



- iii) Ensure system and equipment function;
- iv) Facilitate building operation and maintenance.

2. Objectives and Benefits

The fundamental objectives of the HVAC commissioning process are:

- i) to formulate methodology, procedure and document to verify the performance of the HVAC facilities;
- ii) to enhance communication between various parties on building quality issue throughout all phases of the project;
- iii) to validate and report that system performance meets the design intent.

According to current ASHRAE Standard (Guideline 1-1996), HVAC commissioning process can be implemented in five phases, i.e. Pre-design phase; Design phase; Construction phase; Acceptance phase and Post-acceptance phase.

As shown, commissioning is a quality control process that facility and its systems are planned, designed, installed, tested and capable of being operated and maintained to perform according to design intent.

3. Implementation of an Effective Commissioning Process

The following two documents should be prepared in ensuring an effective commissioning process.

- i) The **commissioning plan** - a document that describes all aspects from beginning to end of the commissioning process.
- ii) The **commissioning specifications** - a document provides a clear description of the context and extent of the verification testing procedures required including documentation, reporting and

scheduling requirements.

Normally, the commissioning specifications shall also detail the operation and maintenance manual and training requirements.

To succeed in HVAC commissioning process, each party has specific responsibilities to ensure that the commissioning is completed according to the commissioning plan and specifications.

- a) Owner - shall show the dedication in procurement of quality building by defining the overall vision and establish operational goals and requirements.
- b) Commissioning Specialist - is a person or organization who is experienced in commissioning process and capable of organizing and leading the commissioning team. The commissioning team shall prepare the commissioning plan and specifications, monitors the commissioning process and prepares the final commissioning report.
- c) Design Team - consists of architects and engineers who shall prepare the design documents which explicitly transforming the owner's design intent into realistic function of the building systems.
- d) Project or Construction Manager - is responsible for managing the construction process and assuring respective commissioning process completed on time. This could include coordinating interactions between the commissioning team and other project team members.
- e) Main Contractor - is responsible for overall construction and coordination on site. The specific commissioning responsibilities could include, but not limited to site coordination, schedule performance tests and provision of facilities for commissioning.

	Program	Design	Construction	Acceptance	Post - Acceptance
Pre - Contract Stage	→				
Contract Stage			→		
Post - Contract Stage				→	
UK - Testing & Commissioning		Design Advice	Pre - Cx	T & C	Post - Cx
USA - Commissioning Process	→				

Commissioning Process