



What is Pre-Commissioning?

The term Pre-Commissioning is used for activities after construction completion, such as cleaning, catalyst loading, dry-runs and checks within the systems in order to prepare these items/systems for the next step - commissioning.

Pre-Commissioning activities can be done after or as well before mechanical completion (MC).

API Recommended Practice 1FSC

"Group of energized and static tests that constitute verification that the equipment or component is fabricated, installed, cleaned, and tested in accordance with the design and ready for commissioning."

Also: "static commissioning"

Pre-Commissioning Activities (Examples)

- Flushing, blowing and drying activities
- Chemical cleaning
- Final inspection and closing of vessels and tanks
- Final reinstatement of systems or sub-systems
- Air tightness "Leak" testing of systems
- Lubricants application
- Pre-commissioning "Run-in" of major rotating equipment and electrical motors
- Installation of filters
- Packing of distillation columns
- Loading of catalyst and molecular sieve beds
- Refractory dry-out (if possible - mostly commissioning activity)
- Vendor and factory acceptance testing
- Instrument, electrical and motor loop testing
- Punchlisting (ongoing process)

Pre-Commissioning Sequence (Example)

1. Power and control system (electrical sub-stations)
2. Building power, HVAC, fire & gas protection
3. DCS and PLC systems and instrumentation
4. Raw water and fire fighting systems
5. Waste water treatment systems
6. Oily sewer / clean sewer systems and chemical sewers & neutralization pits
7. Service water / potable water / cooling water systems
8. Instrument air / plant air and regeneration air systems
9. Water treatment systems, demineralization units and boiler water system
10. Nitrogen system
11. Flare system
12. Plant safety equipment and fire & gas detection
13. Fuel gas and fuel oil system
14. Slop systems
15. Flushing oil system
16. Boiler systems with steam & condensate networks
17. Amine, aromatics and caustic drain systems
18. Feed & product storage systems
19. Product & feed systems
20. Sour water treatment section and chemical handling treatment section
21. Amine treatment section
22. All process systems in order of "priority"

RFC

Milestone "Ready For Commissioning"

Pre-Commissioning activities are completed and the systems are ready to commence commissioning.

Protocol

API Recommended Practice 1FSC

"Minor milestone in project when pre-commissioning activities for a discipline (electrical, instrumentation, mechanical, piping, etc.) are essentially complete and ready to commence commissioning."

Licensors

Final inspection of "critical" equipment installation

Supervision of catalyst and chemical loading

Vendor Specialists

For major items of rotating machinery, major utility systems and special electrical and instrument control equipment

Package units

Request for mechanical completion acceptance

Mechanical completion certificate

Release for pre-commissioning notice

Punchlist report of outstanding punch points

Pre-Commissioning Additional Records

Pre-commissioning activity test records are prepared to record the satisfactory completion of various system preparation tasks & activities.

Pre-Commissioning Test Records

- Cleaning
- Chemical cleaning
- Drying
- Air tightness test
- Loading of catalysts
- Blinds list
- Performance Indicators
- Reporting
- Tightness tests
- Total / Completed / Remaining
- Stationary equipment pre-commissioning activities
- Rotating equipment pre-commissioning activities
- Instrumentation pre-commissioning activities
- Piping pre-commissioning activities
- Systems punchlist (commissioning punch)
- Construction QA/QC documentation

Pre-Commissioning Checklists

Many different checklists for different types of equipment

To record the inspection and status of equipment items within the plant

To conform readiness for commissioning

Often to be witnessed by client, PMC & licensor

Pre-Commissioning Procedures (Examples)

- Spectacle blind installation checks
- Non-return valve internals installation checks
- Thermal refractory lining installation checks
- Mechanical interlock checks
- Fitting of all locks on valves
- Packing of a distillation or scrubbing column
- Packing a reactor with catalyst
- Installation of filter medium and cartridges
- Air blowing
- Steam blowing
- Water flushing
- Chemical cleaning
- Tightness test
- Cooling water passivation
- Mechanical test run of pumps

NOTE: All slip blinds or spectacle plates utilized must be given a suitable tail or handle so immediate identification can be made in the field.