

KST-N

COUNTERFLOW BOTTLE TYPE
COOLING TOWER





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MAIN BENEFITS

Bottle type configuration on counterflow design maximizes heat-exchanging efficiency, while minimizes acquisition cost as well as installation cost .

FEATURES

FRP Casing & Basin

Free from corrosion and rust; ensuring durable operation and long service life. High structural strength can effectively withstand high wind velocity and vibration.

Round Design

The design permits maximum air intake at whatever wind direction.

Lightweight and portable components

All the tower components are carefully designed to be small enough to either fit into an elevator or maneuvered via stairways to rooftops or plant rooms. That enables easy transportation and eliminating rigging.

Inner, Centralized Piping System

The piping and pipe connections all are centralized in water basin. That ensures ease of installation and reduction of installation cost.

Meticulously Designed and Tested Fills

The honeycomb PVC fills are corrugated by air-vacuum forming method. The fill orifices are consistent and uniform. That enables maximum airflow volume, minimizes the pressure drop through the tower, and consequently contributes to a higher heat rejection with lower power consumption.

The corrugation of the PVC fills was meticulously designed to offer maximum water/air contact time, which results in superior heat exchanging efficiency.

Mesh Type Air Intake

The plastic mesh air-intake effectively prevents foreign objects from entering into water basin, and also provides easy access to water sump for cleaning.

Louver type air intake is available for areas that experience snow fall.

High Efficiency Drift Eliminator

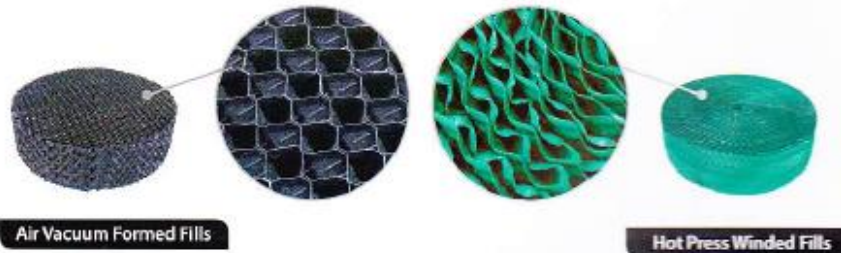
Efficiently designed PVC drift eliminators can be provided upon request. The drift eliminators can limit drift loss to less than 0.005%.

KST-N Counterflow
Bottle Type Cooling
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COMPARISON OF FILLS

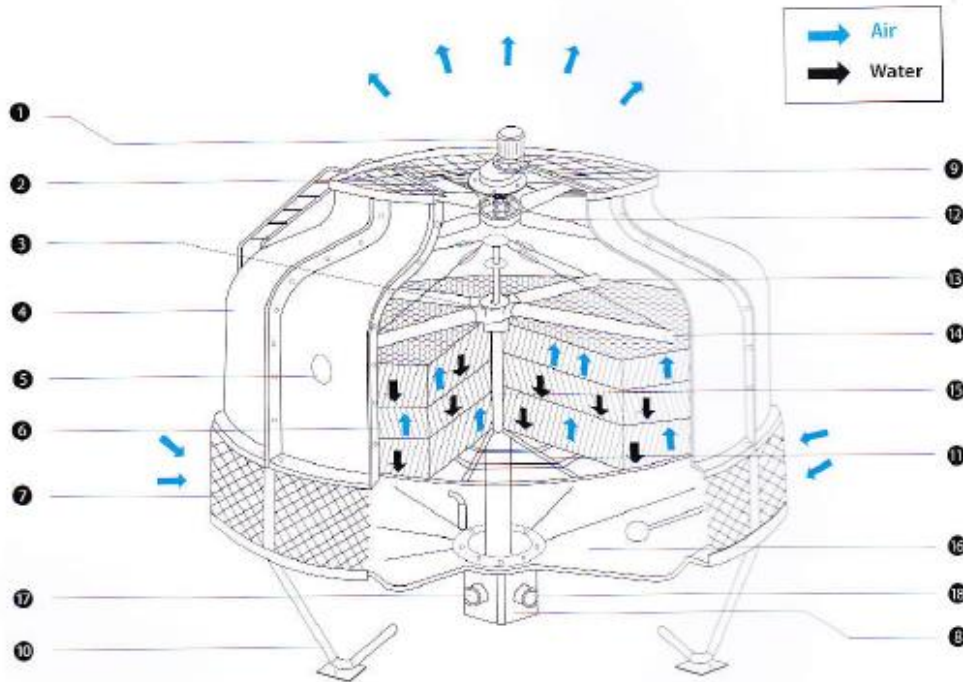


Air Vacuum Formed Fills Vs. Hot Press Winded Fills

Item	Air Vacuum Formed Fills	Hot Press Winded Fills
Power Consumption	The fill orifices are uniform. That allows a well distributed air flow pattern and maximizes the internal airflow volume through the fill while minimizing the pressure drop. All that contribute to a lower overall power consumption of the tower.	The fill orifices are inconsistent, so more energy is required in order to achieve the design air flow volume through the tower.
Efficiency	The uniform orifices offer a larger heat transfer surface area, creating maximum water dispersion and leading to higher cooling efficiency. The heat exchanging efficiency is 20% higher than traditional hot press winded fills.	The inconsistency of the orifices largely reduces the heat transfer surface area of the fill. That consequently decreases the cooling efficiency of the tower.
Service Life	Air vacuum forming softens the PVC sheets thoroughly before shaping the individual profile sections. The process will not affect the inner stress integrity of thie PVC sheets or destroy their crystal structure. That ensures an extended service life of the fill.	Hot press forming only softens the PVC sheets slightly and shapes them by force. That will cause the inner stress congregation of the PVC sheets and destroy their crystal strcuture. As a result, the PVC sheets become brittle and the service life of the fill becomes shorter.



KST-N STRUCTURAL DRAWING



Parts & Standard Materials

No.	Parts	Material
1	Motor	50Hz / 60Hz
2	Motor support	H.D.G. steel
3	Sprinkler head	A.B.S. / Aluminium Alloy
4	Casing	F.R.P.
5	Inspection hole	P.V.C.
6	Fill	P.V.C.
7	Air intake- mesh type	P.V.C.
8	Water Sump from 350RT ~ 1500RT	F.R.P.
9	Direct driving system from 3RT ~ 200RT Gear reducer from 225RT ~ 1500RT	50Hz / 60Hz

No.	Parts	Material
	Tower support from 3RT ~ 300RT	F.R.P.
10	Tower support from 350RT ~ 1500RT	H.D.G. Steel
11	Fill support	H.D.G. Steel
12	Fan assembly	A.B.S. /F.R.P. Aluminium Alloy
13	Tension device set	H.D.G. Steel
14	Sprinkler pipes	P.V.C.
15	Standpipe	P.V.C.
16	Water basin	F.R.P.
17	Water inlet	F.R.P. / Aluminium Alloy
18	Water outlet	F.R.P. / Aluminium Alloy



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SELECTION TABLE

Type	Normal Temperature Type								Medium Temperature Type		High Temperature Type	
	Wet Bulb Temperature	27°C		28°C		29°C		30°C		27°C	28°C	27°C
Wet Bulb Temperature	37°C	37.5°C	37°C	37.5°C	37°C	37.5°C	38°C	38.5°C	42°C	42°C	60°C	60°C
t _{min} / Model	32°C	32°C	32°C	32°C	32°C	32°C	33°C	33°C	32°C	32°C	35°C	35°C
3	39	36	33	30	26	24	28	26	23	20	23	20
5	65	60	55	50	43	41	46	43	39	32	39	36
8	104	95	88	80	70	66	76	70	63	55	63	60
10	130	120	100	95	88	82	95	88	78	68	78	75
15	195	180	152	148	133	123	142	133	118	100	118	110
20	260	240	220	200	177	165	190	177	157	135	157	145
25	325	300	275	255	220	210	240	220	196	170	196	185
30	390	360	330	305	270	250	290	266	240	205	240	230
40	520	480	440	415	375	355	395	375	340	300	340	330
50	650	600	550	530	470	440	500	470	400	370	400	390
60	780	720	660	615	560	520	590	560	480	450	520	490
70	910	840	770	740	660	620	700	660	580	530	600	570
80	1040	962	892	826	733	700	788	743	655	570	660	610
100	1300	1210	1120	1025	925	829	937	877	830	729	870	750
125	1625	1513	1398	1304	1152	1104	1237	1166	1034	940	1070	1000
150	1950	1814	1680	1563	1391	1330	1495	1415	1251	1093	1260	1190
175	2275	2108	1963	1837	1624	1541	1728	1634	1460	1310	1510	1430
200	2600	2419	2241	2114	1849	1786	1990	1895	1659	1456	1760	1660
225	2925	2736	2514	2380	2100	1990	2220	2090	1890	1680	1950	1830
250	3250	2995	2791	2610	2330	2180	2480	2310	2090	1860	2140	2040
300	3900	3634	3355	3135	2810	2605	2910	2760	2488	2220	2520	2395
350	4550	4223	3932	3696	3330	3130	3486	3293	2952	2615	3050	2890
400	5200	4832	4490	4250	3800	3518	3960	3748	3350	2992	3450	3220
500	6500	6100	5660	5330	4788	4520	5023	4780	4356	3880	4440	4230
600	7800	7280	6749	6340	5613	5330	5960	5650	5100	4550	5250	4950
700	9100	8470	7965	7350	6725	6300	7000	6660	6127	5482	6220	5930
800	10400	9710	8984	8520	7650	7270	8090	7680	7000	6280	7270	6930
1000	13000	12180	11430	10710	9756	9200	10100	9700	8965	8050	9250	8840
1250	16250	15350	14300	13550	12250	11700	12900	12250	11300	10300	12000	11400
1500	19500	18420	17160	16260	14700	14050	15480	14700	13600	12200	14200	13200

- 1 Please verify the wet bulb temperature at the geographical location where the tower is to be installed before consulting the Selection Table.
- 2 Should the design temperature condition not be within the selection temperature range of the table, please contact your King Sun representative.
- 3 In order to select the cooling tower model no., the data below are necessary:
 - Water flow rate... LPM, GPM, m³/hr
 - Entering temperature... water temperature into the tower
 - Leaving temperature... water temperature required out of the tower
 - WBT... wet bulb temperature