

Maintenance of cooling towers placed on standby / shutdown



General

A cooling tower constitutes a significant and essential component of many manufacturing processes. Ordinarily, cooling systems operate over long periods without any breaks. Due to stoppages in production, remodeling of facilities, or decrease in demand, it is occasionally necessary to shut down cooling towers, either partially or entirely, for longer than usual.

In addition, in the event of its being delivered sooner than anticipated, the cooling tower is not operated immediately upon completion of its erection, but rather is put on standby mode until all its components are ready and the tower's operation is needed. In order to maintain the tower and all its parts in working order during shutdown, preparations are necessary prior to shut down and during the shutdown period.

Pre-shutdown preparations

- **Relays** – In cooling towers fitted with relays, the mechanical system must be shut down for at least 4 hours. After the relays have cooled down, they should be operated for 3-4 minutes only, in order to attain optimal lubrication. This solution is appropriate for a short shutdown of up to 6 months. In the event that the period of inoperation extends past half a year, filling the oil in the relays up to the maximum level is recommended (before restarting operations, drain excess oil down to proper working levels).
- **Motors** – Shut down motors and pumps and cut off their electricity supply. If the motors are fitted with anti-condensation heaters, leaving the mechanism connected to electricity for the shutdown period is recommended.
- **Water distribution system** – Drain the tower pool and the pipes of all water, and leave the drains open.
- **Water treatment system** – Empty the chemical tanks, drain the injection pipes, and turn off the controllers.

Actions to be performed during shutdown

- **Cleaning** – Taking advantage of the shutdown for thorough cleaning of the tower parts that are affected by environmental contaminants is recommended: fill, louvers, drift eliminators, nozzles, and pool.

- **Periodic Inspections** – Take advantage of the shutdown period to perform testing/checking, essential repairs, and maintenance of the tower structure and its various systems. Perform monthly testing to check on the tower's condition, metal parts, and bolts.
- **Monitoring activation** – Activate the relays and the motors once a week for 5-10 minutes. In the event that the systems cannot be turned on electrically, rotate the fans manually for 2-3 minutes.
- **Louvers** – To maintain good ventilation of the structure, leave the louvers uncovered.

Pre-reoperation

- **Motors** – Ascertain that the motors are greased properly, the bearings are oiled, and all electrical connections are sound.
- **Relays** – Ascertain that oil levels are sufficient.
- **Fan** – Perform a visual check of the fan blades. In addition, rotate the fan manually in order to ascertain that the blades' path is clear and the mechanical system is sound.
- **Electrical connections** – Before restarting the cooling tower, ascertain that the protections are set to the appropriate values for the various consumption levels.
- **Distribution system** – Close the drains that were left open, and fill the pool and conduits with water.
- **Water treatment system** – Add chemicals to the tanks and calibrate the monitors.

Restarting the cooling tower

- Ascertain that the fan is rotating in the correct direction and that it is pushing the air upwards in the tower.
- Measure and ascertain that the desired values are set (temperature, pressure, supply, flow, water level, etc.)
- Ascertain that the water treatment system is working properly, and that bleeding is set as it should be.