

## **Why Thermal Upgradation:**

Primary function of a cooling tower is to produce Cold Water. Cold water is very important for industrial processes. Water gets cold when its excess heat collected by recirculating water from heat exchangers gets dissipated to the atmosphere in the cooling tower. Atmosphere becomes the ultimate heat sink for whole thermal cycle of the process. On one hand for some processes it is essential to keep the quality of the final product within control, on the other it is essential for efficiency. Depending on the type of process the impact of cold water varies. But one thing is constant and that is, if the process in which cold water is required does not get appropriate cold water temperature, there will be some kind of loss either in quality, quantity or efficiency which ultimately translates into loss of money. This is the prime reason why one should under take thermal up gradation for cooling tower.

Cooling towers are heat rejection device which dissipates waste heat from the process to atmosphere. However as the cooling tower is used for a long time its performance degrades over the time. As the thermal mechanism for heat dissipation is very complex, the reasons are as diverse as cooling tower type and the location where they are situated. To thoroughly understand why a cooling tower is failing thermally to deliver cold water requires an expertise of maintenance of years. Still some general reasons that may be attributed are:

1. Poor maintenance is the primary reason for degradation of functioning of any cooling tower. Cooling towers are very sensitive in their performance. Slight increase in wet bulb temperature due to recirculation, fallen or clogged nozzle, defects in gear box or fan hampers directly the performance. There may be other reasons also which may be seen on case to case basis
2. The requirement of cooling has increased with addition of new capacities i.e. increased heat load but the cooling tower is same. Addition of new plant or equipment requires more recirculating water and additional cells to achieve the same performance.
3. Knowledge about cooling tower and its performance is not available easily. This leads to wrong operation and maintenance procedure followed, which ultimately leads to degradation of performance.

So in order to upgrade the capacity of cooling tower, understanding of working of cooling tower and its component is must. GTPL, with its years of experience knows how to upgrade the thermal performance and how the cost is recovered by efficient cooling.

In these days of high electricity cost, the savings coming due to well functioning and efficient cooling tower impacts significantly the bottom line of company's performance.

Table: Why thermal upgradation

1	Sugar	Quality of sugar: fineness of grains leading to export quality sugar
2	Petrochemical	Generation of correct temperature: Production of right mix of petroleum derivatives
3	Refinery	Generation of correct temperature zone: Separation of petroleum derivatives
4	Air conditioning	Condensation of refrigerant vapours: reduction in compressor power
5	Plastic Moulding	Cooling plastic moulds: creation of high quality finish plastic products
6	Chemical	Efficient condensation: greater production of chemicals

Table: Thermal Capability Inspection

S No	System	Components	Look for
1	Fill		Type of fill, Broken parts, algae, fouling,
2	Drift Eliminator		Drift loss, broken areas, clogged areas, debris
3	Distribution system		Area of dry spot
		Nozzles	Fallen or clogged
		PVC pipe	Broken parts, clogging
		End cap, coupler	Dislodged and misaligned
4	Air flow		Motor amperage and flow by anemometer
		Fan	Pitch, vibration, tip clearance
		Gearbox	Oil level, foundation, vibration
		Motor	Ampere, foundation, coupling
		Driveshaft and coupling	Wobbling, visible signs of damage