



## Commissioning

Building commissioning is a high-value-added activity that is unknown outside the building industry. Think of a ship; when construction is finished, it's time for sea trials. Long before a vessel sets out on a mission or voyage, all key systems are tested in calmer waters to make sure everything is working as designed. This includes propulsion, navigation and safety equipment.

Now consider a modern high-rise building, which is every bit as complex as a ship. It's expected to perform well for decades, supporting all types of occupancy and enduring both normal and extreme weather events, including torrential rains, high winds, tornadoes, floods and hurricanes, and to be safe for its occupants in the event of fire or earthquake. Shouldn't this building be commissioned just as a ship would be?

Posed this way, the answer is obvious. In the past decade, the practice of commissioning for larger buildings has become an accepted practice. The LEED system requires that every project be commissioned according to certain standard procedures. The goal is to test all energy-using and life-safety systems in actual building operation and to work out all the kinks before occupancy. More than 120 research studies have shown that energy savings increase 10% to 15% when a building is commissioned.<sup>25</sup> In energy savings alone, commissioning pays for itself in less than five years; when other non-monetary (but real) benefits are included, the return is typically less than one year.

The cost of commissioning is relatively minor compared with the benefits. In larger projects, the cost might range from \$0.40 to \$1.00 per square foot, less than 1% of building costs. The key to the process is to get experienced commissioning agents on board during the design phase so that they can understand and help clarify the owner's project requirements and the engineer's basis of design. In this way the commissioning agent understands the project's goals, systems and performance requirements before testing begins.

A typical commissioning activity involves creating a plan; writing commissioning requirements into the project specifications; engaging the subcontractors during construction — especially mechanical, electrical and controls contractors — to assist with testing; fixing any problems encountered with system operations; and confirming that operators have been trained to keep the building running optimally.