

Reasons to Commission a Laboratory Project

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#1 Pay now or Pay more forever

Commissioning is a qualitative process which ensures that the systems within a facility are designed, installed, functionally tested, and capable of being operated and maintained as it was intended. The process begins at the project inception and carries through the full occupancy cycle.

The process is executed by a commissioning team which may include the owner, architect, engineer, building contractor/sub-contractor, and the commissioning authority.

The most effective commissioning occurs when the experienced personnel is engaged, coupled with experienced independent commissioning authority with a background in laboratory projects design. The commissioning authority will represent the owner through the project's duration.

Facilities that house laboratories have integrated engineering systems, stringent safety requirements, and often have a high demand for energy consumption. In addition to climate control, the laboratory facilities have noise, vibration, odor, debris, and often, pressurization issues/requirements. Due to these interdependencies, a problem with one system may adversely impact others, consequently impeding the overall performance of a facility, regardless of how well it was designed upon conception.

The facility may end up with a myriad of problems that may not be easily corrected, and as a result, result in unsatisfied customers. In a commissioning process problems are identified early on, equipment and systems are tested and verified by the commissioning authority, which validates system engineering and integration before occupants move in to a given facility. Commissioning contributes not only to a safe and effective project construction, but assures that the daily operations of a given facility are efficient as possible while meeting customer demands. Commissioning is a proven method to achieve improved building performance by optimizing energy efficient design features.

#2 – Essential Risk Management

Proper operation of building systems in Laboratories is vital for protection of the occupants, the surrounding community and critical research. Commissioning is an essential risk management strategy. It ensures that systems are purchased, installed and perform as designed. Commissioning also validates that containment measure are operating properly.

The Commissioning agent should be an engineer specializing in high-performance environments and have a complete understanding of research safety and containment and their unique requirements. Environmental health and safety or bio-safety expertise is critical to the success of the project.

The Basis of Design and any other project documentation should reflect an agreement between all parties to be valid project requirements which will shape commissioning, equipment choices, hood design (ie. openings and face velocity) and containment. In addition the Basis of Design will incorporate user needs, safety/risk assessments and environmental, and energy performance requirements.

Laboratory containment varies. It is subject to the specific space requirements (ie. require air cleanliness and temperature and humidity control limits). Chemical, biological or physical hazards may require specialised rooms, ventilation systems, specific monitoring or life- safety systems and commissioning. Commissioning verification and testing ensures that the specific design intent has been physically installed correctly and is functioning properly manner.

Once the building is balanced, the stability of the supply and exhaust systems must be assessed. The best method for collecting and/or monitoring (trending) this data is through the Building Management System (BMS). Potential problem are than easily identified by unstable system performance which exhibiting large swings in pressure or hunting. The issues would need to be corrected before performance testing begins. Random testing of VAV room systems for temperature, pressurisation, speed and response would also be a reliable indicator of the system performance. The critical task for lab users and facility maintenance is to understand the design intent of the system, systems capabilities and how to respond to prompts and alarms. Commissioning would then provide essential support in the collection and dissemination of the pertinent information.