that doesn't seem to be a big issue, it can have a great impact on energy consumption and comfort.

With energy costs on the rise having systems retro commissioning can save thousands of dollars in energy and labor costs as shown in the above example. Retro commissioning projects can range between \$0.35 and \$1.50 per s/f depending on the building and systems installed. Cost saving can vary again depending on issues found and can yield between \$0.10 and \$1.00 per s/f. Most provide a ROI between 2-5 years and continue to pay dividends for years to come.

BMS/EMS is taking a larger role in today's market as well by providing a "bench mark" of system performance once the commissioning has been completed. They can provide continuous monitoring of the changes and or repairs implemented to catch the examples given above prior to economic loss. Choose a partner who can help you understand the process and provide results.

Retro commissioning: is it worth the cost? Do some information gathering of your own...then you decide!

Scott Schelin, CEM, LEED AP, is the president at Advanced Control Solutions, Bayshore, N.Y.

New York Real Estate Journal - 17 Accord Park Drive #207, Norwell MA 02061 - (781) 878-4540