



**Manufacturer of all kinds of industrial cooling towers**  
**CROSSFLOW FRP COOLING TOWER**



**BRENTWOOD**



**DURABLE \* ENERGY & SPACE SAVING**



## TGH COOLING TOWER SELECTION TABLE



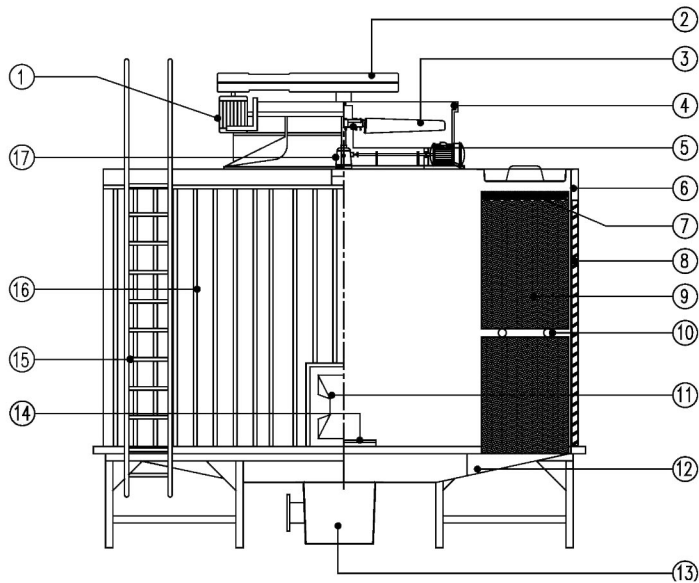
The table below show the common combinations of various cold water, hot water and wet bulb temperature.  
However, if there is a difference in temperature combination, please contact the company for a selection of the cooling tower by our computer software

Deg F	In	*95	*95	*95	98.6	95	97	98	98.6	97	100	98.6	100	100
	Out	85.1	85.1	85.1	89.6	86	87	88	89.6	87	90	89.6	90	90
	WB	80.6	81.5	81.9	80.6	81	81	82	81.5	82	82	82.4	83	84

Deg C	In	*35	*35	*35	37	35	36.11	36.67	37	36.11	37.78	37	37.78	37.78
	Out	29.5	29.5	29.5	32	30	30.56	31.11	32	30.56	32.22	32	32.22	32.22
	WB	27	27.5	27.7	27	27.22	27.22	27.78	27.5	27.78	27.78	28	28.33	28.89

MODEL	REFERENCE **HRT	MOTOR (kw)	FLOWRATE( M <sup>3</sup> /HR)													
			1	2	3	4	5	6	7	8	9	10	11	12		
1	TGH/1401-80-11	80	1.5	36.5	35.21	27.43	65.20	44.03	46.13	47.22	63.14	29.10	58.23	58.21	61.09	48.19
2	TGH/1401-90-12	90	1.5	38.2	36.04	30.7	73.14	49.57	54.22	51.50	76.32	34.18	64.32	64.29	66.11	56.12
3	TGH/1401-100-13	125	2.2	43.15	38.11	33.27	91.77	52.42	57.34	58.69	84.71	49.94	77.28	77.32	70.09	62.35
4	TGH/1401-125-14	150	3	51.46	43.12	39.65	109.71	62.48	68.42	70.24	101.2	59.57	92.55	92.30	83.85	74.46
5	TGH/1401-150-15	175	4	58.84	49.30	45.33	125.71	71.53	78.27	80.54	115.93	68.14	106.14	105.67	96.05	85.21
6	TGH/1401-200-17	175	4	62.82	56.06	52.81	134.45	79.87	79.32	89.44	124.92	73.13	115.36	114.96	105.55	94.3
7	TGH/1401-225-18	200	5.5	76.46	65.12	60.42	154.26	91.41	99.66	102.43	143.25	87.62	132.26	131.75	120.95	108.04
8	TGH/1401-250-19	250	5.5	107.66	92.63	86.46	206.26	126.64	138.32	140.92	192.73	122.2	178.89	178.66	164.94	148.25
9	TGH/1401-300-210	300	2*3	119.8	103.01	96.11	229.90	140.92	154.02	156.91	214.79	136.01	199.40	199.04	183.71	165.06
10	TGH/1401-350-211	300	2*4	134.03	115.33	107.66	256.31	157.58	172.15	175.37	239.59	152.09	222.53	222.17	205.2	184.44
11	TGH/1401-400-212	400	2*5.5	163.64	139.53	129.61	323.31	193.99	212.59	216.70	300.88	186.77	278.23	277.48	255.13	228.36
12	TGH/1401-450-213	450	2*7.5	175.65	149.76	139.1	347.41	208.26	228.33	232.76	323.25	200.56	298.96	298.04	274.06	245.28
13	TGH/1401-450-314	450	3*4	175.65	149.76	139.1	347.41	208.26	228.33	232.76	323.25	200.56	298.96	298.04	274.06	245.28
14	TGH/1401-500-215	525	2*5.5	217.73	187.65	175.29	416.18	255.98	279.15	284.33	388.90	246.88	360.63	360.46	332.41	299.02
15	TGH/1401-550-316	525	3*4	217.73	187.65	175.29	416.18	255.98	279.15	284.33	388.90	246.88	360.63	360.46	332.41	299.02
16	TGH/1401-600-317	600	3*5.5	251.31	217.53	203.68	472.82	294.04	320.34	326.13	442.32	284.03	411.82	410.45	380	342.46
17	TGH/1401-700-318	700	3*5.5	312.77	270.23	252.78	586	366.07	399.47	406.8	549.93	353.83	512.47	512.02	474.58	427.35
18	TGH/1401-700-419	700	4*4	312.77	270.23	252.78	586	366.07	399.47	406.8	549.93	353.83	512.47	512.02	474.58	427.35
19	TGH/1401-800-320	800	3*5.5	337.36	282.35	273.91	626	393.74	429.32	437.17	587.56	380.98	548.77	547.81	509.03	459.02
20	TGH/1401-800-421	800	4*5.5	337.36	282.35	273.91	626	393.74	429.32	437.17	587.56	380.98	548.77	547.81	509.03	459.02

\*REMARK – RANGE OF CERTIFICATION FOR CTI SHALL NOT EXTEND BEYOND 2.2°C & 2.8°C APPROACH  
\*\*REFERENCE HTR – THE REFERENCE NOMINAL TONNAGE BASED ON CONDITION (13L/M,37/32/27°C) per TON



ITEM	DESCRIPTION	MATERIAL/SPECIFICATION
1	MOTOR	IF 1,2,3/3PHASE/4 POLES/415V/50hz
2	DRIVE SYSTEM	RIGHT ANGLE / HELICAL TYPE/V-BELT AND PULLEY
3	FAN BLADE	FRP/CAST ALUMINIUM ALLOY
4	FAN STACK	FRP
5	FAN HUB	CAST ALUMINIUM ALLOY
6	MAIN FRAME STRUCTURE	HOT DIPPED GALVANIZED STEEL
7	DISTRIBUTION PACK	PVC
8	INTEL LOUVER	PVC
9	HIGH PERFORMENT FILM FILL PACK	PVC
10	FILL SUPPORT	HOT DIPPED GALVANIZED STEEL
11	ACCESS DOOR	FRP
12	SLOPE COLD WATER BASIN	FRP
13	COLD WATER BASIN SUMP	FRP
14	INTERNAL WALKWAY	HOT DIPPED GALVANIZED STEEL
15	LADDER	HOT DIPPED GALVANIZED STEEL
16	CASING PANEL	FRP
17	GEAR REDUCER SYSTEM	OPTIONAL

**Tower Construction**

Tower casing body is made out of F.R.P. (Fiberglass Reinforced Plastics) which is corrosion free, very durable and yet light. Furthermore the body is coated with a special epoxy consist of anti-ultraviolet agent making the tower body more resistant to UV sunlight. The tower main structure frame is using steel which has undergo hot dipped galvanization (HOG)

**Cold Water Basin**

The cold water basin is constructed from F.R.P. (Fiberglass Reinforced Plastics) which is corrosion free and is supported by HOG steel frame underneath. The cold water basin is also slopping basin to ensure the dirt and sediments trapped inside the basin is being diverted towards the depressed sump in the centre of basin. The depressed sump will prevent air lock from occurring during the tower operation. The sump is also supplied with suction strainer, makeup water ball valve, overflow and drain connection.

**Mechanical drive system**

Fans are of axial type designed to deliver air performance at low noise level. Fan blades material shall be FRP as standard and aluminium alloy as optional. . All fan blades are factory balanced before shipped out. The fan is operating inside a fan stack enclosure to streamline the air entry while maintaining maximum fan efficiency. The V belt drive system which connects the cast iron pulleys at the motor and fan is contained inside FRP belt cover. This is to ensure that the belts are protected from moist discharge air. Optional aluminium alloy pulleys are available.

The motor is of TEFC weather proof squirrel cage for 3 phase 415 V / 50 Hz power supply. The motor shall be located outside the discharge air stream below the belt cover to prolong the motor life and ease of maintenance and access. The fan bearing has a lubrication delivery system from external point outside the fan stack to the fan bearing to allow grease top up to be carried even when the fan is in operation.

**Fills**

The film type cellular fill is made of air vacuum forming Ultra Violet (UV) Light resistant PVC sheets which have corrugated surface. The surface has been specially designed to spread the water droplet from hot water basin evenly. The infill shall be installed in glued blocks and ease of removable for cleaning. The second layer of infill blocks shall be supported with galvanized pipes to prevent the weight being imposed on the bottom layer.

**Water distribution system**

The hot water basin is open gravity type flow made from FRP material that is resistant to Ultra Violet (UV) Light and corrosion. The water is distributed via specially positioned holes in the basin onto a scattering bars below. These scattering bars will sprinkle the water effective and evenly on the fill section underneath.

**Access Door**

Each tower should be provided with as access door to enter the internal compartment of cooling tower for inspection and maintenance. The access door shall be of FRP material and able to be locked.



### 1. Evaporating Loss (E) kg/h

The evaporating quantity may be calculated by the equation below:

$$E = \frac{Q}{600} = \frac{(T1-T2) \times WF \times C}{600}$$

Where WE	: Evaporating Quantity	kg/h
Q	: Heat of Cooling	Kcal/h
600	: Latent Heat of Water	Kcal/kg °C
T1	: Intake Water Temperature	°C
T2	: Discharge water Temperature	°C
WF	: Circulating Water Flow	kg/h
C	: Specific Heat of Water	1 Kcal/kg °C

### 2. Drift Loss ( D ) kg/h

The drift loss (D) depend on the type of cooling tower and drift eliminators used. Due to the air flow at a certain speed created by the fan, some water droplets are carried away with the air, this is called carry-over loss.

There are many factors affecting the figure and this generally at a low level, approximately 0.005% of the normal circulating water quantity.

### 3. Blowdown Quantity (B) kg/h

The blow-down (B) can be carried out in any of the following methods

- (1) The drain valve is kept slightly open during the run.
- (2) Maintain the operating water level higher to create slight overflow
- (3) The whole basin water is replenished with fresh water during shut down for cleaning

The required level of blowdown varies depending on the water quantity or the extent of concentrations, but is generally believed to be about 0.2% to 0.4 % for air conditioning applications.

### 4. Replenishing Water Flow rate (R) kg/h

$$R = E + D + B$$

Eg: Evaporation loss	: E = 0.98%
Drift loss	: D = 0.005%
Blow-down	: B = 0.4%

Therefore, the make-up water required is approximately  
 = 0.98% + 0.005% + 0.4%  
 = 1.385%

Hence, considering safety margin, a make up of 2% of the circulating water flow rate is sufficient.

Specification			Head Loss	Dimensions [mm]					Mass [Kg]		Kcal/Hr	Fan. Motor				Piping Size [A]						
Intel Temp [°c]	37			Length	Width	Tower height	Fan casing height	Moter height	Shipping	Operation		Fandimen-sions	Rated output	Pole	Q'ty	Circu-lating water inlet	Circu-lating water outlet	over flow	Drain	Auto-matical makeup	Manual makeup	Q'ty
Out Temp [°c]	32																					
W.B.Temp [°c]	27	28																				
Model	Water flow rate [l/Min]		[M]	L	W	H	h	h1	[mm]	[kW]	[P]		100	100	50	50	20	20	1			
TGH/1401-80-11	1000	900	3.0	3200	1700	280	615	389	640	1980	241916	1200	1.5	4	1	100	100	50	50	20	20	1
TGH/1401-90-12	1000	1100	3.1	3200	1700	280	615	389	640	2100	272155	1200	1.5	4	1	100	100	50	50	20	20	1
TGH/1401-100-13	1100	1250	3.9	3300	1900	280	615	439	730	2450	302395	1200	2.2	4	1	100	100	50	50	20	20	1
TGH/1401-125-14	1400	1600	6.7	3300	1900	280	645	439	870	2640	377994	1500	3	4	1	125	125	50	50	20	20	1
TGH/1401-150-15	1760	1900	10.5	3300	2200	280	715	497	945	3100	453593	1500	4	4	1	125	125	50	50	20	20	1
TGH/1401-175-16	2000	2300	3.1	3300	2200	280	615	389	1050	3440	529191	1500	4	4	1	100×2	100×2	50×2	50×2	20×2	20×2	2
TGH/1401-200-17	2200	2700	3.9	3600	2300	280	615	439	1140	3850	604790	1800	4	4	1	100×2	100×2	50×2	50×2	20×2	20×2	2
TGH/1401-225-18	2550	2930	7.3	3600	2300	280	645	439	1240	3950	680389	1800	5.5	4	1	125×2	125×2	50×2	50×2	20×2	20×2	2
TGH/1401-250-19	2800	3250	6.7	3600	2300	280	645	439	1240	4100	755987	1800	5.5	4	1	125×2	125×2	50×2	50×2	20×2	20×2	2
TGH/1401-300-210	3420	3950	10.5	3800	3300	280	715	497	2100	6800	907185	1500	4	4	2	125×2	125×2	50×2	50×2	20×2	20×2	2
TGH/1401-350-211	4200	4900	6.7	3800	3300	280	645	439	2100	6200	1058382	1500	4	4	2	125×3	125×3	50×3	50×3	20×3	20×3	3
TGH/1401-400-212	4700	5300	8.8	4600	3600	280	715	449	2280	7700	1209580	1800	4	4	2	125×3	125×3	50×3	50×3	20×3	20×3	3
TGH/1401-450-213	4600	3600	10.5	4600	3600	280	715	497	2480	8200	1360777	1800	5.5	4	2	125×2	125×2	50×2	50×2	20×2	20×2	2
TGH/1401-450-314	5140	5900	10.5	5700	3300	280	715	497	2835	9300	1360777	1500	3	4	3	125×3	125×3	50×3	50×3	20×3	20×3	3
TGH/1401-500-215	7150	6274	8.8	4600	3600	280	715	449	2480	8200	1663172	1800	5.5	4	2	125×2	125×2	50×2	50×2	20×2	20×2	2
TGH/1401-550-316	715	6274	8.8	6900	3600	280	715	449	3420	11550	1663171	1800	5.5	4	3	125×4	125×4	50×4	50×4	20×4	20×4	4
TGH/1401-600-317	7820	6861	10.5	6900	3600	280	715	497	3420	11550	1814370	1800	4	4	3	125×4	125×4	50×4	50×4	20×4	20×4	4
TGH/1401-700-318	9700	8640	10.5	6900	3600	280	715	497	3720	12300	2116765	1800	5.5	4	3	125×3	125×3	50×3	50×3	20×3	20×3	3
TGH/1401-700-419	9700	8640	105	9200	3600	280	715	497	4560	15600	2116765	1800	5.5	4	4	125×5	125×5	50×5	50×5	20×5	20×5	5
TGH/1401-800-320	10725	9411	8.8	6900	3600	280	715	449	3720	12300	2419160	1800	5.5	4	3	125×3	125×3	50×3	50×3	20×3	20×3	3
TGH/1401-800-421	10725	9411	8.8	9200	3600	280	715	449	4560	17200	2419160	1800	5.5	4	4	125×4	125×6	50×6	50×6	20×6	20×6	6





Deg F	In	*95	*95	*95	98.6	95	97	98	98.6	97	100	98.6	100	100
	Out	85.1	85.1	85.1	89.6	86	87	88	89.6	87	90	89.6	90	90
	WB	80.6	81.5	81.9	80.6	81	81	82	81.5	82	82	82.4	83	84

Deg C	In	*35	*35	*35	37	35	36.11	36.67	37	36.11	37.78	37	37.78	37.78
	Out	29.5	29.5	29.5	32	30	30.56	31.11	32	30.56	32.22	32	32.22	32.22
	WB	27	27.5	27.7	27	27.22	27.22	27.78	27.5	27.78	27.78	28	28.33	28.89

MODEL		REFERENCE **HRT	MOTOR (kw)	FLOWRATE( M <sup>3</sup> /HR)												
1	TGH/1401-80-11	80	1.5	36.50	35.21	27.43	65.20	44.03	46.13	47.22	63.14	29.10	58.23	58.21	61.09	48.19
2	TGH/1401-90-12	90	1.5	38.20	36.04	30.70	73.14	49.57	54.22	51.50	76.32	34.18	64.32	64.29	66.11	56.12
3	TGH/1401-100-13	125	2.2	43.15	38.11	33.27	91.77	52.42	57.34	58.69	84.71	49.94	77.28	77.32	70.09	62.35
4	TGH/1401-125-14	150	3	51.46	43.12	39.65	109.71	62.48	68.42	70.24	101.20	59.57	92.55	92.30	83.85	74.46
5	TGH/1401-150-15	175	4	58.84	49.30	45.33	125.71	71.53	78.27	80.54	115.93	68.14	106.14	105.67	96.05	85.21
6	TGH/1401-200-17	175	4	62.82	56.06	52.81	134.45	79.87	79.32	89.44	124.92	73.13	115.36	114.96	105.55	94.30
7	TGH/1401-225-18	200	5.5	76.46	65.12	60.42	154.26	91.41	99.66	102.43	143.25	87.62	132.26	131.75	120.95	108.04
8	TGH/1401-250-19	250	5.5	107.66	92.63	86.46	206.26	126.64	138.32	140.92	192.73	122.20	178.89	178.66	164.94	148.25
9	TGH/1401-300-210	300	2*3	119.80	103.01	96.11	229.90	140.92	154.02	156.91	214.79	136.01	199.40	199.04	183.71	165.06
10	TGH/1401-350-211	300	2*4	134.03	115.33	107.66	256.31	157.58	172.15	175.37	239.59	152.09	222.53	222.17	205.20	184.44
11	TGH/1401-400-212	400	2*5.5	163.64	139.53	129.61	323.31	193.99	212.59	216.70	300.88	186.77	278.23	277.48	255.13	228.36
12	TGH/1401-450-213	450	2*7.5	175.65	149.76	139.10	347.41	208.26	228.33	232.76	323.25	200.56	298.96	298.04	274.06	245.28
13	TGH/1401-450-314	450	3*4	175.65	149.76	139.10	347.41	208.26	228.33	232.76	323.25	200.56	298.96	298.04	274.06	245.28
14	TGH/1401-500-215	525	2*5.5	217.73	187.65	175.29	416.18	255.98	279.15	284.33	388.90	246.88	360.63	360.46	332.41	299.02
15	TGH/1401-550-316	525	3*4	217.73	187.65	175.29	416.18	255.98	279.15	284.33	388.90	246.88	360.63	360.46	332.41	299.02
16	TGH/1401-600-317	600	3*5.5	251.31	217.53	203.68	472.82	294.04	320.34	326.13	442.32	284.03	411.82	410.45	380.00	342.46
17	TGH/1401-700-318	700	3*5.5	312.77	270.23	252.78	586.00	366.07	399.47	406.80	549.93	353.83	512.47	512.02	474.58	427.35
18	TGH/1401-700-419	700	4*4	312.77	270.23	252.78	586.00	366.07	399.47	406.80	549.93	353.83	512.47	512.02	474.58	427.35
19	TGH/1401-800-320	800	3*5.5	337.36	282.35	273.91	626.00	393.74	429.32	437.17	587.56	380.98	548.77	547.81	509.03	459.02
20	TGH/1401-800-421	800	4*5.5	337.36	282.35	273.91	626.00	393.74	429.32	437.17	587.56	380.98	548.77	547.81	509.03	459.02

**NOTE:**

1. The basic design condition of TGH series is based on hot water

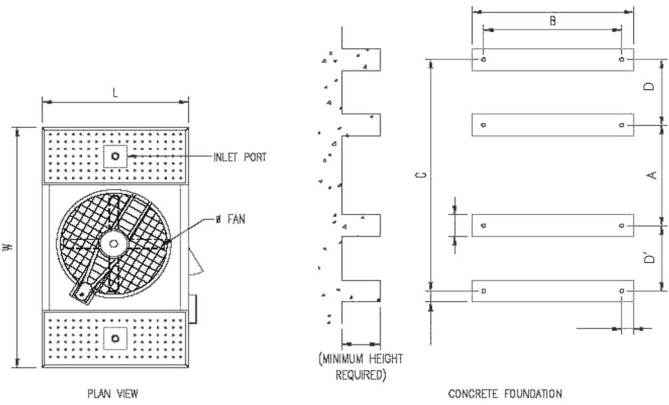
inlet 37°C, cold water outlet: 32°C, Ambient WB: 27°C, 13 e/min/HRT water flow rate.

2. Manufacturer reserve the right to change the technical data for improvement of products without prior notice.

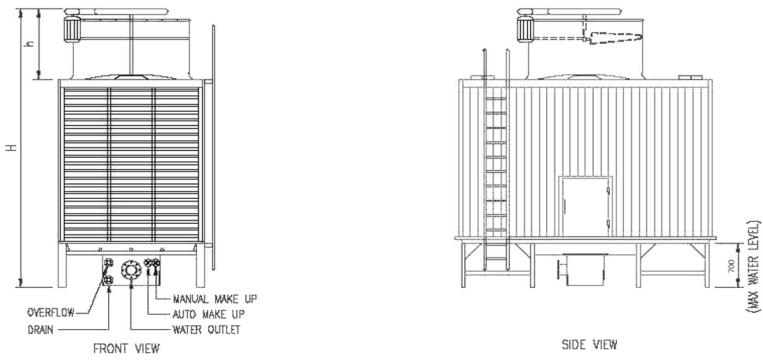
3. The pump head requires is apporoximately the height of the cooling tower.



# 1 CELL

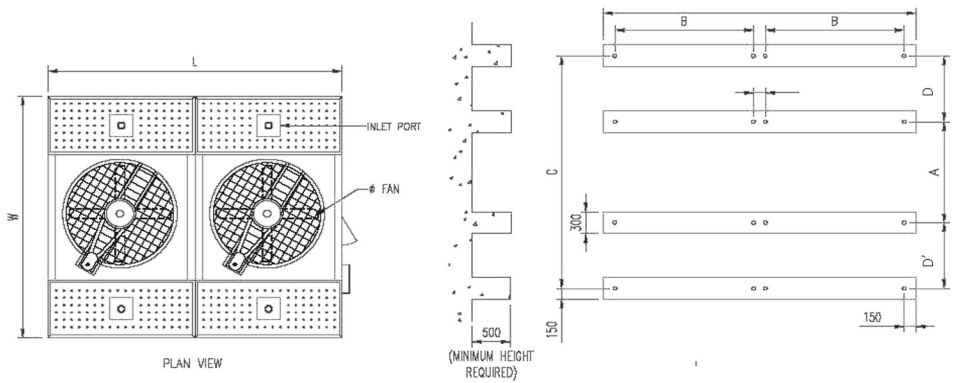


MODEL	POWER DIMENSION(mm)			FOUNDATION DETAILS			DISTANCE
	L	W	H	A	B	C	D,D
TGH/1401-80-11	3200	1700	2800	1600	1800	3200	80
TGH/1401-90-12	3200	1700	2800	1600	1800	3200	80
TGH/1401-100-13	3300	1900	2800	1600	2000	3300	80
TGH/1401-125-14	3300	1900	2800	1600	2000	3300	80
TGH/1401-150-15	3300	2200	2800	1700	2300	3300	80
TGH/1401-200-17	3600	2300	2800	1800	2400	3600	90
TGH/1401-225-18	3600	2300	2800	1800	2400	3600	90
TGH/1401-250-19	3600	2300	2800	1800	2400	3600	90

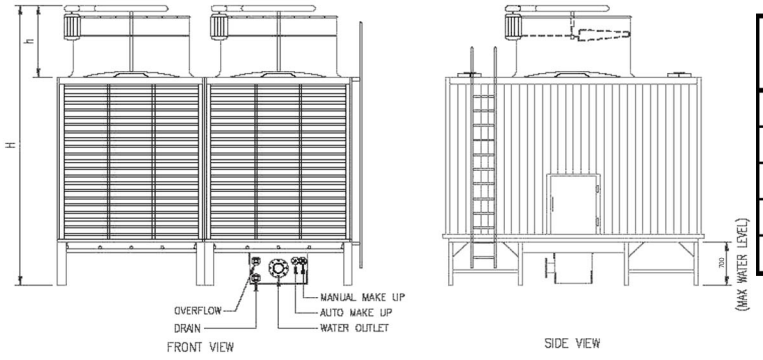


Model	TGH/1401-300-210	TGH/1401-350-211	TGH/1401-400-212	TGH/1401-450-213	TGH/1401-500-215
A inch	2*6	2*6	2*6	2*6	2*8

# 2 CELLS



Model	TGH/1401-450-314	TGH/1401-550-316	TGH/1401-600-317	TGH/1401-700-318	TGH/1401-800-320
A inch	3*6	3*6	3*8	4*8	4*8

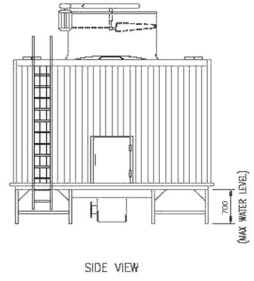
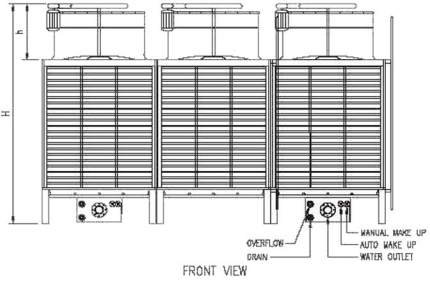
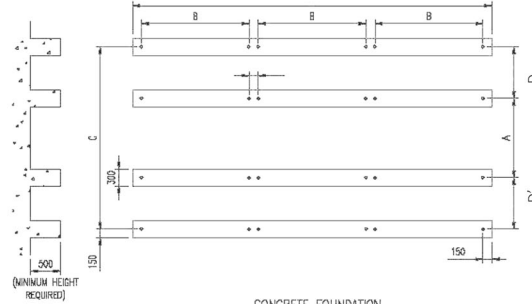
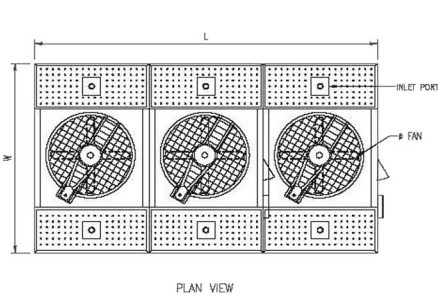


MODEL	POWER DIMENSION			FOUNDATION DETAILS			DISTANCE
	L	W	H	A	B	C	D,D
TGH/1401-300-210	3800	3300	2800	1700	4000	3800	80
TGH/1401-350-211	3800	3300	2800	1700	4000	3800	80
TGH/1401-400-212	4600	3600	2800	1800	4600	3600	90
TGH/1401-450-213	4600	3600	2800	1800	4600	3600	90
TGH/1401-500-215	4600	3600	2800	1800	4600	3600	90





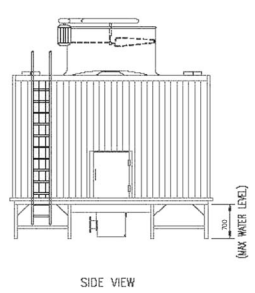
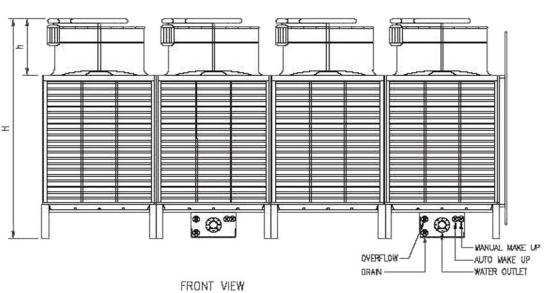
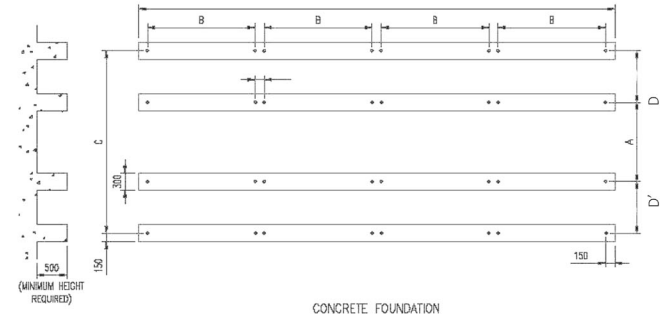
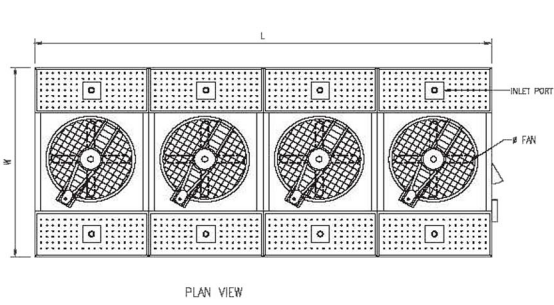
### 3 CELLS



MODEL	POWER DIMENSION			FOUNDATION DETAILS			DISTANCE
	L	W	H	A	B	C	D,D'
TGH/1401-450-314	5700	3300	2800	1700	5900	3300	80
TGH/1401-550-316	6900	3600	2800	1800	7100	3600	90
TGH/1401-600-317	6900	3600	2800	1800	7100	3600	90
TGH/1401-700-318	6900	3600	2800	1800	7100	3600	90
TGH/1401-800-320	6900	3600	2800	1800	7100	3600	90

Model	91E-00P-10P/1H/L	91E-00S-10P/1H/L	41E-00P-10P/1H/L	81E-00C-10P/1H/L	02E-00P-10P/1H/L
A inch	3*6	3*6	3*8	4*8	4*8

### 4 CELLS

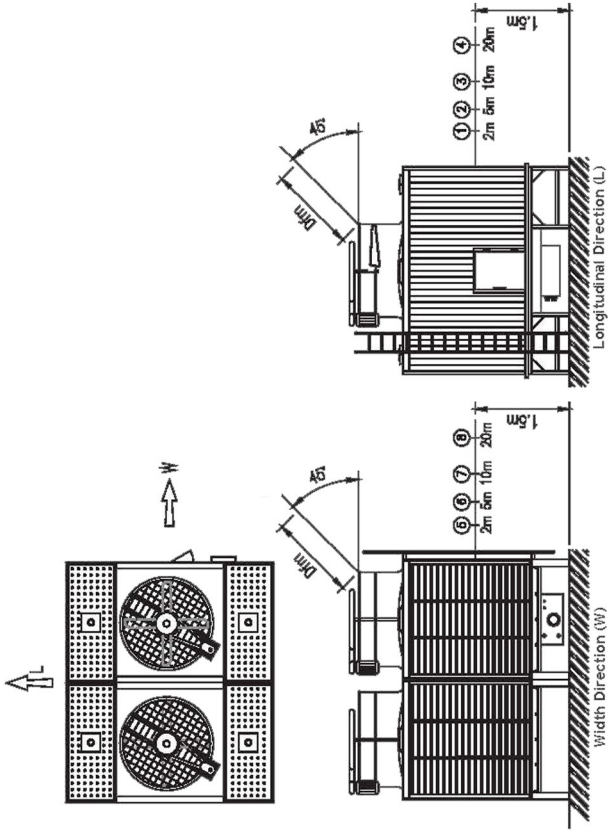


MODEL	POWER DIMENSION			FOUNDATION DETAILS			DISTANCE
	L	W	H	A	B	C	D,D'
TGH/1401-700-419	9200	3600	2800	1800	9400	3600	90
TGH/1401-800-420	9200	3600	2800	1800	9400	3600	90

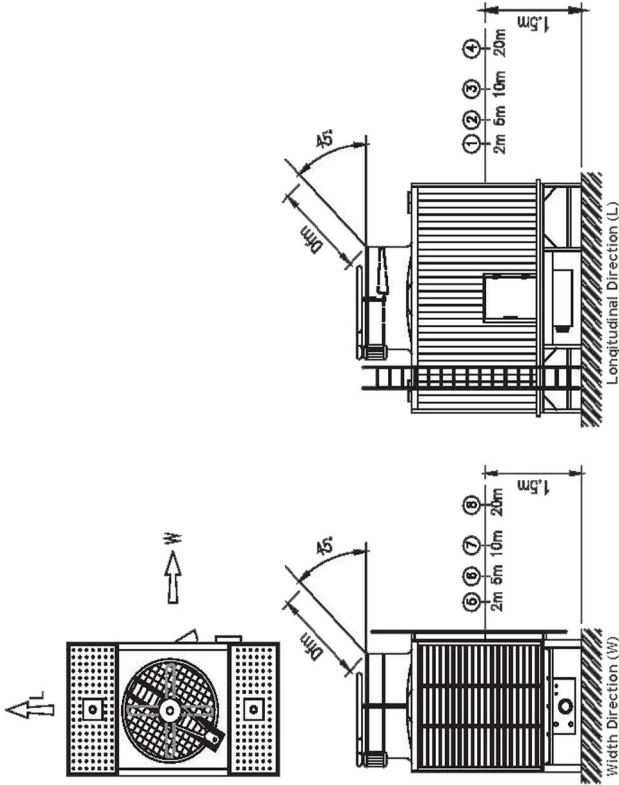
Model	TGH/1401-700-419	TGH/1401-800-420
A inch	4*6	4*6



2 CELLS



1 CELL

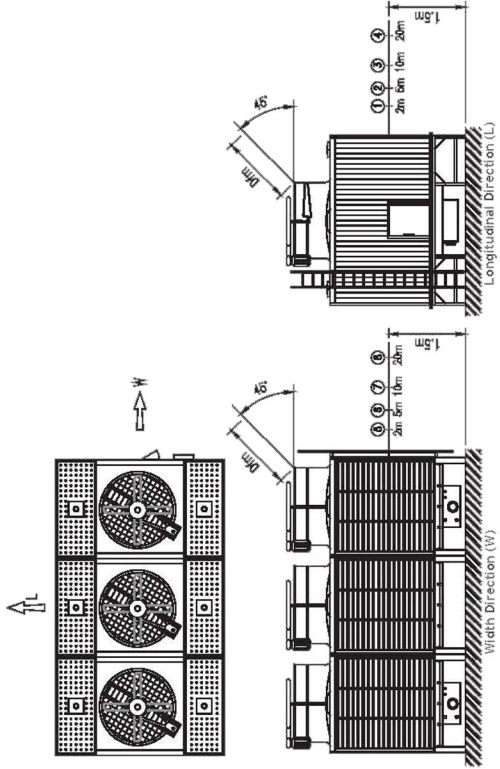


TOWEL MODEL	Louver(L) dB(A)		Panel(W) dB(A)		FAN(Dfm)(45°)dB(A)
	①	②	③	④	
MK					⑤
TGH/1401-300-210	68.00	54.02	64.50	50.52	72.00
TGH/1401-350-211	68.50	54.52	65.00	51.02	73.00
TGH/1401-400-212	70.00	56.02	66.50	52.52	75.00
TGH/1401-450-213	70.50	56.52	67.00	53.02	75.50
TGH/1401-500-215	74.00	60.02	70.50	56.52	78.50

TOWEL MODEL	Louver(L) dB(A)		Panel(W) dB(A)		FAN(Dfm)(45°)dB(A)
	①	②	③	④	
MK					⑤
TGH/1401-80-11	64.50	50.52	61.00	47.02	69.50
TGH/1401-90-12	64.50	50.52	61.00	47.02	69.50
TGH/1401-100-13	64.50	50.52	61.00	47.02	69.50
TGH/1401-125-14	65.00	51.02	61.50	47.52	69.50
TGH/1401-150-15	65.00	51.02	61.50	47.52	70.50
TGH/1401-200-17	65.50	51.52	62.00	48.02	69.50
TGH/1401-225-18	65.50	51.52	62.00	48.02	70.50
TGH/1401-250-19	67.50	53.52	64.00	50.02	71.00

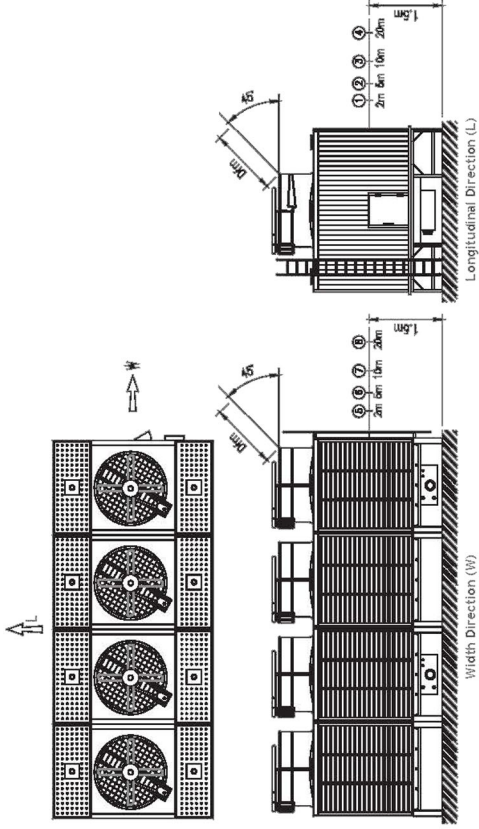


3 CELLS



TOWER MODEL	Lower(L) dB(A)	Panel(W) dB(A)	FAN(Dfm)(45) dB(A)
MK	(1)	(3)	(5)
TGH/1401-550-316	65.50	62.00	69.50
TGH/1401-600-317	65.50	62.00	69.50
TGH/1401-700-318	65.50	62.00	69.50
TGH/1401-800-320	65.50	62.00	69.50

4 CELLS



TOWER MODEL	Lower(L) dB(A)	Panel(W) dB(A)	FAN(Dfm)(45) dB(A)
MK	(1)	(3)	(5)
TGH/1401-700-419	65.50	62.00	69.50
TGH/1401-800-421	67.50	64.00	71.00

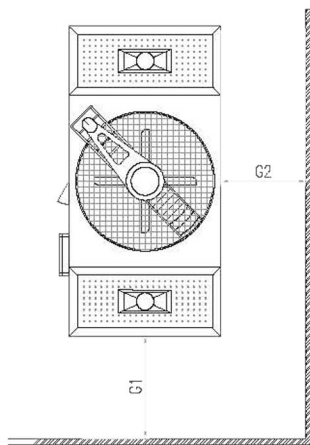


FIGURE : 1

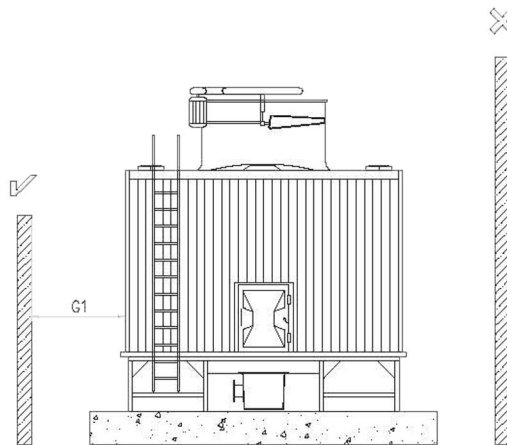


FIGURE : 2

Refer Table 1, for the distance recommended if cooling tower is located near to a wall.

Tower Size	Recommended Distance (mm)	
	G1 (Air Intake)	G2 (For Maintenance Access)
1 CELL	1500	1000
2 CELLS	1800	1000
3 CELLS	2400	1000
4 CELLS	3000	1000

Table 1: Distance Cooling Tower to Wall

Based on Figure 2, the wall near to the cooling tower is always recommended to be lower than cooling tower. This is to prevent discharge air from cooling tower to recirculate, as this will effect the cooling tower's performance.

It is always preferred, if the wall is a louvered wall, that there should be a 70% net free area and the louver height should not be higher than cooling tower.

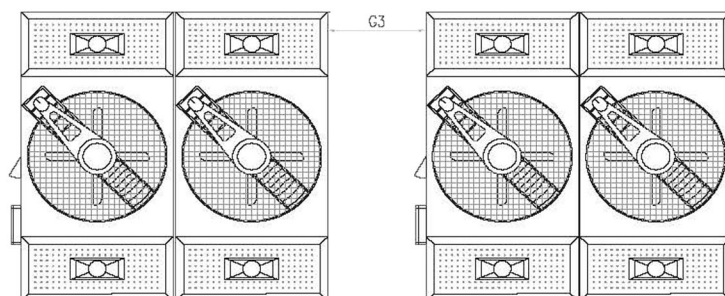


FIGURE 3

Tower Size	Recommended Distance (mm)
	G3
All Models	1000

Table 2: Distance Cooling in Series Arrangement

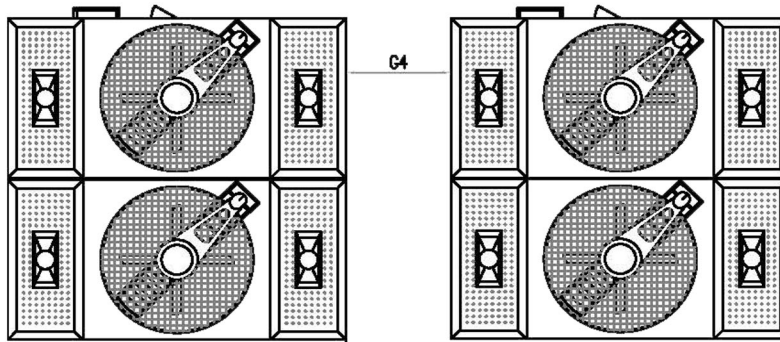


FIGURE 4

Tower Size	Recommended Distance (mm)	
	G4	
1 - 2 (CELLS)	3000	
3 (CELLS)	4000	
4 (CELLS)	5000	

Table 3 : Distance Cooling In Parallel Arrangement

SOLID WALL

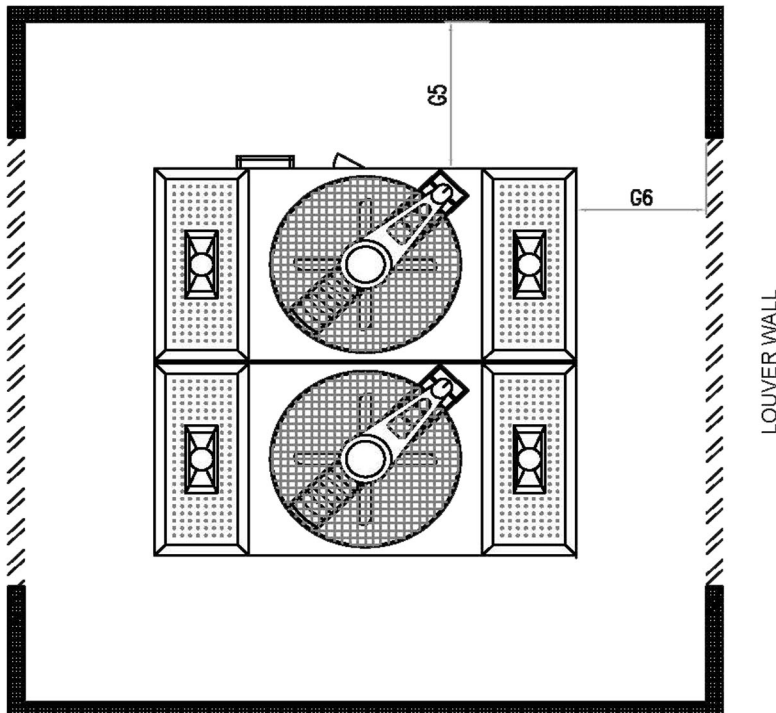


FIGURE 5

Tower Size	Recommended Distance (mm)	
	G5 (Panels Side)	G6 (Louvers Side)
1 - 2 (CELLS)	1000	1500
3 (CELLS)	1000	2000
4 (CELLS)	1000	2500

Table 4 : Distance Cooling between Solid Wall & Louver Wall



### GEAR REDUCER

In addition to using V belt, right angle reduction gears are used for stringer application that requires no down time due to wear and tear. This type of option gives the building owner the convenience of planning the down time for planned maintenance. Design features and ratings are in accordance with the minimum requirements of AGMA (American Gear Manufacturers Association) and CTI (Cooling Technology Institute) standards.



### HANDRAIL

The safety option is to ensure that working at elevated height of cooling tower is now complete with guard rail around the tower parameters. This option can be further enhanced with caged ladder which is an added feature as well.



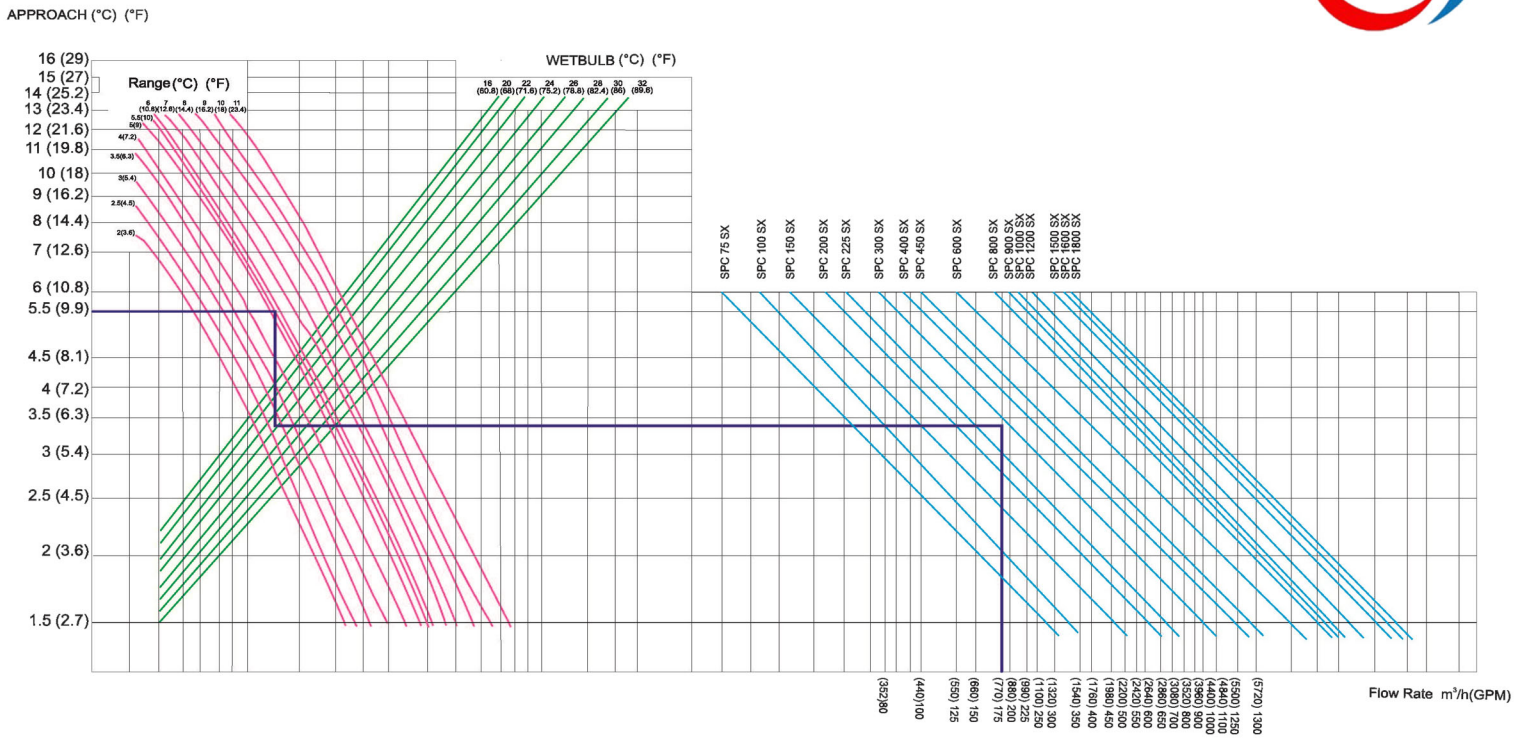
### HIGH EFFICIENCY MOTOR

Our high efficiency motor are rated to Eff2 or IE1 (standard) , Eff1 and IE2 (high efficiency). We also offer latest IE3 (premium) standards as indicated by IEC 60034-30. The choice of efficiency is up the client's preferences. For usage with variable speed inverters, we recommend special modification to the motor is required in order to allow the motor to operate at low frequency.



### DISCHARGE HOOD

This option gives alternative diversion of hot air discharge from the fan stack to other direction deemed more suitable. It is made from Fibreglass Reinforced Polyester (FRP) which is the same material as the fan stack. The most popular discharge angle is 45°.



**Cooling Tower Selection Procedure**

Design Data:

**Example 1**

Water Inlet Temperature, T<sub>1</sub> : 97 °F (36.1 °C)  
 Water Outlet Temperature, T<sub>2</sub> : 87 °F (30.5 °C)  
 Ambient Wet Bulb, T<sub>WB</sub> : 81 °F (27 °C)

Determine the following parameter:

**Range** = T<sub>1</sub> - T<sub>2</sub>  
 = 36.1 - 30.5 °C  
 = 5.6 °C

**Approach** = T<sub>2</sub> - T<sub>WB</sub>  
 = 30.5 - 27.0 °C  
 = 3.5 °C

**Selection Procedure**

1. Determine the intersection point of **RANGE** and **APPROACH**. (Pt 1)
2. Draw perpendicular line up or down from the intersection point to the **AMBIENT WET BULB** line. (Pt 2)
3. Then, draw a line across the chart to meet the perpendicular line of **NOMINAL FLOW**.
4. For the flow of:

**Example 1**  
 1600 L/M : Capacity derived : 200 TR (Pt 3)  
 Tower Model : GPC 200 or GPT 200

**Example 2**  
 4550 L/M : Capacity derived : 500 TR (Pt 4)  
 Tower Model : GPC 500 or GPT 500

<b>Project Name</b>				
Cooling Tower				
Inlet Water Temp., T <sub>1</sub> °C				
Outlet Water Temp., T <sub>2</sub> °C				
Ambient Wet Bulb, T <sub>WB</sub> °C				
Flow Rate (L/min)				
Range (T <sub>1</sub> -T <sub>2</sub> ) °C				
Approach (T <sub>2</sub> -T <sub>WB</sub> ) °C				
<b>Cooling Tower Model</b>				



**COOLING TECHNOLOGY INSTITUTE**

P. O. Box 73383, Houston, Texas 77273 • 2611 FM 1960 West, Suite A-101, Houston, Texas 77068 Phone: 281.583.4087 • Fax: 281.537.1721 http://www.cti.org

# CERTIFICATE

The Certification Body  
of TÜV SÜD Asia Pacific TÜV SÜD Group  
certifies that

**Tabadol gostar hirad Fiberglass Engineering Ltd.**  
Iran-tehran-shahriar-azadegan ST-Golha Alley-NO 8  
Post Code: 523231

has established and applies  
a Quality Management System for

**Design, Manufacture and Sales of Cooling Tower;  
Processing of Fiberglass Reinforced Plastic Products**

An audit was performed, Report No. 20041344  
Proof has been furnished that the requirements  
according to

**ISO 9001:2008**

are fulfilled. The certificate is valid until 2015-05-17  
Certificate Registration No. TUV100 04 1289  
2012-05-18

Kim, Du M

Certification Body  
of TÜV SÜD Asia Pacific  
TÜV SÜD Group



Accreditation by the ANZ Accreditation System  
of Australia and New Zealand, IAF,  
www.accreditation.org/australia



TÜV SÜD Korea Ltd. • 12F, "KJ" Bldg., #40

March 4, 2012

Tabadol gostar hirad company

No, Tehran, Shahriar azadegan ST - Golha Alley \_ NO 8

Subject: voluntary withdrawal of cti cooling tower thermal certification

Tabadol gostar hirad industry company ltd

Series E.S.I line of counter flow ,induced-draft cooling tower

Gentlemen;

This is to acknowledge that the E.S.I company ,ltd. line of series E.S.I counter flow ,induced -  
draft cooling tower intends to discontinue production and has voluntarily withdrawn the series  
E.S.I from the thermal performance certification standard STD-201(11).

The series E.S.I line of cti certified cooling towers was assigned CTI certification validation  
number 94-20-01-1 .in accordance with the CTI STD-201(11),the manufacturer:

A may use the certification label on all units from the certified line previously sold as CTI  
certified, providing they ship within a 180 day period from the date of voluntary withdrawal.

B shall not use the certification label on any new units sold after the date of the voluntary  
withdrawal.

C shall remove all references to CTI certification from the product brochures, published  
ratings, product drawings, and other literature to the withdrawal line within 120 days of the date  
of the voluntary withdrawal.

If there any questions regarding the procedures listed above, please contact me.

Very truly yours

Thomas E. Weast, P.E (CTI certification administrator )

Kim, Du M



ریاست جمهوری  
سازمان ملی استاندارد ایران  
اداره کل استاندارد استان طهران  
کمک سه‌میهن: ۱۳۹۸/۱۱/۲۱

**پروانه کاربرد علامت استاندارد اجباری**

بر اساس قانون اصلاح قوانین و مقررات سازمان استاندارد و تحقیقات صنعتی ایران مصوب یکم اردیبه‌ستاد و سیصد و هفتاد و یک و در اجرای مصوبات شورای عالی استاندارد؛ به موجب این پروانه اجازه داده می‌شود، شرکت تبادل گستر هییراد با رعایت قوانین و مقررات مربوط و استاندارد های ملی شماره ۲۰۴۲ از علامت استاندارد ایران برای محصول تولید، برج خنک کننده و مخازن سپتیک با استاندارد ISO1124 با نام یا علامت تجاری اینکار صنعت ایرانیان

به فارسی و لاتین طبق نمونه به ثبت رسیده استفاده نماید.

**ESI cooling tower**

نیره پروین  
از طرف رئیس سازمان استاندارد  
فغانه شکرالهی



131692

واحد تولیدی یا خدماتی باید حداقل ۳۰ روز قبل از پایان اعتبار پروانه اقدامات لازم را به منظور تمدید پروانه به روز رسانی مستندات بعمل آورد  
نشانی واحد تولیدی/خدماتی: شهریار - جاده اتران به شهریار - بعد از اسد اباد - جنب کشتارگاه مرکزی قائم - کوی گلپا - پلاک A

رعایت مندرجات پشت پروانه برای دارنده ان الزامی است  
مدت اعتبار این پروانه از تاریخ صدور/تمدید پنج سال است