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# Using the commissioning tool set

## Achieving integration, quality, efficiency, and persistence

**I**fear that in our rush to embrace technology, improve efficiency, reduce cost, and build things faster, we have counterfeited the currency of our building-delivery process. Design professionals faced with constantly evolving, increasingly complex technology; tighter design schedules; and pressure to minimize fees find themselves forced to focus on their area of expertise, run with what they know, and rely on vendors and contractors to put it together and make it work. Vendors and contractors are faced with similar challenges, which manifest themselves as guaranteed maximum

prices on buildings that have yet to be designed and schedules that are eaten away by design slip, lead times, and Mother Nature at the start and end in hard completion dates with liquidated damages. The buildings produced often are plagued with operational problems that waste additional resources, further counterfeiting the process.

And now, commissioning is emerging as a bandage for a system that is failing us. This is sad because commissioning can and should be so much more. State-of-the-art buildings are prototypical, interactive assemblies of high-tech equipment

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and systems that must function repeatedly and reliably over a wide range of operating conditions. A tool that tests and tunes them to ensure that their design intent is realized should be integral to their successful start-up and operation. Such a tool should be embraced as a positive process, the final step in bringing dreams to fruition and the basis for ensuring the persistence and adaptability of systems over the life of a building. It shouldn't be a questionable add-on process of marginal value implemented in a last-ditch effort to resurrect quality, identify deficiencies, and force accountability.

Commissioning as a bandage may identify the counterfeiters and mitigate some of the waste, but it won't eliminate the problem. It is akin to treating a wound, rather than preventing it. Commissioning as an essential tool in the process is another matter entirely.

Enforcing the start-up and testing requirements of contract documents would technically, if not procedurally, commission many buildings. Formally supporting those requirements with a professional who has an integration perspective, organizational and planning skills, and a sense of ownership for the entire building would enhance the requirements already in place and ensure that they are implemented, freeing the other team members to focus on their areas of expertise. Whether implemented as a rigorous, statistically and scientifically based procedure, such as the upcoming ASHRAE Guideline 0-1996, *The Commissioning Process*, or a more relaxed procedure the essential components of which are tailored to the tastes and budget of the project team, the framework provided can be crucial to the success of a project.

Design requirements can be at loggerheads with the realities of operation. High-efficiency, state-of-the-art machinery often goes hand in hand with complexity, which leads to more costly (but justifiable) operation-and-maintenance requirements. Because an operation-and-maintenance viewpoint is integral to commissioning, a provider involved in

the design process can help the team assess the start-up and operating implications of their design propositions. If a realistic assessment of what it will take to make things work and keep them working results in a budget that is not palatable, then a less complex approach is in order, even if it does not represent the peak of efficiency or technology. A simple system working repeatedly and reliably is better than a complex, highly efficient one that never functions.

The commissioning tool set is designed to carry the integration perspective into the construction process via inspection and functional testing. Commissioners frequently spot flaws made evident by the juxtaposition of equipment, systems, and building elements that are less obvious to professionals with a more specialized focus. Recognizing these factors during construction allow them to be addressed in a timely, less costly manner, preventing similar problems in other areas. Functional testing provides a final verification of the integrated operation of the myriad elements that buildings contain, ensuring that the design intent is achieved initially and will persist.

Training and documentation also are integral to the commissioning tool set, ensuring that an integration perspective and organized approach to operations are carried into a building's operational life. With proper training and support, an operating staff will understand and use a design's features from the start and maintain and adapt them to achieve maximum benefit for the life of the building.

The dysfunction and chaos of the current building-delivery system can be attributed to factors such as advancing technology, tighter financial markets, a world economy, and a higher standard of living. As such, it is unlikely to become any less intense. By embracing the commissioning tool set and tailoring the process to the specific needs of our building projects, we can bring order to the chaos, cure the dysfunction, recover lost value and quality, and deliver buildings that reflect the vision of our dreams.

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