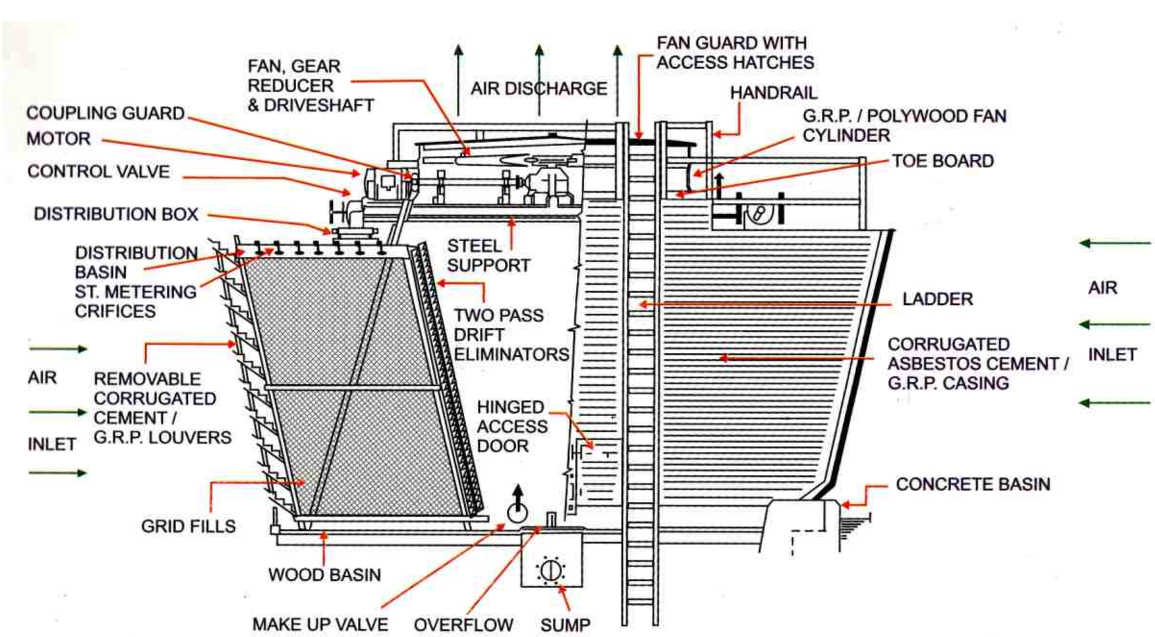
Induced Draught Crossflow Cooling Towers

KOOL DROP COOLING TOWERS PVT. LTD.

AN ISO 9001 Co.

TECHNICAL SPECIFICATION OF
"KOOL DROP" WOODEN CROSS FLOW INDUCED DRAFT COOLING TOWERS "SERIES KCR-35"

Model No.	Length	Height At Fan Cylinder	Width At		Fan Dia	Approximate Operating Weight (Kgs)
			Fan Deck Lavel	Besin Lavel		
KCR-1071	6'-6"	10'-6"	13'-0	10'-6"	54	3400
KCR-1072	6'-6"	10'-6"	15'-0	12'-0"	60	3800
KCR-1073	6'-6"	12'-6"	15'-0	12'-0"	60	4800
KCR-1074	6'-6"	12'-6"	17'-0	14'-0"	60	5000
KCR-1075	8'-8"	10'-6"	18'-0	15'-0"	72	6200
KCR-1076	8'-8"	10'-6"	20'-0	17'-0"	72	6700
KCR-1077	8'-8"	12'-6"	20'-0	17'-0"	72	7000
KCR-1078	8'-8"	12'-6"	22'-0	17'-0"	72	8000
KCR-1079	8'-8"	12'-6"	22'-0	18'-0"	72	9000
KCR-1080	12'-8"	10'-6"	22'-0	18'-0"	96	10000
KCR-1081	12'-8"	10'-6"	22'-0	19'-0"	96	11000
KCR-1082	12'-8"	12'-6"	22'-0	16'-0"	96	12000
KCR-1083	12'-8"	12'-6"	23'-0	18'-0"	96	14000
KCR-1084	12'-8"	12'-6"	24'-0	20'-0"	96	15000
KCR-1085	16'-8"	12'-6"	20'-0	16'-0"	96	16000
KCR-1086	16'-8"	12'-6"	22'-0	18'-0"	96	18000
KCR-1087	16'-8"	12'-6"	24'-0	20'-0"	96	20000
KCR-1088	20'-8"	12'-6"	22'-0	18'-0"	120	23000
KCR-1089	20'-8"	12'-6"	24'-0	20'-0"	120	24000
KCR-1090	20'-8"	12'-6"	27'-0	22'-0"	120	25000



Induced Draft- Cross Flow Timber Cooling Towers

KCR- 35 series

Cross Flow Cooling Towers are engineered to ensure uniform air-water contact across the entire fill section. The design allows the incoming air to effectively interact with every splash fill element, maximizing heat and mass transfer efficiency and resulting in superior thermal performance Cross-flow cooling towers are manufactured in single- or multi-cell configurations, depending on water quality and capacity requirements. Splash fills are selected based on the specific characteristics of the circulating water. The thermal efficiency of a cross-flow cooling tower is influenced by several factors, including fill type, fill design, fill density, fan design, the angle and configuration of drift eliminators, the shape of the fan cylinder, and the efficiency of the gearbox.

KOOL DROP designs and manufacturers all CROSS FLOW cooling tower components in accordance with Specified thermal, structural, and operational parameters to ensure optimal performance and reliability.

Induced Draft - Counter Flow Timber Cooling Towers

KCR- 312 series

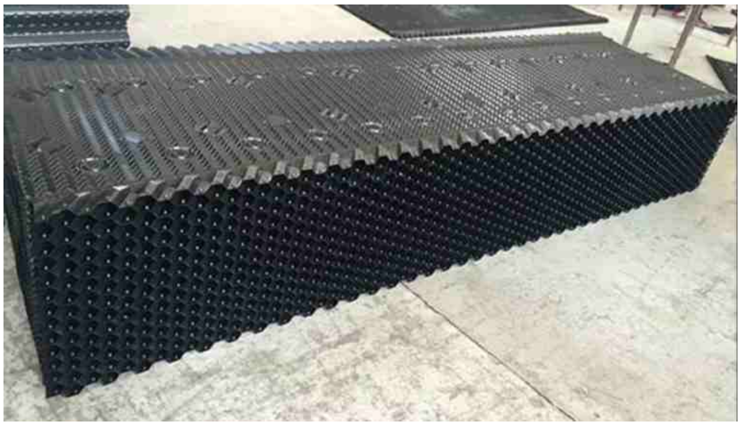
COUNTER FLOW cooling towers are known for their high thermal efficiency. Their unique design enables maximum heat transfer between the circulating water and ambient air. In a counter-flow configuration, hot water is distributed uniformly from the top of the tower and flows downward over the fill media, while ambient air is drawn upward through the air inlets located at the bottom. Because the air and water move in opposite directions (at a 180° flow angle), the temperature difference between them is maintained throughout the tower height. This counter-current movement maximizes both the heat and mass transfer rates, ensuring longer contact time and greater cooling efficiency compared to other tower configurations.Counter-flow cooling towers are manufactured in single-cell or multi-cell configurations, depending on water quality, thermal performance, and capacity requirements. In these towers, splash or film-type fills are selected based on the characteristics of the circulating water, such as suspended solids content, scaling tendency, and biological activity. The thermal efficiency of a counter-flow cooling tower is influenced by several design and operating factors, including the type and configuration of the fill media, air distribution pattern, fan design and speed, the geometry of drift eliminators, the shape of the fan stack or cylinder, and the efficiency of the mechanical drive system (gearbox or direct drive). The counter-flow arrangement, in which air moves vertically upward opposite to the downward flow of water, enhances heat and mass transfer by maintaining a higher temperature gradient throughout the tower height.

KOOL DROP designs and manufacturers all COUNTER FLOW cooling tower components in accordance with Specified thermal, structural, and operational parameters to ensure optimal performance and reliability.

COMPONENTS OF COOLING TOWERS

Fills Splash Bars (treated Wood), PVC V Bars And PVC Film Type Fills Of Various Sizes Like 600 Mm x 1500 Mm, 600 Mm x 1800 Mm Or 600 Mm x 2400 Mm Can Be Used In Cooling Towers Depending On The Applications.

FILLS - PVC



Thermoformed PVC fills, equipped with integral louvers, drift eliminators, and support holes for steel tube hangers, are designed to maximize heat transfer efficiency. The louvers enhance water distribution and airflow, while the drift eliminators minimize water loss due to entrainment. The structural design, including holes for secure mounting on steel hangers, ensures proper alignment, stability, and optimal contact between water and air, resulting in improved cooling performance.

FILLS - TREATED TIMBER

Raw sawn, treated timber splash bars are highly efficient, as they absorb and retain water, increasing the effective surface area and prolonging contact time between the downward-flowing hot water and ambient air. This enhanced interaction improves heat transfer and overall cooling performance.

COMPONENTS OF COOLING TOWERS

Fan Frp / Aluminium Fans Designed By Kool Drop Are Guaranteed For Better Performance And Durability. Aerodynamically Designed Frp Blades Generate Higher Air Volume And Bell Mouth Shape Fan Cylinders Ensure Low Pressure Drop During The Operation Of Cooling Tower Resulting In To The Lower Power Consumtion And Longer Life Of Gear Box And Motors.

FAN - FRP / ALUMINUM

Aerofoil-designed blades, made of FRP or aluminum with adjustable pitch, are engineered to provide the required airflow and overcome the specific static pressure of a cooling tower, ensuring optimal cooling efficiency.

FAN - STACK

The efficiency of a cooling tower fan depends significantly on the design of the fan stack. The fan stack should be designed to guide airflow effectively, minimizing turbulence and pressure losses, so that the fan can pass the maximum volume of air through the cooling tower, thereby improving overall thermal efficiency.

COMPONENTS OF COOLING TOWERS

GRIDS

Grp / Ss Grids Frp And Ss-304 Grids Are Manufactured By Kool Drop These Grids Are Designed To Bear Maximum Possible Load And Last Long Even After Continuous Exposure To Normal Or Acidic Water.

The SS-304 grids in a wooden cooling tower are fabricated from high-quality SS-304 stainless steel wires of 12/14/16 gauge and are spot-welded for strength and durability. These grids are designed to securely support the weight of the splash bars while resisting corrosion in the cooling tower environment.

GEAR BOX

The gearbox transmits power from the motor to the fan, ensuring the correct fan speed for optimal airflow. Its efficiency directly affects energy consumption and fan performance, impacting the overall cooling efficiency of the tower.

Spiral Bevel Reduction Gear Boxes Designed By Kool Drop Are Sturdy, Quiet In Operation And Made For Continuous Heavy Duty Operations. These Gear Boxes Are Designed On 2.5 Service Factor And Suitable For Fans Of 530 To 163 Rpm, ensuring optimal power transmission and fan performance in cooling towers.

DRIFT ELIMINATORS

ELIMINATOR BLADES

MULTY-SPACER

D SPACER

Drift eliminators are components installed in a cooling tower to capture water droplets entrained in the airflow before they leave the tower with the exhaust air. These droplets, known as “drift,” carry water and dissolved salts, which can cause water loss, corrosion, or environmental issues if released.

Key Functions:

1. Minimize Water Loss: Drift eliminators prevent water from being carried out with the exhaust air, reducing water wastage and the need for makeup water.
2. Protect Surroundings: By capturing water droplets, drift eliminators prevent wetting of nearby structures and reduce environmental and operational hazards.

Impact on Cooling Tower Efficiency:

Drift eliminators indirectly improve thermal efficiency by maintaining proper water levels and flow inside the tower. Excessive water loss without drift control can lead to increased makeup water demand and potential fluctuations in water temperature, which reduces the tower’s ability to maintain consistent cooling. Well-designed drift eliminators allow smooth airflow with minimal pressure drop, ensuring the fan operates efficiently and the heat transfer process is not impeded.

NOZZLES








Nozzles are used to distribute the hot water coming from the condenser (or process equipment) uniformly over the fill media inside the cooling tower. They break the water into fine droplets or thin films, increasing the surface area for heat and mass transfer between water and air.This improves evaporative cooling, as more water surface is exposed to air.
AspectImpact on Efficiency
Spray Pattern: A uniform spray pattern ensures even water distribution over the fill. Uneven spraying causes dry zones (less cooling) or flooding (inefficient airflow).
Droplet SizeSmaller droplets increase surface area and improve heat transfer but can drift out with the exhaust air if too fine. An optimal droplet size maximizes cooling with minimal drift losses.
Flow Rate and PressureProper nozzle pressure ensures consistent water distribution. Low pressure = poor spray coverage; too high = excessive drift and wear.
Material and MaintenanceNozzles must resist scaling and corrosion. Clogged or worn nozzles reduce spray uniformity and lower tower performance.
Placement and OrientationCorrect nozzle spacing and angle ensure that all fill sections receive equal water flow, maintaining balanced heat exchange.

COMPONENTS OF COOLING TOWERS

DRIVE SHAFTS

Drive Shafts Perfectly Balanced Tubular Floating Type Drive Shafts With Flexible Coupling Using No Lubrication For Movement Are Designed For Motors Of Rating 10 Hp To 250 Hp.

The drive shaft is critical for transmitting power to the fan, and its design, alignment, and balance directly impact the operational efficiency, mechanical stability, and lifespan of the cooling tower.

Kool Drop manufactures well-balanced drive shafts made of SS-304 stainless steel, designed to minimize energy loss during power transmission and ensure efficient fan operation in cooling towers.

Our Valuable Clients :-

Alpine Distilleries Pvt. Ltd.
Bhatinda Chemicals Ltd.
Uttam Sugar Mills Ltd.
Pernod Ricard India Ltd.
Bhawani Papers Ltd.
Suraj Solvent Ltd.
Adani Wilmar Ltd.
Siegwerk India Ltd.
Hindustan Unilever Ltd.
Nector Life Sciences Ltd.
United Breweries Ltd.
Bhaskar Oil Pvt. Ltd.
Anmol Solvex Pvt. Ltd.
Pioneer Industries Ltd.
Dhanuka Laboratories
Bajaj Hindusthan Ltd.
Mohan Steels Ltd.
ACC Cement Ltd.
Ester India Ltd.
Havells India Ltd.
Jindal Industries Ltd.
MES
CPWD
PWD
Sainson Paper Mills Ltd.
Britannia Industries Ltd.
AB Grains Ltd.

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