



United Cooling Towers

United Heat Exchangers



Corporate Member



PERRY JOHNSON
REGISTRARS, INC.



UKAS
QUALITY
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The real Cooling Systems

united cooling towers

United Cooling Systems, as our name implies we unite every cooling requirement under one roof. United cooling towers and heat exchangers is one of the world's largest total cooling tower and heat exchanger manufacturer, apart from that we are providing life long solutions for our customers need that includes renovation, servicing, remodeling of your existing any brand cooling towers which comprises periodical maintenance and services for better performance. Our wide product range includes cooling Towers, Heat Exchanger, Oil cooler, finned coolers, Compressed Air driers and all varieties of maintenance chemicals. We proved ourselves as the ultimate cooling professionals.

According to our clients requirements we are manufacturing all types of cooling towers. Apart from this we also provide tailored solutions according to your need based on location and atmospheric conditions.

Cooling tower is a heat rejecting device. It extracts waste heat generated and exhausts it to the atmosphere. Cooling towers either use evaporation of water to remove the processed heat and cool the working fluid or solely rely on the air for removal of heat. The principle of a wet cooling tower is by using small portion of circulating water by evaporation, the remaining water is cooled. The heat transferred from water to the air stream increases the air temperature and humidity, the hot air moves up and is discharged to the atmosphere.

The common applications of cooling towers include cooling the circulating water used in all process applications like, Thermal, textile, generator, compressors, cement, sugar, air conditioning, refrigeration, steel, natural gas, pharmaceutical, oil refineries, chemical plants, power plants etc. Cooling tower is one of the important cooling product in a cooling system. By function it is divided in to Counter flow, cross flow induced draft wet cooling towers and dry cooling towers and by natural cooling. It is called fan less or natural draft cooling towers. Counter flow wet cooling tower means, the water and air will meet in counter flow direction whereas in cross flow cooling tower the water and air will meet in cross flow directions. This is applicable in both wet or dry cooling towers. But in natural draft fan less fill less cooling tower, the atmospheric wind is used as the cooling media.

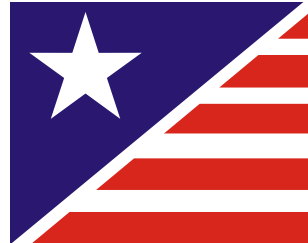
| Quality Profile |

United cooling system committed the quality and continual developments of its each and every product to its customer's utmost satisfaction. We are confident about our products and its quality for uncompromised quality, durability, and its performance. Each component is checked from procurement of raw material to packed condition at various stages of continuous quality control systems and we make sure that each makes an added advantage to our product. We are outfitted with proficient experienced engineers and employees and updated technology. Production stage is well planned and screened by our production planning team for scheduled delivery, exact capacity and validation of its outcome. Our products undergo various quality checks before leaving the company premises. Apart from this we believe that our services extend after sales too and we are happy to make our customer satisfied. Back bone strength of our company is attending all service calls immediately to solve the problem on the spot.

| Credentials |



Corporate Member



**PERRY JOHNSON
REGISTRARS, INC.**



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[FRP COOLING TOWERS](#)

[TIMBER COOLING TOWERS](#)

[DRY COOLING TOWERS](#)

[RCC COOLING TOWERS](#)



FRP cooling towers are produced with fiber Reinforced plastic materials with resin. It is double stronger than steel and wood and by weight 60% less than it. It is resistant to chemicals. It is highly durable and cost effective. Comparing with Timber cooling towers, FRP Cooling towers are lesser maintenance. FRP cooling towers intakes the air from bottom and discharge the waste heat at the top permitting water droplet more contact time with air by counterflow operation. The wet cooling Towers are cooled with the help of evaporating some proportionate quantity of circulating water. Three types of FRP towers by operation are available i.e., Counter flow method, Cross flow method and natural draft [fanless] FRP cooling towers. By shape wise bottle type[round] and square type cooling towers are available.

Adjustable pitch, Aluminium [LM-6] or epoxy coated FRP Fan Blades are directly mounted on the Electric motor [IP 55, with Stainless steel/ EN-8 shaft, TEFC Special type cooling tower motor] to avoid excess power consumption and unnecessary gear driven wear and tear problems. All moving parts can be easily approached from top. Smaller capacity ready made cooling towers are factory assembled and just on site bolting is enough. However higher capacities are assembled into the site only to avoid excess transportation cost. Our range includes 10 TR to 5000 TR in single cell and multiple cells are used for further capacities.

FRP s mainly used in Diesel Engine Generators, Compressors, Induction Furnace, Air Conditioning & refrigeration Suppliers, Plastic Machinery, Pet Bottle Machines, Induction Heating Machines, injection moulding machine, Hydraulic oil cooling purposes, Chemical Processing Industries, Pharmaceutical Industries etc.

[1. Counter Flow FRP Towers](#)

[2. Cross Flow FRP Towers](#)

[3. Fan less Cooling Towers](#)

| Products | FRP Cooling Towers | Counter Flow FRP Towers |

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In this cooling towers, water and air moves in opposite counter flow direction. Air enters an open area beneath the fill layer and it moves up. Water is sprayed through pressurized nozzles/ or self propulsion type sprinklers [only in bottle shape towers] placed above the fill layer and the water passes down through the fills, opposite to the air flow. The hot humid air is discharged at the top and cooled water is collected at the bottom of the tower. In this model water and air contact time is more and effective. Counter flow FRP towers are available in both square and bottle shape.

| Square or Rectangular Type Towers |

FRP Square type cooling tower

The same frp cooling tower technique is used in square shaped cooling model. The operating principle is same. But here the water distribution is by pressure nozzles and one more Drift eliminator fills are provided on the top of the water distribution system to control the water losses. This model towers can be erected on the RCC basin directly if required for larger hold up volume.



| Bottle Type Towers |

Bottle type cooling towers are round in shape filled with honey comb type PVC fills to slow down the water falling there by increasing the contact time with air and also it provides large surface area per unit volume resulting in maximum evaporation. The hot water sprinkler is fixed at the top and it sprays water equally over the fills. Air moves from bottom to top through the fills. The FRP flat type simple drift eliminators are used to control the drift water loss. It helps us to view the entire inner portions from top to assess the cooling tower without any frequent dismantling. The hot saturated air is discharged at the top and cool water is collected at the bottom. In this tower, the entire wetted surface area is usable.

FRP Bottle type cooling tower



NEXT ▶▶

Cross flow cooling tower air flow is perpendicular to the water flow. Air enters through one or more vertical faces of the cooling tower to meet the fill material. A distribution or hot water basin consisting of a deep pan with holes or nozzles in the bottom is utilized in a cross flow tower. Gravity distributes the water through the nozzles uniformly across the fill material. The air continues through the fill and thus past the water flow into an open plenum area and exhaust at the top. Cross flow type is available in Rectangular shape.

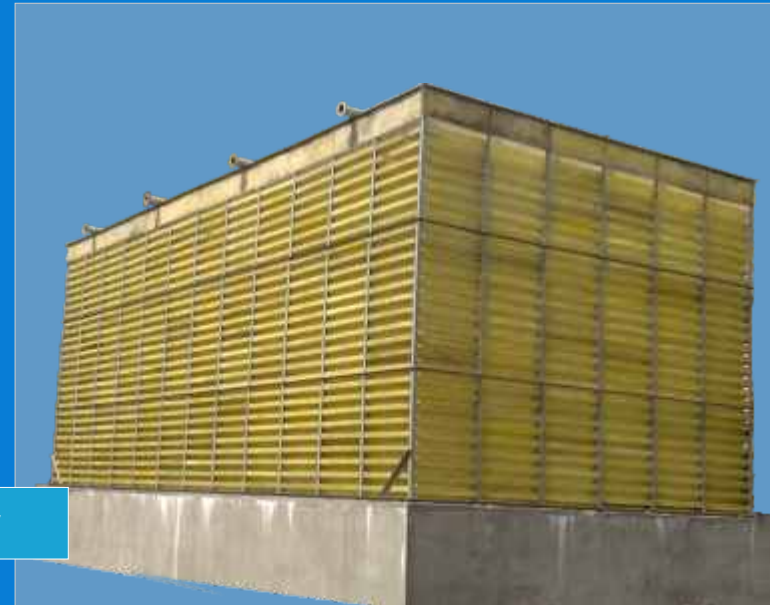
Rectangular type is having serial ventilators adopt inletting air from both sides. The air in the top ventilators exchanges with warm water. The damp and warm air is expelled outside. Ventilators adopt low speed, low dynamic pressure vanes, strengthened polyester driving belt, having low noise, high driving efficiency and no-sliding when touching water. Because of two side inletting wind, the fills pile up directly water slot from bottom of water pool.



United manufactures fan less fill less FRP cooling tower which requires less power and maintenance. Fan less towers doesn't require fan and fills. It follows the principle of evaporative cooling. In this process the hot water is bring into direct contact with the dry atmospheric air. water is cooled by converting a small portion of water into vapour, where latent heat of water is carried away by air. For discharging the hot damp air Fan less cooling towers employs natural draft method. The towers are aerodynamically designed with FRP louvers, which help in the reduction of spillage and evaporation. Features of fan less cooling system are:

- Less power consumption
- Consistence cooling and maintenance free as it is fan less and fill less.
- Natural draft method provides better cooling and energy saving.

Fan less cooling tower



| [Products](#) | [Timber Cooling Towers](#) |

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In timber cooling towers the tower is constructed with timber. It is mainly used in chemical plants, air conditioning plants, induction furnace, injection moulding machine, chilling plants, oxygen plants, major process water cooling, power plants, refineries, sugar industries, diesel generating sets and heat exchangers. And also for steel industries, cement industries, chemical industries, and water effluent treatment industries. We are mainly manufacturing cross flow type timber cooling towers.

In cross flow method the air and water flow are in perpendicular directions as like the same frp cross flow cooling towers. The air intake can be one-sided or double sided. The water is distributed by even distributing target nozzles by gravity saving the pumping cost. The mechanical fan sucks out the hot moist air to the atmosphere. It is having the highest Delta-T with better thermal performance and lower maintenance cost. The model can be constructed according the site condition and the quantity of water cooling can be increases by extending its volume. The timber used is high quality seasoned chemically treated light wood. Comparing with all type of Cooling towers, timber towers will give the lowest possible cold water outlet.



Timber cooling tower

Dry cooling tower is employing air cooling technology. This is an apt option for water scarce area. Excess water evaporation or makeup is not required. It is an extended version of radiator cooling. It is a closed circuit cooling tower i.e. the processed fluid is directly taken from the system as the air and fluid is in separate in and out of the finned tubes. Since in this type finned tubes are used, more heat transfer surface, high pressure fluid inlet is possible. This reduced the need of a mid heat exchanger. The tubes and fins are either made with copper or aluminium to increase the heat transfer area. Carbon steel tubes also used in air cooled condensers.

The processing fluid is circulated in aluminum or copper tubes. The heat transfer area is cooled with the air intake fan at the top in counter flow method to maximize the heat transfer efficiency. The primary media is the fluid and it is cooled by the atmospheric air the secondary media.

The heat transfer area is easily approachable making periodical cleaning an easy process. Various hot media can simultaneously cooled by the same fan, using segregated parts. Air cooled heat exchanger, fin fan cooler, coil cooling tower are some of the other name of a dry cooling tower. This cooling towers are most suitable model Where the outlet temperature is having a very good difference from the dry ambient temperature and if the site location is very scarce in water. And also comparatively maintenance is negligible level. There is no need of frequent shut down is required for this model air cooled heat exchangers.

Advantages of dry cooling system

- Reduced water usage i.e. more than 95%
- Avoids algae and bacterial problems
- Avoids scale and corrosion
- Extended life time
- Reduce maintenance cost.



RCC means reinforced cement concrete cooling towers. The tower body is constructed with RCC. Instead of old conventional model timber construction. This is much durable than timber and FRP cooling towers. Internal fill pack may be FRP /timber like other cooling towers. Since it is higher capacity cooling towers, Spiral bevel gear boxes are used in this model. It is advisable to use this RCC Cooling towers for larger capacity requirement applications like , sugar plants, power plants etc.

We are manufacturing both cross flow and counter flow type RCC cooling towers.

1. Counter flow cooling towers

Counter flow cooling towers employs counter flow method of water cooling as like other FRP and timber cooling towers. In this water and air moves in opposite counter flow direction. Air enters through an open area beneath the fill layer and it moves up through the fill layer. Water is sprayed through spraying nozzles and falls down with gravity. In this method the water and air will have more contact time for heat exchanging.

2. Cross flow:

In cross flow RCC cooling towers the air moves perpendicular to the water movement .air enters through the vertical faces of the cooling tower to meet the fill material. The water is evenly distributed over the fills by distributing nozzles. Air pass through the water and exchanges heat is collected in middle open area and is discharged at the top by induced draft geared driven fan assemblies.





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An exchange of
your trust with our quality

United Heat Exchangers

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United cooling systems is one of the largest total cooling system manufacturer in India. This company is established in the year of 1989. Our range of products includes Cooling Towers, Heat Exchangers viz. Oil cooler, finned coolers, fin fan coolers, air cooled heat exchangers, air cooled condensers and plate heat exchangers and also all types of maintenance chemicals for heat exchanger and cooling tower maintenance. Apart from manufacturing activities, we under takes erection , commissioning and servicing of cooling Towers, Heat Exchangers ,air cooled heat exchangers, oil coolers up to the satisfactory performance of the customers. Our back bone is our fully equipped infrastructure, timely delivery and 24 hours dedication of service net work . We are also outfitted with full pledged R & D department and quality control cells with fully experienced and qualified engineers .

We are manufacturing four types of heat exchangers namely shell and tube heat exchanger, finned tube heat exchanger, plate heat exchanger, air cooled heat exchangers. We also under take customized solutions like design, up gradation etc.

| [Product Profile](#) |

Heat exchanger is a device for an efficient heat transfer between two fluid media. The two medium may be in separate paths or be in direct contact. Heat exchangers are mainly used in Generators, compressors, process cooling like space heating, refrigeration, air conditioning, power plants, chemical plants, marine, automobile, petrochemical plants, petroleum refineries, and natural gas processing, Nuclear plants, ports,ship building centre, Indian railways etc. united is one of the very few companies in the world manufacturing all four type heat exchangers in one roof. They are Shell and tube exchangers, Finned tube heat exchangers, Plate type heat exchangers, Air-cooled heat exchangers. The heat exchanger flow is two nature. One is co current flow [parallel flow], second one is counter current flow [Counter flow] This heat exchangers are mainly used for reducing or increasing the heat in one media to another media.

| [Quality Profile](#) |

United cooling system is committed to its customer satisfaction through supply of quality products with continual development and improvement in its product processing system . it assures the quality of its each and every product. We are confident about our products and its quality for the customer's utmost satisfaction. United Heat Exchangers are carefully designed, analysed and tested with latest softwares from Thermal design, mechanical , selection of raw materials ,witnessing of pressure testing as per specifications and the quality is tested with its own quality control departments. We outfitted with proficient engineers and employees and updated technology. Production stage is well planned and screened with our production planning dept. Our products undergo various quality checks before leaving the company premises like metallurgy, X-Ray Hydraulic, Pneumatic, penetration testing. Also Third party inspection agency like ,DGQA,Lloyds Register, Bureau Veritas,IBR, RITES and Engineers India are also arranged for Quality assurance based on the customer needs.

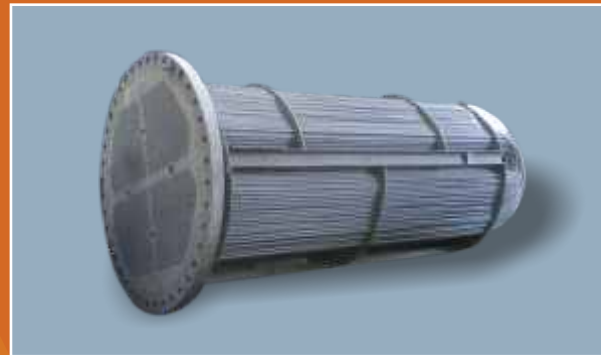
| Products |

Shell and tube exchangers

Finned tube heat exchangers

Air-cooled heat exchangers

Plate type heat exchangers



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Shell and tube heat exchangers as the name implies is consisting of an outer shell containing of a bundle of tubes. The set of tube is called tube bundle which may be either plain or longitudinally finned. This is used widely for those heat transferring mediums which have no chance of intermixing. In this heat exchanger two fluid mediums with different starting temperature will flow, one medium flow through the tube bundles and other flow over it i.e. in the shell for exchanging heat from one media to another media . And the heat exchanged is happened through the tube walls. The medium may either liquids and gases or both.

Shell and tube heat exchangers are used mainly for high pressure applications because of its shape and its assurance of avoiding intermixing of various severe fluid medias . United is manufacturing two types of Shell tube heat exchangers they are fixed and floating type heat exchangers. In the fixed type heat exchangers, the tube sheet will be welded with the shell outside. So there in no absolute chance of intermixing. Where as in floating type, the entire Tube bank will be bundled with the help of two tube plates and the same may be inserted insideThe separate shell and both side leakage will be arrested with the help of Gaskets and 'O' rings. In this type, cleaning of tube bundle 's both sides are possible. And also repairing/removal of individual damaged tubes [in course of time] are possible. It is a flexible model heat exchanger.

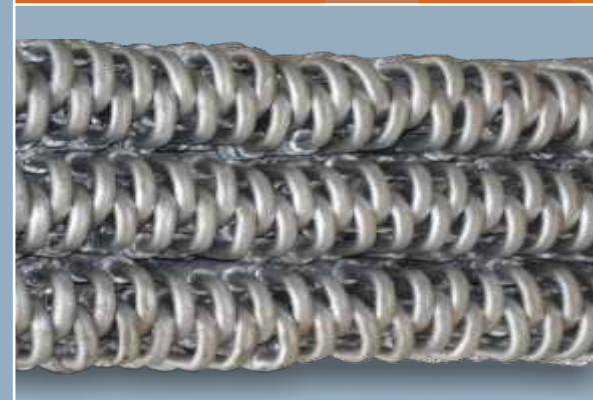


| [Products](#) | [Finned tube heat exchangers](#) |

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Finned tube heat exchanger is an ideal solution for heat transferring between low density, low heat medium and high heat medium. United finned tube heat exchanger implements the European technology of spirally wrapping continues wire or strip of fin material around the tubes, which strengthen the tubes to withstand higher internal pressure and also increases the heat transfer surface area. More surface area can be accommodated in a lesser compact area is possible in this model heat exchangers.

Materials use for finned tube heat exchangers are Tubes, Tube sheets, shells, Baffles and Fins of Heat Exchanger are made out of various custom required material & TEMA Standards like seamless or ERW tubes and shells in Copper, Aluminium, Brass, mild steel, cupro Nickel, Aluminium brass and stainless steel, carbon steel, admiralty Brass materials are used. The end of the tubes are probably welded or expanded with grooved tube plates by tube expanding machines up to a pressure level of 1000 PS1 Pressure.



Air cooling heat exchangers are used mainly in industrial applications where reliable source of water is not available. An air cooled heat exchanger, or ACHE or , as the name implies use atmospheric air as secondary medium to cool the primary medium. Air cooling heat exchangers are designed with a series of multiple rows of finned tubes on a surface along with a number of fans to move large amount of atmospheric air to cool the medium inside the tube. A common example of an air cooler is a car's radiator. Air cooling heat exchangers are more economic and eco friendly as compared to other heat exchangers, as it does not requires any auxiliary water and water treating chemicals. The evaporation and drift loss are almost nil in this type heat exchanger. Periodical maintenance is also nil in this heat exchangers. The air cooled heat exchangers are called as dry cooling tower, fin fan cooler, air fin cooler . The air cooled condenser is also one type of air cooled heat exchanger. This air cooled condensers are mainly used to condensate the steam in power plants where steam is used for turbines. The stream after the turbine, it is condensates to water again and it is used to boilers for reproduce of stream. These Air Cooled Type Heat Exchangers are used in oil, gas, refinery, Process Industries, Gensets, Furnaces, Oil and Gas, Refinery, Petrochemical and Power plants and condensation plants. All type of fluids in process industries are cooled in Air Fin Coolers with the use of atmospheric air, as the cooling media which resulting in economy in running costs. This can be used in high pressure high temperature applicants. Nil water loss and negligible level of maintenance is the strength of this heat exchanger.

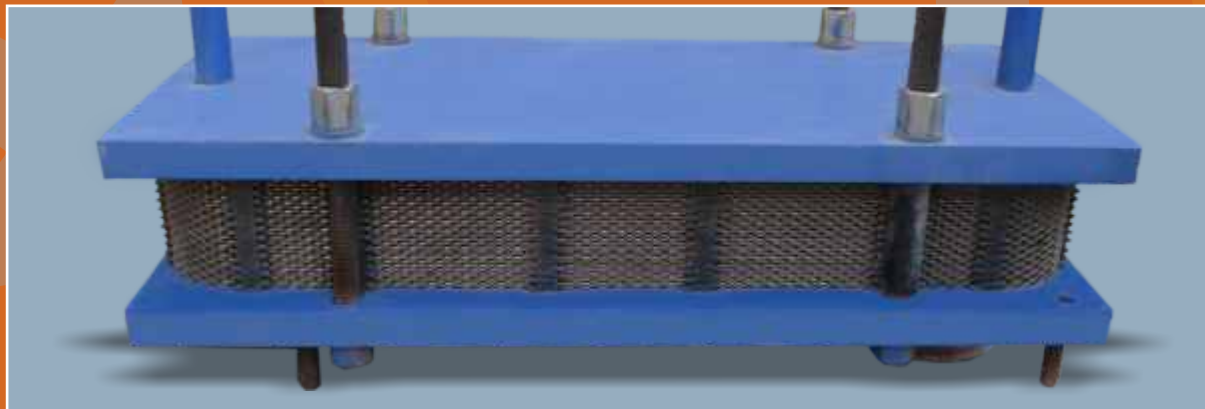


| Products | Plate type heat exchangers |

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Plate type heat exchanger is also called as plate fin heat exchangers. In Plate type heat exchanger plates and finned tubes are used for exchanging heat between two media. This comprises of alternative layers of corrugated sheets separated with metal plates, mainly stainless steel material. This corrugated sheets and metal plates create a series of finned chambers closed with side bars at the edges. Separate hot and cold layers will be flowing through alternative chambers. Heat is transferred from one stream through the fin interface to the separator plate and through the next set of fins into the adjacent fluid.

Plate type heat exchanger is widely used because of its high flexibility as they can use in any combination of medium. This model is highly efficient because it is having relatively high heat transferring area comparing to the volume ratio. The size of the exchanger are also very small and compact when comparing with other shell and tube and finned tube heat exchangers. And also this model is a user friendly model. Because, if any deficiency in the area, we can increase or decrease the number of plates to add or reduce the area in the same exchanger. This is the major benefit of this heat exchanger. Easy, periodical cleaning is also possible.



HIGH PERFORMANCE CAPABILITY

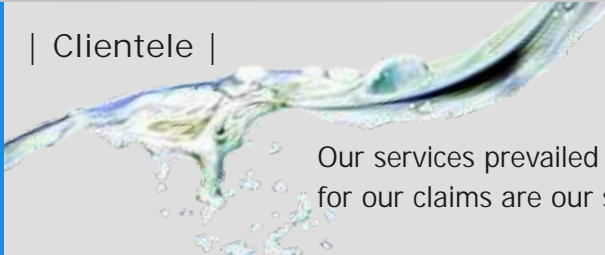
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| Clientele |



Our services prevailed all over India and now it's widening internationally. The best evidence for our claims are our satisfied clients.

Our Indian customers are

M/s. BHEL
M/s. TNPL (Tamil Nadu News Print and Papers Ltd.,)
M/s. SOUTHERN RAILWAYS
M/s. ICF (Integral Coach Factory)
M/s. ATOMIC ENERGY
M/s. AAVIN MILK
M/s. HAL
M/s. NLC (Neyveli Lignite Corporation)
M/s. ONGC
M/s. CHENNAI PORT TRUST

M/s. ASHOK LEYLAND
M/s. MALCO
M/s. INDIAN NAVY
M/s. SHIP BUILDING CENTRE
M/s. EASTERN RAILWAYS
M/s. SOUTH EASTERN RAILWAYS
M/s. RAIL COACH FACTORY
M/s. HINDALCO INDUSTRIES
M/s. GRASIM INDUSTRIES

Our over seas clients are from

USA, Egypt, Dubai, Syria, Bangladesh, Srilanka, and Kenya



For more customer list contact us

HIGH PERFORMANCE CAPABILITY

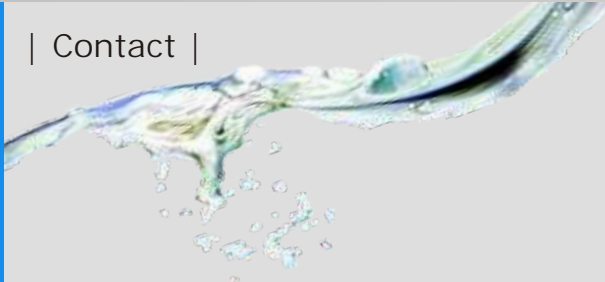
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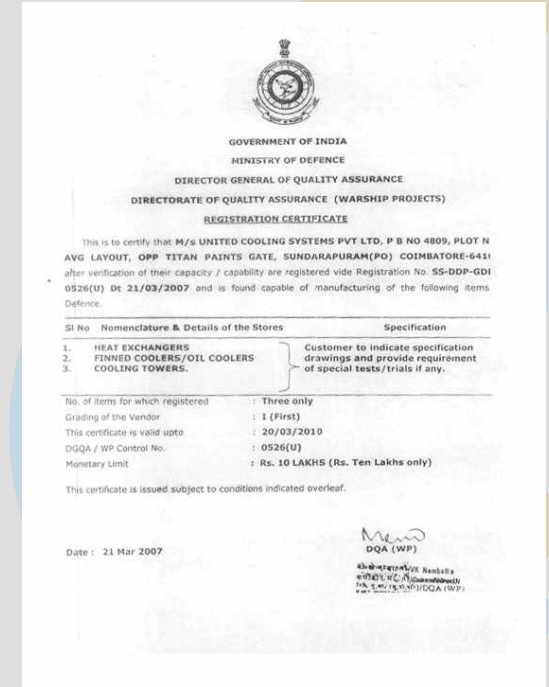
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Cooling Towers Institute



ISO 9001 : 2008 certification



Ministry of Defence

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