Delta Cooling Towers P. Ltd.

Essential Water Quality Standards for Optimal Cooling Tower Performance

Water quality for cooling towers is crucial for efficient operation, longevity of equipment, and prevention of health hazards such as Legionella. Here are the key norms and parameters typically monitored and maintained for cooling tower water quality:

1. pH Level:

- Recommended Range: 6.5 to 8.0
- Importance: Prevents corrosion (too acidic) and scaling (too alkaline).

2. Conductivity (Total Dissolved Solids - TDS):

- Recommended Range: 200 to 800 µS/cm (depending on water source and treatment)
- Importance: High conductivity can lead to scaling and corrosion.

3. Hardness:

- Recommended Range: Less than 300 ppm as $CaCO_3$
- Importance: High hardness can cause scaling on heat exchange surfaces.

4. Alkalinity:

- Recommended Range: 100 to 300 ppm as $CaCO_3$
- Importance: Helps buffer the pH but excessive alkalinity can promote scale formation.

5. Chlorides:

- Recommended Range: Less than 300 ppm
- Importance: High chloride levels can accelerate corrosion, especially in metal components.

6. Sulphates:

- Recommended Range: Less than 250 ppm
- Importance: High sulphate levels can contribute to scaling and corrosion.

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7. Silica:

- Recommended Range: Less than 150 ppm
- Importance: High silica can cause hard, difficult-to-remove scale deposits.

8. Microbiological Control:

- Biocide Usage: Regular use of oxidizing and non-oxidizing biocides.
- Legionella Control: Maintain low levels of Legionella bacteria to prevent Legionnaires' disease.

9. Suspended Solids:

- Recommended Range: As low as possible, typically less than 50 ppm.
- Importance: Reduces fouling and sludge accumulation.

10. Corrosion Inhibitors:

- Usage: Regular use of corrosion inhibitors to protect metal surfaces.

11. Scaling Inhibitors:

- Usage: Use of chemicals to prevent scale formation.

Monitoring and Maintenance:

- Regular Monitoring: Routine testing of water quality parameters.
- Blowdown Control: Periodic removal of water to control concentration of dissolved solids.
- Filtration: Use of filters to remove suspended solids.
- Chemical Treatment: Appropriate chemical dosing based on water quality analysis.

Maintaining these parameters helps ensure efficient cooling tower operation, minimises maintenance needs, and extends the life of the equipment. Regular monitoring and appropriate chemical treatment are essential for optimal performance.