



Due "green" Diligence

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The word "green" today can be used in many contexts. Definitions range dramatically from the novice to the true professional. From the standpoint of a veteran mechanical engineer, "green" is a word that is sometimes used a little too widely and a bit too loose, and in order to maximize the benefits of this great modern day term, one must be prepared to perform the proper due diligence in order to understand one's benefits or disadvantages associated with the word "green."

From extensive experience in mechanical engineering, I have learned that every building and every situation, no matter how similar it may appear, has very dramatic hidden differences that can really make or break the paybacks of an energy or "green" project. One must understand these very meticulous differences in order to maximize the benefits of the "green" process. A building owner or project manager that is planning on engaging in such projects should do so with smart planning, and proper investigative research. This allows for the client to fully understand if a project will be worth the initial investments, and what sometimes appears at first to be the best payback solution, may not necessarily be. From the eyes of seasoned professionals who see the true differences from building to building with a detailed understanding of mechanical, electrical and control systems, these meticulous differences can be "ironed" out early in a project to clearly explain to a building owner the best energy approach and strategy, while maximizing the paybacks and minimizing the initial investments. A lot of discussions that I have heard with "green", involve extensive and complicated projects with not enough initial due diligence to completely understand the full benefits or deficiencies of the proposed project. This can be detrimental to the investors of the project because some of these project deficiencies do not become known until construction commences or deep into the project when substantially initial investments have already been made.

For instance, the installation of a Variable Frequency Drive (VFD) for a given motor application will sound like an excellent idea upon first hearing this, but after initial research of the system operation this may not always be the case. Yes VFD's will generally save an owner 25% of the energy cost of a motor application, but this will only be true if the system has the existing variable capability to take advantage of this VFD technology. If the system is not fully configured for variable operations, after a detailed design development of the VFD installation and payback study with actual construction costs, one may find that there is a lot more work and costs involved with a VFD energy upgrade than may have been first presented. In order to fully set the system up to maximize the energy saving benefits of the VFD investigation, the Initial construction costs may out weight the payback benefits and therefore in the long run, a VFD upgrade may not be the best energy solution for this given system.

The role of the professional (Engineer, Architect, Energy Consultant, etc.) in this case becomes a critical investigative step in maximizing ones payback. It is imperative that a proper due diligence be performed from all professional aspects and presented to the owner with a real understanding of the

facility, a detailed understanding of the proposed upgrades and renovations , the impacts on the facility during these upgrades (such as shut-downs, overtime work and other expenses) that can be easily overlooked on a project basis. These shortfalls and misunderstanding of all the project requirements can add Change Orders during construction which can quickly expand one's initial study paybacks. Proper planning with contractors, and obtaining real time bid costs based on a good initial study Due Diligence reports, can provide detailed insight into the project construction from both the installer standpoint and the construction manager standpoint, thus accounting for these construction costs as part of the Due Diligence Report. The engineer or professional can act as the "Quarterback" for these many activities since they require much coordination and time to perform a quality job. Too much coordination prior to an energy project is unheard of. The owner only prospers from a single point or professional responsibility in the course of the project. I do refer to the engineer in many cases because the true energy savings projects come from the core mechanical and electrical systems within each facility and a real understanding of these systems and how they operates within a specific facility is essential to fully understanding the maximum benefits of any proposed energy upgrade.

In summary, proper due diligence with experienced professionals, can help maximize one's energy paybacks and to also understand when projects may not always be worth the initial investments. Building owners, especially in these times, will be able to appreciate the benefits of good engineering and planning.

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