



**Professional  
Cooling Equipment & Solutions**

# Close Loop Cooling tower

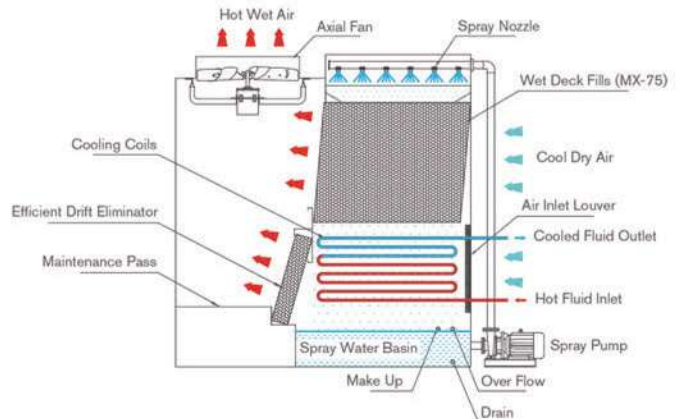


# GHM SERIES



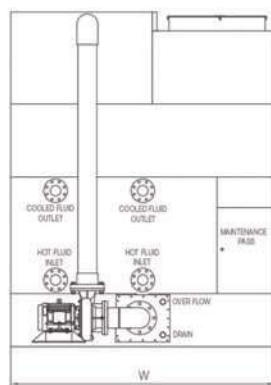
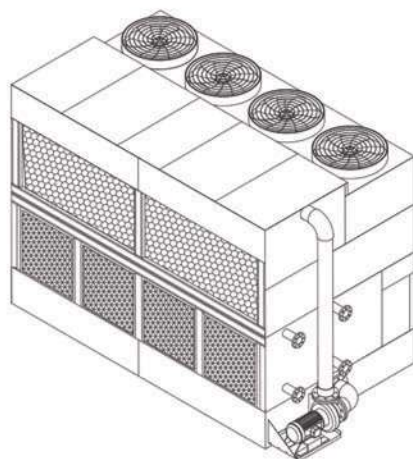
## CLOSED CROSS FLOW COOLING TOWER

**GHM** Series are of capacities from 30 to 366 nominal tons, can work in series as a group for larger capacities. Casing made in special alloy coated steel or stainless steel, Heat exchange coils made in stainless steel or red copper, Wet deck fills made in PVC. All raw materials are of high industrial grade, with superior corrosion resistant features. GHM towers are designed of high efficiency but lower initial and long term costs, easy and economical installation and maintenance. The towers dimensions can be customized to suit standard containers or particular project conditions. GHM towers are widely applied in different fields, to cool circulating water, oil or other process fluid for HVAC System, Compressors, Furnaces, Data Centers, Ground Source Heat Pumps, Power Generators, Transformers, Converters, Refrigerators, Food and Chemical Production Lines, etc.

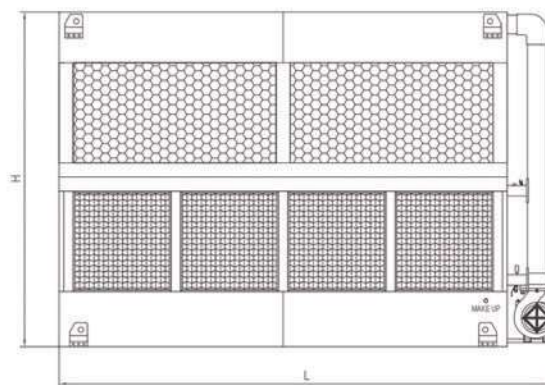


## WORKING THEORY

GHM series belong to induced draft type cross flow cooling towers. During the working process, dry cool air is inlet through wide louvers on one side of the tower, then directed through the heat exchange coils and wet deck fills across the spray water, becoming wet hot air, eventually induced draught out of the tower into the atmosphere by the fans on the top. In this process, a part of heat from the fluids inside the closed loop is transferred efficiently, and removed continuously.



VIEW 1



VIEW 2

Model No.	Nominal Tons	Fan		Spray Pump		Connecting Pipe (mm)			Overall Dimensions(mm)			Weight	
		Power (kW)	Air Volumn (m <sup>3</sup> /s)	Power (kW)	Flow Rate (T/h)	Inlet/Outlet	Make Up	Drainage	L	W	H	Net (kg)	Operation (kg)
GHM-225	30	1.1×2	3.7×2	1.5	45	DN80	DN25	DN40	2540	1940	2200	1020	1820
GHM-230	37	1.1×2	3.7×2	1.5	45	DN80	DN25	DN40	2960	1940	2200	1050	2020
GHM-235	43	1.1×2	3.7×2	1.5	45	DN80	DN25	DN40	2960	1940	2200	1100	2100
GHM-340	49	1.1×3	3.7×3	2.2	60	DN80	DN25	DN40	3360	1940	2200	1310	2540
GHM-350	61	1.1×3	3.7×3	2.2	60	DN80×2	DN25	DN40	3760	2240	2200	1450	3080
GHM-365	79	1.5×3	5.1×3	2.2	60	DN80×2	DN25	DN40	3360	1940	2730	1520	3200
GHM-380	98	1.5×4	5.1×4	2.2	114	DN80×2	DN25	DN40	4220	2240	2680	2050	4920
GHM-390	110	1.5×4	5.1×4	2.2	114	DN80×2	DN25	DN40	4220	2240	2680	2100	5000
GHM-3100	122	1.5×4	5.1×4	2.2	114	DN80×2	DN25	DN40	4220	2240	2840	2150	5100
GHM-3110	134	1.5×4	5.1×4	2.2	114	DN80×2	DN25	DN40	4220	2240	2840	2250	5250
GHM-5125	152	1.5×4	5.1×4	3.7	140	DN100×2	DN40	DN40	4740	2240	2910	2800	6800
GHM-5150	183	2.2×4	6.3×4	3.7	140	DN100×2	DN40	DN40	5440	2240	2910	3200	7820
GHM-5175	213	2.2×4	6.3×4	3.7	140	DN125×2	DN40	DN40	5440	2240	2910	3300	8000
GHM-7200	244	4×4	16.7×4	5.5	160	DN125×2	DN40	DN40	5840	2900	3260	5000	9000
GHM-7225	274	4×4	16.7×4	5.5	160	DN125×2	DN40	DN40	5840	2900	3470	5500	10000
GHM-7250	305	4×4	16.7×4	5.5	160	DN150×2	DN40	DN40	6420	2900	3470	6500	11500
GHM-7275	335	4×4	16.7×4	5.5	160	DN150×2	DN40	DN40	6420	2900	3470	6800	11800
GHM-7300	366	4×4	16.7×4	5.5	160	DN150×2	DN40	DN40	6420	2900	3470	7000	12000

**NOTE**

Nominal Tons are based upon temp. drop 35~29.5°C/ 95~85°F, WBT 25.5°C/ 78°F, and 0.681 m<sup>3</sup>/hr/ton.

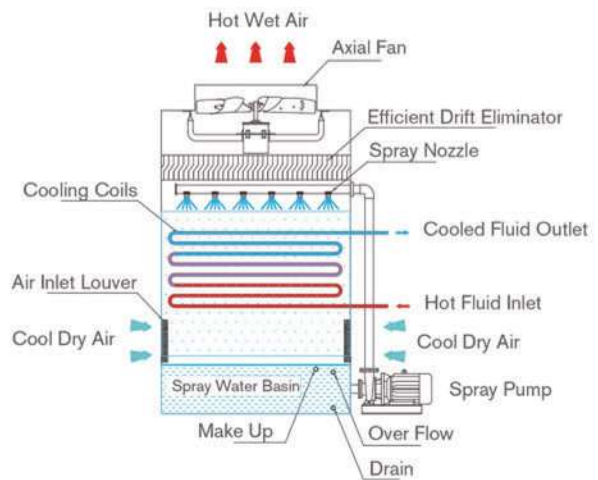
# GTM SERIES



## CLOSED COUNTER FLOW COOLING TOWER

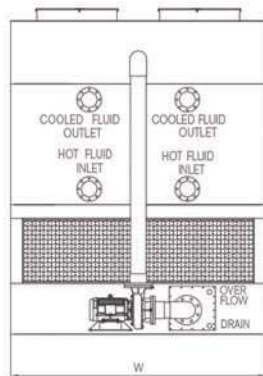
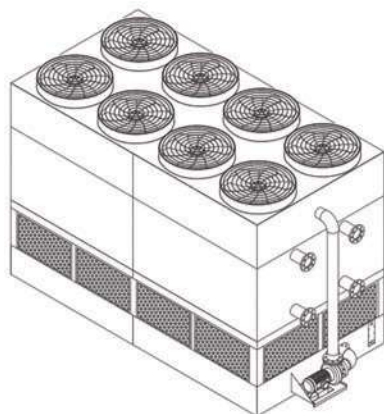


**GTM** Series are of regular capacities from 6 to 305 nominal tons. Casing made in special alloy coated steel or stainless steel, Heat exchange coils made in stainless steel or red copper. GTM Towers tend to be more compact, taking less installation space, working without any wet deck fill, more suitable to cool hot water of higher inlet temperature. The towers dimensions can be customized to suit standard containers or particular project conditions. GTM towers are widely applied in different fields, to cool circulating water, oil or other process fluid for Melting/ Vacuum/ Multi-crystal Furnaces, Induction Heaters, Compressors, Heat Pumps, Metal Parts Production Lines, Hydraulic Stations, Power Generators, Transformers, Converters, etc.

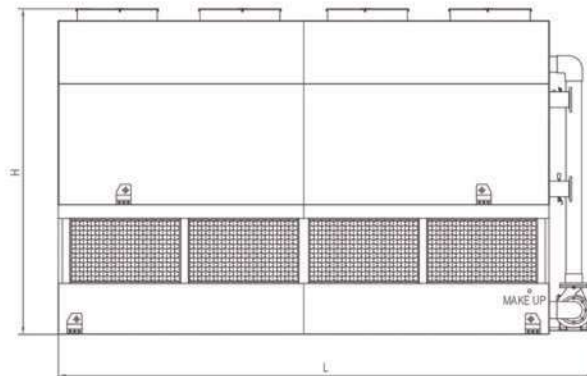


### WORKING THEORY

As counter flow towers, the dry cool air is inlet through louvers on both sides of the tower from the bottom, and drawn upwards passing a large heat exchange surface of the coils section under the induced fans, against the spraying water in the opposite way, becoming hot wet air, induced draught out of the tower into the atmosphere by the fans on the top. During this process, a part of the heat from the fluids inside the closed loop is transferred efficiently, and removed to the outside environment.



VIEW 1



VIEW 2

Model No.	Nominal Tons	Fan		Spray Pump		Connecting Pipe(mm)			Overall Dimensions(mm)			Weight	
		Power (kW)	Air Volumn (m³/s)	Power (kW)	Flow Rate (T/h)	Inlet/ Outlet	Make Up	Drainage	L	W	H	Net (kg)	Operation (kg)
GTM-15	6	0.55	2.4	0.75	20	DN50	DN25	DN40	2200	1000	1830	450	700
GTM-110	12	0.55	2.4	0.75	20	DN50	DN25	DN40	2400	1000	1900	490	800
GTM-115	18	0.55×2	2.4×2	0.75	20	DN65	DN25	DN40	2300	1020	1830	460	1000
GTM-120	24	0.55×2	2.4×2	0.75	20	DN65	DN25	DN40	2300	1020	1900	500	1050
GTM-225	30	0.55×2	2.4×2	1.5	45	DN80	DN25	DN40	2860	1240	2050	730	1650
GTM-230	37	1.1×2	3.7×2	1.5	45	DN80	DN25	DN40	2860	1240	2180	830	1760
GTM-235	43	1.1×2	3.7×2	1.5	45	DN65×2	DN25	DN40	2860	1240	2420	1050	2030
GTM-340	49	1.5×2	5.1×2	2.2	60	DN65×2	DN25	DN40	2860	1520	2440	1280	2500
GTM-350	61	1.5×2	5.1×2	2.2	60	DN80×2	DN25	DN40	2860	1520	2630	1370	2660
GTM-365	79	1.1×4	3.7×4	2.2	60	DN80×2	DN25	DN40	3200	1760	2630	1820	3460
GTM-370	85	1.1×4	3.7×4	2.2	114	DN80×2	DN25	DN40	3200	2120	2750	1930	3970
GTM-380	98	1.5×4	5.1×4	2.2	114	DN80×2	DN25	DN40	3200	2120	2750	2050	4000
GTM-390	110	1.5×4	5.1×4	2.2	114	DN80×2	DN25	DN40	3200	2120	2750	2150	4050
GTM-3100	122	1.5×4	5.1×4	2.2	114	DN80×2	DN25	DN40	3550	2120	2750	2330	4710
GTM-3110	134	1.5×6	5.1×6	2.2	114	DN80×2	DN25	DN40	4150	2120	2870	2650	5550
GTM-5125	152	1.5×8	5.1×8	3.7	140	DN100×2	DN40	DN40	4750	2120	2970	3100	6500
GTM-5150	183	1.5×8	5.1×8	3.7	140	DN100×2	DN40	DN40	5050	2120	3120	3500	7480
GTM-7175	213	1.5×8	5.1×8	5.5	160	DN125×2	DN40	DN40	5480	2120	3120	3800	8240
GTM-7200	244	1.5×8	5.1×8	5.5	160	DN125×2	DN40	DN40	5080	2620	3120	4800	9170
GTM-7225	274	1.5×8	5.1×8	5.5	160	DN125×2	DN40	DN40	5480	2620	3220	5600	11300
GTM-10250	305	1.5×10	5.1×10	7.5	240	DN150×2	DN40	DN40	6230	2620	3220	6000	12560

**NOTE**

Nominal Tons are based upon temp. drop 35~29.5°C/ 95~85°F, WBT 25.5°C/ 78°F, and 0.681 m³/hr/ton.

# BASIC CONFIGURATIONS

## STRUCTURE & CASING



The standard enclosure is made of the latest type of Highly Corrosion-resistant coated steel sheet with a coating composition consisting of Zn+Al(11%)+Mg(3%), and a trace amount of silicon, originally imported from Nippon Steel or Posco. The panels are sheared and folded precisely in whole cold machining process, then densely bolted and sealed for water tightness, with sufficient reinforcing bars, preventing deforming during hoisting process in fields. Each tower is completed with maintenance access and doors of maximized size, for internal inspection convenience. Heat exchange section is firmly supported by frame made in stainless steel, or H.D.G steel plated entirely after welding.

## EVAPORATIVE COOLING COILS



The water cooling series adopt high efficient heat exchange coils. Optimized coils has effectively reduced air-side resistance, suitable to work with larger amount of spray water, and significantly improved heat transfer efficiency. The heat exchanger combines one or more coils supported by steel structure, firm and durable. This whole section is of patented design, easy to eliminate cooling medium fluid. Standard coils tube made in stainless steel 304/316, or red copper and titanium ally on option. Different wall thickness can be met on request. Each coil is tested under continuous nitrogen gas pressure of 30 bar for 24 hours, ensure no leaking or weak point, with guarantee provided for 18 for both raw material and design of this critical section of an evaporative cooler.

## DRY/AIR COOLING COILS



The dedicated dry cooling coils in GKM Series is used exclusively for the purpose of dry cooling, fitted with particularly shaped aluminum or steel fins around the coils tubes, to maximize heat transfer surface and efficiency. The gap between the neighbouring fins can be customized and depends on the environment and other working conditions of the project sites. Dry cooling coils with suitable fin gaps can also work with spray water in cases the temperature drop becomes a challenge in the hot season, and save operation power greatly. Rest of specifications is common to above evaporative cooling coils.



### **DIRECT-DRIVE AXIAL FANS**

The standard closed loop series adopt direct-drive axial fans, fitted with resin or al-alloy airfoil blades perfectly balanced and coupled to a weather proof TEFC three-phases electric motor. The fan casing is a galvanized steel cylinder to draw the air vertically and avoid the risk of recirculation. The tip speed of the impeller is limited to keep the noise level within acceptable limits.



### **NON-DIRECT DRIVE AXIAL FANS**

A part of open loop series adopt non-direct drive axial fans, fitted with al-alloy airfoil blades perfectly balanced and coupled with gear box or belts with speed reducer, to a weather proof TEFC three-phases electric motor. The fan casing is a galvanized steel cylinder to draw the air vertically and avoid the risk of recirculation. The tip speed of the impeller is limited to keep the noise level within acceptable limits.



### **SPRAY PUMP**

Standard spray pumps are of GZ horizontal centrifugal series from GSD brand, with motor of brand TECO, specially designed for evaporative cooling equipments, of generally large flow rate but low pumping head. The selected pumps are of dynamic-static balance, with shaft as an extended section from the motor, for most reliable concentricity. With first grade bearings, the pumps runat minimized vibration and low noise. Mechanicseals avoids abrasion to shaft, no leakage in long term service life. Overload protected on any point of the performance curve, not exceeding the rated power during the whole working period. Enclosure materials and installation arrangement can be optional and modified to suit different projects requirements.



### **WET DECK FILL**

The fills are formed in flame-retardant PVC sheets with a special shape design of herringbone surface, to distribute water evenly over the entire fill area for maximal thermal performance, can be integrated with air inlet louvers and drift eliminators. For medium fouled water, fill types with enlarged grids are available to reduce the chances of blocks. All the raw materials are of virgin grade from approved suppliers, with long service life in tough environment.



### **DRIFT ELIMINATOR**

Cellular Drift Eliminators are specifically designed to achieve maximum drift removal, with significantly lower pressure drop. The modules are constructed of a series of sinusoidal-shaped, corrugated PVC sheets that are mechanically assembled to mating sinusoidal structural waves, forming closed cells. These cells force the drift droplets being carried in the leaving airstream to make three distinct changes in direction. When the air is forced to change direction, the inertia of the water droplets keeps them moving in a straight line, causing them to impact the wall of the drift eliminator and drain back into the wet section of the tower.



### **AIR INLET LOUVERS**

Cellular air Inlet louvers with advaned design improve air flow into the cooling tower, keep out debris, eliminate water splash-out, which otherwise can cause icing, near-site water damage, and unnecessary water loss. The deign restrict the amount of sunlight into the cooling tower to impede algae growth, reduce noise from the tower, and improve the tower's appearance.

# BASIC CONFIGURATIONS



## SPRAY NOZZLES FOR OPEN TOWERS

The Spiral Target Nozzles used for GOM Series open towers, injection molded in polypropylene unit consisting of two parts, main body with integral target diffuser and a snap-on insert or orifice cap. The nozzles installed in bottom of the hot water distribution basins, to eliminate water diffusion decks below the hot water basins, provide full water coverage of the fills by gravity flow, removable and replaceable but of long service life. Sizes and variety depends on the tower size, water flow rate and water quality.



## SPRAY PIPE

Spray Pipes made in U-PVC from FPC, of high mechanical strength and long service life, holding pressure 1.0 Mpa, accessible to inspect and maintain from outside of the tower, convenient to check with when running fully, completed with buttonholes for quick and tight installations of spray nozzles.



## FLOAT VALVE

Heavy duty floating valve, made in stainless steel, floating ball in engineering plastic or stainless steel, with long service life. Water level adjustable.



## ANTI-EDDY FILTER

Effectively filtering the sundries, with anti-eddy arrangement, preventing air bubbles sucked into the pumps, punched in the same material as the enclosure, highly corrosion resistant.



## FASTNERS

Fasteners of leading brands, standard materials in steel dacromet treated, stainless steel on options. Intensity of fasteners is higher than average.

# OPTIONAL CONFIGURATIONS



## CONTROL PANEL

The control panel is optional for each cooling tower, or a group of towers can share a central control station. The enclosure can be made in powder coated carbon steel, or stainless steel on options, with or without weather proof arrangement.



## PLC DIGITAL CONTROL

In cases digital or remote control function required, the PLC can be applied and programmed according to the project demands, with or without PC connection terminal, usually of brand Simens or AB.



## CIRCULATION AUXILIARY SECTION

Circulation Pumps with Transfer Water Tank, as an integrated solution of circulating system, with PID design on request.



## FREQUENCY CONTROL

An optional part to adjust the frequency of power supply.



## PROTECTIVE GUARDS AND MAINTENANCE LADDER

For maintenance convenience and safety, made in HDG steel or stainless steel.



## LOW NOISE FANS

Fans with low noise design, suitable for installation locations with strict noise limit, 6 to 12 db(a) lower than standard fan system.



## VIBRATION REDUCER

An optional part applied to reduce running vibration when necessary, of nature frequency 2.16Hz ~ 4.79Hz



## VIBRATION LIMIT SWITCH

Used to switch off the tower automatically when the vibration is out of limit when the tower is working abnormally.



## ELETRICAL HEATER

Applied to heat the freezing water when restarting the tower during winter season in some area



## AUTO MAKE UP UNIT

An optional part to make up the liquid automatically, to be working together with liquid level controller.