NEXT

NEXT COOLING | IWC | ASCTI

Natural Draft Cooling Towers

Global Presence, Local Expertise

www.nextcooling.com

Natural Draft Cooling Towers

NEXT Cooling specialises in the refurbishment of Natural Draft Cooling Towers and have successfully completed many refurbishment projects across the globe. NEXT Cooling is arguably the world's most experienced contractor in this field, having completely refurbished 10 cooling towers on-line and undertaken other on-line remedial works on others.

Our experienced team of engineers can design both wet and hybrid (Wet/Dry) cooling solutions as required by site conditions and specifications.

We provide a range of engineering solutions to suit project requirements including seismic, noise, instrumentation and control systems, corrosion, low temperature operation (sub-zero) as well as cooling towers for sea water use.

Natural Draft Cooling Towers utilise the natural upward movement of air, resulting from the pressure difference between inlet and outlet elevation (extending >200 m above ground level) as well as the buoyancy effect of heated air to cool water without the assistance of mechanical fans, significantly reducing operational costs.

Where spatial constraints exist, performance can be enhanced through the integration of auxiliary fans.

Fan assisted natural draft (FAND) cooling towers have a reduced height for the same thermal performance, provide higher operational flexibility, are less susceptible to wind effects and require a smaller plot area.

Cooling Tower Materials of Construction

Typically constructed from cast-in-situ concrete, our natural draft cooling towers are engineered for longevity, even in the most demanding environments. The iconic hyperboloid shape of natural draft cooling towers provides robust structural integrity that is resistant to high wind loads and is stable at heights exceeding 200m.

Special Design Considerations

Recognising that each facility presents unique operational challenges, we provide bespoke cooling solutions tailored to specific site requirements.

NEXT prioritises ease of maintenance, with designs that enhance accessibility and streamline servicing activities.

Refurbishment Services

- **Concrete Repair & Protection**
  Repairing damaged concrete, applying waterproofing, and installing cathodic protection systems to prevent rebar corrosion.
- **Fill & Structure Refurbishment**
  Replacing damaged fill and fill supports and other internal components to restore thermal performance.
- **Structural Upgrades**
  Replacing corroded or failed structural elements, such as beams, corbel brackets and columns.
- **Performance Optimization**
  Improving airflow and water distribution, fill enhancements and reducing pressure drop for better cooling efficiency.

Why Refurbishment is Needed:

- **Extended Asset Life**
  Prevents costly replacement of concrete structures.
- **Improved Efficiency**
  Restores or improves thermal performance lost due to damage, impacting plant output.
- **Downtime Minimization**
  Strategic planning and techniques (like online refurbishment) reduce production losses during maintenance.

Marine Environment Solutions

Seawater cooling applications demand materials that withstand high salinity and corrosion. NEXT designs and supplies systems using corrosion-resistant alloys and protective coatings, ensuring durability and reliability in marine conditions

Noise Management

Effective noise control is critical in cooling tower installations, influencing both operational efficiency and regulatory compliance.

NEXT conducts comprehensive acoustic assessments early in the design phase to evaluate alternative mitigation strategies.

Our solutions include:

- **Impact Attenuation in the Water Basin**
  Floating surfaces are installed to dampen the sound of falling water in the basin.
- **Inlet Silencers or Barriers**
  These devices reduce noise from the air inlets.
- **Low-Noise Fans (Fan Assisted NDCT)**
  Specially designed blades minimise sound emissions while maintaining airflow efficiency.

Cold Climate Adaptations

For operations in sub-zero environments, we offer advanced solutions to prevent freezing and ensure uninterrupted performance:

- Bypass systems
- De-icing systems with warm water spray at air inlets

- Air cooled Condensers
- Mechanical Draft Cooling Towers
- Package Cooling Towers
- Aftermarket Services
- Heat Exchangers

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