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Building Tune-ups for Efficiency Pre and Post Questions

Circle the correct answer.

1. Once a building system is started up and properly commissioned and tuned, you can count on the system performance and efficiency persisting if you take care of the basics like changing filters and lubricating bearings.

True

False

Buildings are highly dynamic machines and things are constantly changing both in terms of how the machines perform and how the building is used. To keep the building operating in top form, the operating team needs to constantly adapt and tune the systems to compensate for changing needs, aging of equipment and other factors that will vary throughout the building's life cycle.

2. What does EUI mean?

A. Energy Utility Information

B. Energy Use Intensity

C. The same thing as "Yucky"

D. Equipment Utility Index

3. Normalizing utility data to the calendar month and plotting it as average daily consumption per month can provide meaningful insights into how a building is using resources as compared to simply tracking total consumption per billing period.

True

False

Normalizing data to the calendar month allows you to compare consumption patterns to other things that tend to be tracked on a monthly basis, like heating and cooling degree days or occupancy or production of widgets.

In addition, this approach makes the data consistent from month to month and year to year. For instance different months and different billing periods have different numbers of days. So a big bill that was associated with a long billing period may

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actually represent less average daily consumption than a smaller bill over a shorter period of time.

And, a bill that is received on May 12th based on a meter reading taken on May 10th represents some consumption that occurred under the operating conditions that existed in April and some consumption that occurred under the operating conditions that existed in May rather than only representing the consumption during the May time frame.

4. Which of the following items is not a characteristic of a building commissioning process.

- A. Documents design intent
- B. Systematic
- C. Documents performance
- D. One-time process**
- E. Includes functional testing

Building commissioning is a technical process and toolset that provides a framework for properly operating a facility over its entire life cycle.

5. All the items on the following list are important things to consider when selecting a commissioning provider. But one of them is probably the least important compared to all of the other items. Select that item.

- A. Price/fee for the work**
- B. Technical expertise
- C. Comfortable working relationship
- D. Age
- E. Competency with control systems

While budget and fee are certainly important considerations, most Owners are better served by making a commissioning provider selection based on qualifications like so of the other items on the list and then negotiating an acceptable fee for the accomplishing the goals of the project.

6. It is unlikely that an operating deficiency in a given air handling system will impact equipment and areas other than the equipment and area associated with the system.

True

False

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Buildings are dynamic, complex, highly interactive, prototypes. Changes in one system can ripple out and impact the utility systems supporting the system as well as the systems serving adjacent areas.

7. Which of the following items are the goals behind the energy consuming systems in our facilities (circle all that apply).

A. Keep the building comfortable

B. Provide resources to support production

C. Keep the building safe

D. Keep the building clean

Ideally, we would like to accomplish these goals as efficiently and sustainably as possible. But, if in the interest of efficiency and sustainability, we violate any of those goals, then we are not doing our job and it may be worse than not doing anything because if we can't deliver the intended function of the facility, then all of the resources associated with bringing it into existence in the first place are being wasted or misused.

8. It takes a highly specialized set of skills to go into building and recognize indications of the potential to improve performance and efficiency?

True

False

While it does take some skill to develop a finding once it is identified and also to identify complex opportunities, many opportunities can be identified by simply applying common sense and spending a bit of time learning what the "obvious indicators" are.

You may not be able to pilot an aircraft. But you probably could figure out that if you were seeing a mountain goat appearing through the clouds ahead of you, then an opportunity exists to extend the lifecycle of the aircraft and its occupants.

9. An owner's financial "end game" should be considered when presenting the benefits of making energy efficiency improvements.

True

False

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Understanding how an Owner thinks of money and then presenting your project to them in those terms instead of something like simple payback or dollars per square foot can make a big difference, even though at the bottom line, the resource savings and dollars they represent are the same.

Consider an example from a different industry. If you go under general anesthesia for some sort of medical procedure, on average, your chances of dying due to the anesthesia are 1 in 15,000 or .0067%. But if you consider that there were approximately 131,507 surgical procedures performed per day in the United States in 2009, you may not feel quite as good about your odds since on average 8 or 9 people died of complications due to the general anesthesia that was used.

10. Energy savings potential and energy consumption are directly related.

True

False

For an resource efficiency feature to deliver savings, the system it is applied to needs to be consuming the targeted resource. For example, a recent project targeted using cutting edge technology for recovering water and heat from a hotel laundry process. It was exotic but the analysis behind the project said it would pay for itself in three years. So the owner committed the funds and then waited for the savings to roll in.

Initially, the equipment did not perform as rated, but those issues were corrected by a thorough commissioning process and improved operations and maintenance procedures and the targeted efficiency was achieved.

But right after that point in time, there was a down turn in the economy and occupancy dropped. As a result, there simply was not as much laundry to be processed every day.

That meant the over-all water consumption for the laundry dropped and thus the savings achieved by the system fell off, even though it was operating at its design efficiency. This left the Owner with a bad taste for the system, even though it had delivered.

Ultimately, the Owner decided to shut down the laundry and outsource the work. And because of that decision, the machinery never paid for itself.

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In hindsight the Owner may have been better served by selecting some of the other projects that were on the table at the time that the laundry system was offered as a project. They were not as exotic or cutting edge, but they would have improved the day to day operation and efficiency of core systems in the facility, systems that would only go away if the facility itself went away.