

Inspection, Testing and Analysis:

GTPL understands that the key to a good service is in good inspection and the key to good inspection lies in the experience of the inspection team. The inspection of cooling tower by GTPL is done by a team of experts who are specialist in this field. As the cooling tower plays the major role of removing waste heat from process, its underperformance ultimately affects the process. Be it large size petrochemical industry, refinery, power plant or small size plastic moulding machine, HVAC system, DG set etc their good functioning depends on effective removal of heat. Any defect in the cooling system and ultimately cooling tower directly affects the output.

The service engineers of GTPL undertake visit to the client's facility to understand the problems faced by the client. The visit of the service engineer is planned very professionally. Client first of all makes the service team aware of his problems. This team equips the visiting engineer with all the equipments which are required to collect various parameters related to the problem in the cooling tower. These equipments include structural testing instruments as well as other instruments. Visiting engineer takes prior appointment so that proper arrangements can be made for accurate data collection.

Inspection is done to gather information on structural problems as pointed out by the customer. For structural upgradation the visiting engineer looks for foundations of superstructure, motor, gear box, support for fill, its condition, water distribution system, conditions of wall, load bearing beams, columns, piping etc. The condition of superstructure, walls, fan stack, fan deck is inspected and a detailed report is generated. Old cooling towers are found to suffer from vibrations. The source of vibration is generally fan. The condition of fan, gearbox, motor and their foundation is seen and written in the report. Other parts of the cooling tower like fan stack, fan deck, staircase, ladder, lamp post etc. are also inspected from the perspective of safety. Any other specific detail is also collected. Whole report is sent to the head office where it is analyzed systematically and the solution is suggested. Visiting engineer also collects execution data like labour charges, cost of raw materials, cost of construction etc. so that analysis for payback period can be done if structural upgradation is done.

Testing of structure on existing structure using appropriate tests like:

1. Non Destructive test (NDT)
2. Ultra sonic test
3. Rebar locator test
4. Pull out test

Analysis and solution

1. Application of many specific and special construction chemicals like PMM to overcome defects in RCC structure
2. Water proofing is done using water proofing chemicals like Styrene Buta diene Rubber (SBR)
3. Special grouting chemicals for foundation strengthening
4. Fiber wraps for structural strength and use of special grade Polymer Modified Mortar/Polymer Modified Concrete
5. Anti corrosive treatment to the reinforcement and to Mild Steel structure. Application of corrosion protection paints on such structures
6. Strengthening of load bearing member like columns or creation of new columns to bear loads

Table for Structural Stability Inspection

S No	System	Inspection
1	Fan Stack	Fan tip clearance, cracks, vibration
2	Access Door	General condition, hinges, latches
3	Fan Deck	Cracks, vibration
4	Ladder	Broken rungs, cage, welding
5	Stairway	Rungs, handrails
6	Casing	Fastners, damage
7	Columns	Corrosion, damage