

LHC

Induced Draft Cooling Tower

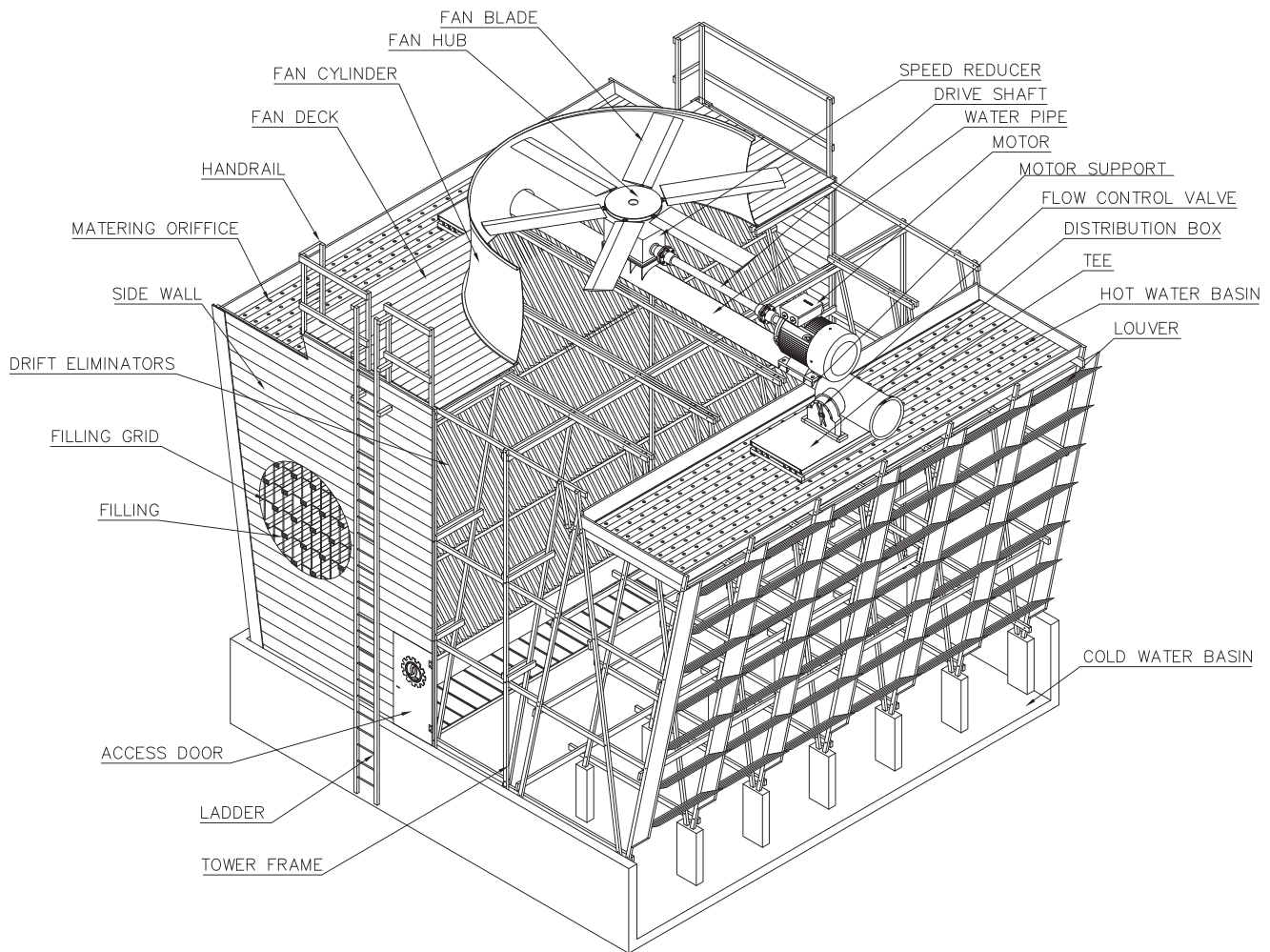
Heavy Duty Cross Flow Type



LIANG CHI INDUSTRY (THAILAND) CO.,LTD.



TOWER STRUCTURE

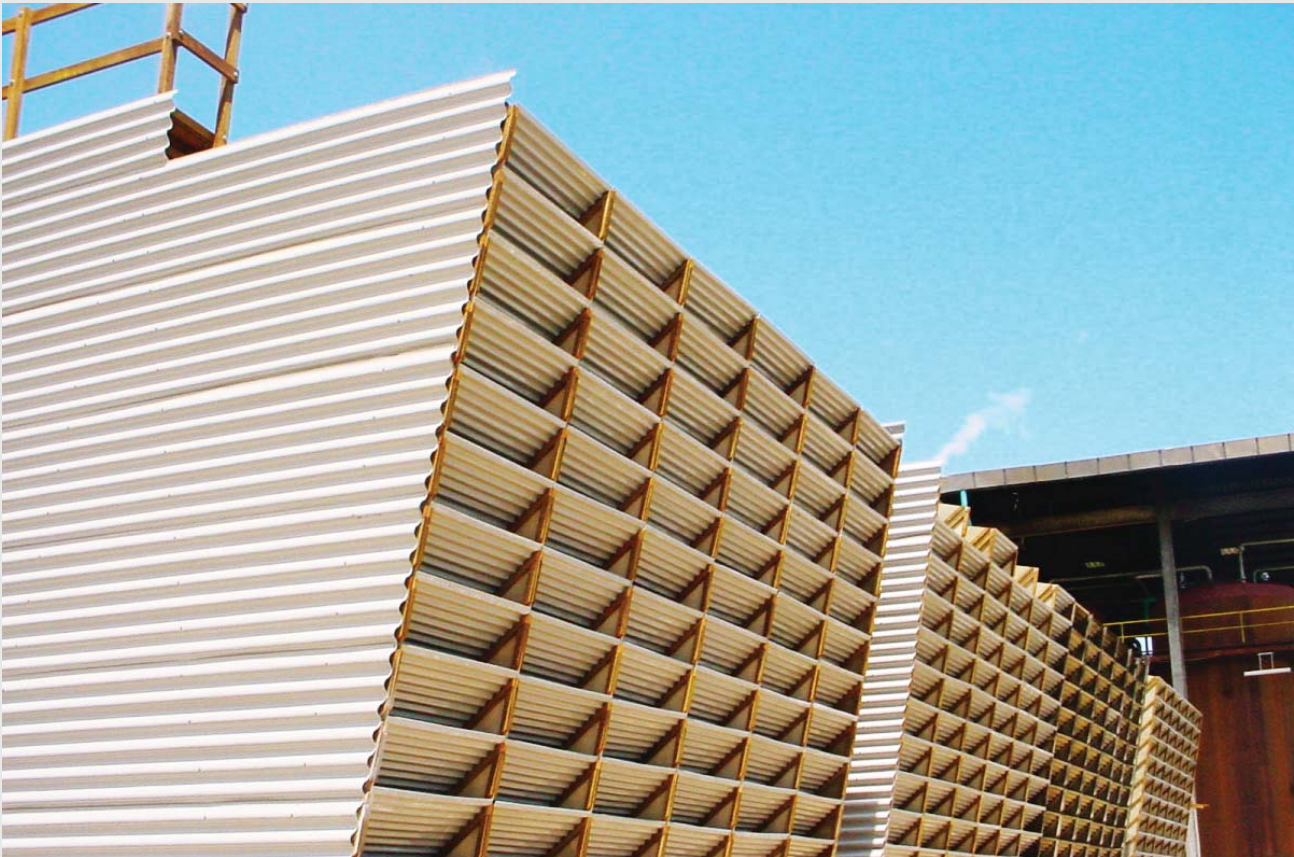


INTRODUCTION

In order to meet today's demand for environmental control, industry has shown a growing interest in water reclamation. This is particularly so in the petroleum, petro-chemical and steel mills when the tremendous amount of water is consumptively utilized in the system.

Liang Chi has started research and development of equipment in this field since 1972. Working in close cooperation with foreign leading manufacturers, Liang Chi developed a standardized range of model LHC cooling tower. It is mechanically designed with crossflow induced draft type, specifically suited for industrial process system.

As the result of extensive experience gained in actual use over many years, Liang Chi cooling tower model LHC is recognized as products meeting the ultimately requirement of today's technology.



COOLING TOWER APPLICATION ASSISTANCE

We understand your time is limited, so within more than 35 years experience on manufacture cooling tower field, We, Liang Chi, are proud to give our valuable customers within best reliability and quickest maintenance for air-conditioning and industrial process.

Select right Cooling Towers can be a puzzle for you, Liang Chi engineers assist our valuable customers to select right cooling towers even though with special customization; we are proud to tell our valuable customers we can do it.





PURCHASER'S SPECIFICATIONS

Purchaser's specifications must clearly outline all conditions which are applicable to the installation so that economical cooling tower selection can be made based on a total cost Evaluation including not only capital investment but also operating costs. Items which should be given consideration for inclusion In specifications are listed below.

DESIGN CONDITIONS

1. Total heat Load : Kcal/Hr
2. Circulating Water Flow : M³ /Hr
3. Pumping Head Required : M
4. Water Inlet Temp. : °C
5. Water Outlet Temp. : °C
6. Ambient Wet Bulb Temp. : °C
7. Average Wind Velocity and Direction
8. Available Installation Area
9. Electrical Voltage and Frequency
10. Conditions of Area Surrounding Installation Site.

MATERIALS TO BE USED

1. Mechanical Equipment Material Including Fan, Reducer & Drive Shaft
2. Materials of Framework and Casing
3. Materials and Treatment of Structure Connectors
4. Materials and Treatment of Piping System

OTHER ITEMS

1. Purpose of Tower Usages
2. Location of Piping
3. Capacity of Cold Water Basin
4. Quality of Circulation Water
5. Time of Delivery



LHC COOLING TOWER ADVANTAGES

1. HIGHEST PERFORMANCE

Provide with more wetted surface for uniform water distribution and higher heat transfer efficiency.

The filling and drift eliminator allow the maximum air volume through the cooling tower.

2. LOWEST MAINTENANCE

Construct with durable materials for cooling tower like preservative treated wood, fiberglass reinforced polyester and asbestos cement boards.

The steel is hot dip galvanized after fabrication to be anti-corrosive.

3. ECONOMICAL OPERATION

Optimize with special axial fans, speed reducer and drift eliminator etc. It is maximized the cooling performance at lower energy.

4. NOISE LEVEL

Design with large fans at low speed operation to minimize noise pollution. The ventri fan cylinder will be added on larger cooling tower for low noise level.



LHC – FRAME STRUCTURE

LHC Cooling Tower standard structure is made of treated wood or in case of extremely several applications, hot dip galvanized steel and Pultruded Fibreglass also optional structures.

Pultruded Fiberglass Structures

Flexible Designing
Thermal Resistant!
Highly Corrosion Resistant,
Light Weight - High Strength,
Non-Conductive - Non Magnetic - Fire Retardant,
Long Life Cycle & Cost Effective



GENERAL DESCRIPTION



MECHANICAL EQUIPMENT

All mechanical equipment for our Cross-Flow Type Cooling Tower is especially designed by ourselves for cooling tower application. For example, The Fans are made of cast aluminum alloy for smooth quiet operation. Adjustable pitch blades can be freely adjusted to reach a maximum of air discharging efficiency according to requirements of air volume.



FAN STACK

Fiberglass Reinforced polyester fan stack Employ "Aero Dynamic Contour" design. This Design allows close tolerance on fan blade tip Clearance plus less interference of air passing Through the tower.

HIGH PERFORMANCE HEAVY DUTY PVC FILL (FILM TYPE)

Fills media is the most important component of cooling tower. We are using quality material and unique designed by professional cooling tower engineers to maximize thermal performance and provide ease of operation.

The high performance heavy duty PVC fills maximizes cooling efficiency and horse-power requirement.



LE-15



HC-25

SPECIFICATION

SPECIFICATIONS	STANDARD	OPTION
MOTOR	IP 55, CLASS F, 380V / 3PH / 50HZ.	IP 56, IP 65, HI-EFFICIENCY, VFD FUNCTION MOTOR
SPEED REDUCER	BELT DRIVE / GEAR REDUCER	-
FAN BLADE	AL. ALLOY	F.R.P. / COATING
FRAMEWORK	TRATED WOOD	F.R.P. / H.D.G.S./RC *
FAN STACK	FIBER GLASS REINFORCED POLYESTER (F.R.P.)	-
FAN DECK	TRATED WOOD	F.R.P. / H.D.G.S. / LINING WITH F.R.P. *
CASING (SIDE PLATE)	FIBER GLASS REINFORCED POLYESTER (F.R.P.)	- *
FILLING (MEDIA)	TRATED WOOD / P.V.C.	P.P. / C.P.V.C / FILM AND SPLASH TYPE
FILLING GRID	FIBER GLASS REINFORCED POLYESTER (F.R.P.)	SUS 304 / WOOD
HOT WATER BASIN	TRATED WOOD	F.R.P. / LINING WITH F.R.P. *
DRIFT ELIMINATOR	P.V.C. / TRATED WOOD	P.P. / C.P.V.C. CELLULAR TYPE
INLET LOUVER	FIBER GLASS REINFORCED POLYESTER (F.R.P.)	-
LADDER AND HANDRAIL	WOOD / H.D.G.S.	SUS 304 / F.R.P. *
FLOW CONTROL VALVE	CAST IRON VALVE	-
METERING ORIFFICE	POLYPROPYLENE (P.P.)	-
STRUCTURE CONNECTORS	H.D.G.S.	SUS 304
COLD WATER BASIN	CONCRETE (TO BE FURNISHED BY BUYER)	-

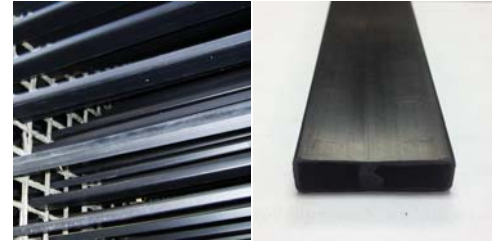
Remarks: In case RC structure all parts mention * must be RC too.

Wood/PP./P.V.C Fill (Splash Type)



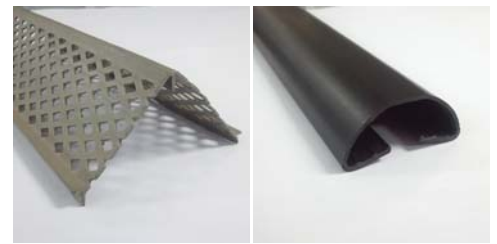
WOOD

OPTI-GRID



SP-10

SP-10



V-BAR

SP-18

DISTRIBUTION VALVE

The distribution valve used in our Cross-flow Type Cooling Tower Model LHC is made of cast iron valve body and brass control disk. It provide the water flow smoothly without interruption and being easily adjusted for long life and low maintenance.



NOZZLE

The "Liang Chi Nozzle" metering orifices used in the hot water basin of our Cross-Flow Type Cooling Tower Model LHC are specially designed to deliver required water distribution and are highly resistant to temperature and weathering damage, also eliminates the need for a separate diffusion deck to provide complete water distribution throughout the filling area.

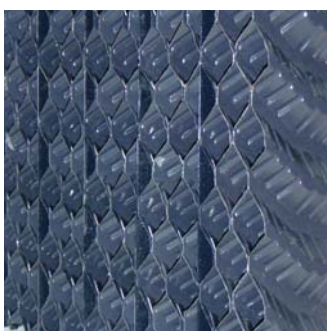
HIGH PERFORMANCE HEAVY DUTY (SPLASH TYPE)

are preservative-treatments, supported on close centers by non-corrosive FRP grids.

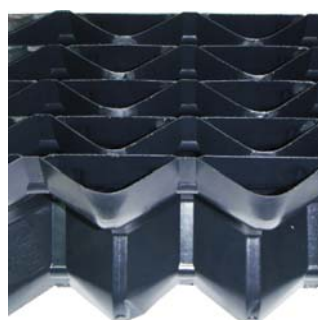
The FRP Grid holds the filling in position permanently to assure uniform water distribution throughout cooling tower, reducing draft loss to minimum and result to maximum cooling efficiency. LHC Series cooling towers fill are also available in PVC material, such as V Bar, S quare Bar, these splash bars are special designed for required surface area and allow uniform distribution of water over it and ensure smooth flow of air without much pressure drop.

DRIFT ELIMINATOR

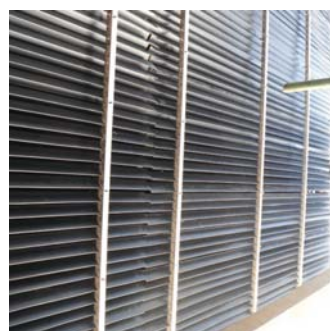
Low drift rate is the primary goal of eliminator design, and low pressure drop



LD-07



LD-15

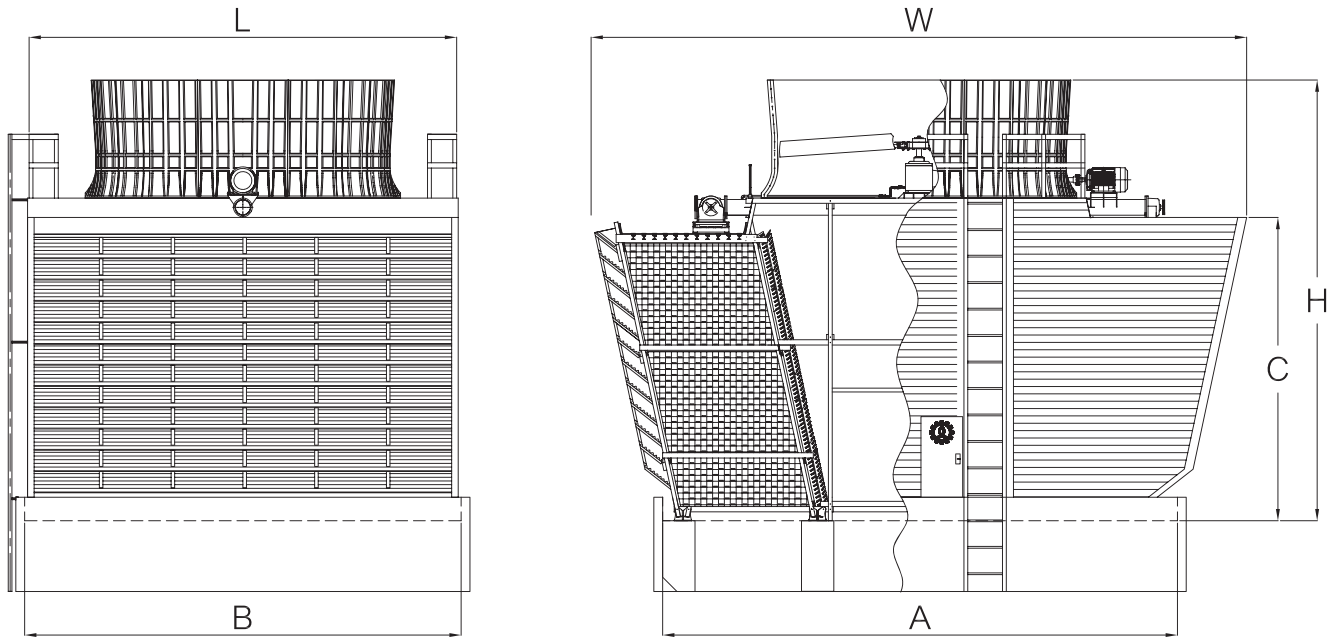


W-TYPE

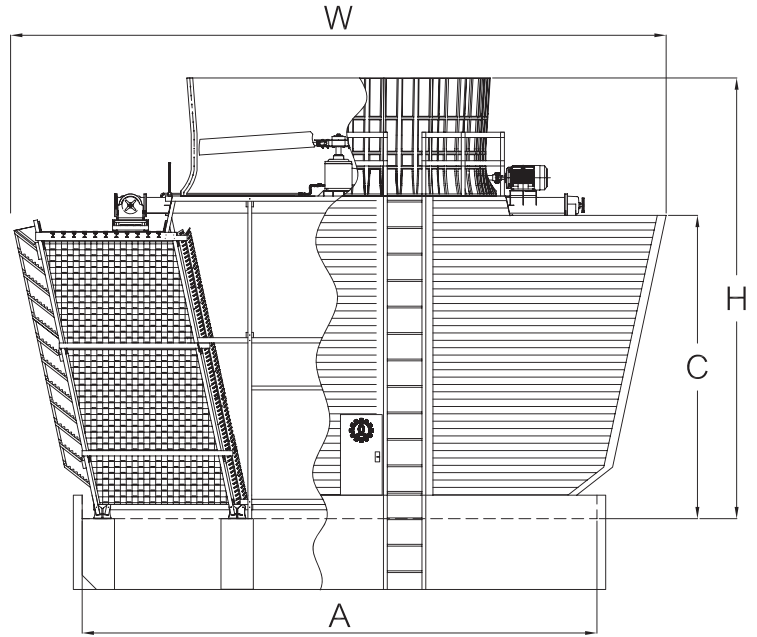
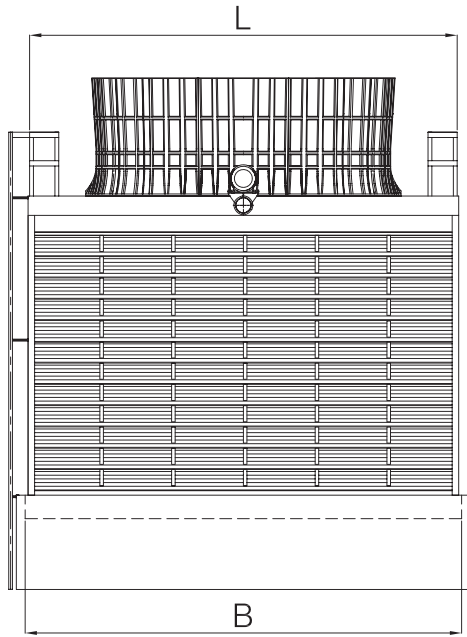


WOOD

STANDARD DIMENSION



MODEL	NOMINAL	DIMENSION (mm.)						Fan DIA. (mm.)	PUMP	OPERATING
LHC	WATER FLOW M ³ /min	W	L	H	A	B	C	HEAD M	WEIGHT : kgs	
361D-C1	3.0	5725	2580	3616	4570	2640	2190	1750Ø	4.5	6360
2 Cells	6.0	5725	5020	3616	4570	5080	2190	1750Ø	4.5	12720
362D-C1	3.1	6335	2580	3616	5180	2640	2190	1750Ø	4.5	7270
2 Cells	6.2	6335	5020	3616	5180	5080	2190	1750Ø	4.5	14540
363D-C1	3.7	5725	2580	4240	4165	2640	2815	1750Ø	5.5	7060
2 Cells	7.4	5725	5020	4240	4165	5080	2815	1750Ø	5.5	14120
364D-C1	4.0	6335	2580	4240	4775	2640	2815	1750Ø	5.5	8020
2 Cells	8.0	6335	5020	4240	4775	5080	2815	1750Ø	5.5	16040
365D-C1	4.2	6945	2580	4240	5385	2640	2815	1750Ø	5.5	8970
2 Cells	8.4	6945	5020	4240	5385	5080	2815	1750Ø	5.5	17940
366D-C1	4.5	6335	3800	3166	5180	3860	2190	2400Ø	5.0	9530
2 Cells	9.0	6335	7460	3166	5180	7520	2190	2400Ø	5.0	19060
367D-C1	4.9	6945	3800	3166	5790	3860	2190	2400Ø	5.0	10860
2 Cells	9.8	6945	7460	3166	5790	7520	2190	2400Ø	5.0	21720
368D-C1	5.9	6335	3800	3794	4775	3860	2815	2400Ø	5.5	10570
2 Cells	11.8	6335	7460	3794	4775	7520	2815	2400Ø	5.5	21140
369D-C1	6.4	6945	3800	3794	5385	3860	2815	2400Ø	5.5	11920
2 Cells	12.8	6945	7460	3794	5385	7520	2815	2400Ø	5.5	23840
370D-C1	6.8	7555	3800	3794	5995	3860	2815	2400Ø	5.5	13300
2 Cells	13.6	7555	7460	3794	5995	7520	2815	2400Ø	5.5	26600
371D-C1	7.0	6345	5020	3794	4775	5080	2815	2400Ø	5.5	13360
2 Cells	14.0	6345	9900	3794	4775	9960	2815	2400Ø	5.5	26720
372D-C1	7.5	6945	5020	3794	5385	5080	2815	2400Ø	5.5	15120
2 Cells	15.0	6945	9900	3794	5385	9960	2815	2400Ø	5.5	30240
373D-C1	8.1	7555	5020	3794	5995	5080	2815	2400Ø	5.5	16930
2 Cells	16.2	7555	9900	3794	5995	9960	2815	2400Ø	5.5	33860
374D-C1	9.2	6945	6240	4240	5385	6300	2815	3000Ø	5.5	17410
2 Cells	18.4	6945	12340	4240	5385	12400	2815	3000Ø	5.5	34820
375D-C1	9.8	7555	6240	4240	5995	6300	2815	3000Ø	5.5	19520
2 Cells	19.6	7555	12340	4240	5995	12400	2815	3000Ø	5.5	39040
376D-C1	10.3	8165	6240	4240	6605	6300	2815	3000Ø	5.5	21870
2 Cells	20.6	8165	12340	4240	6605	12400	2815	3000Ø	5.5	43740



MODEL	NOMINAL	DIMENSION (mm.)						Fan DIA. (mm.)	PUMP	OPERATING
LHC	WATER FLOW M ³ /min	W	L	H	A	B	C	HEAD M	WEIGHT : kgs	
451D-C1	7.7	7800	3800	6095	5700	3860	4595	3000Ø	6	16910
2 Cells	15.4	7800	7460	6095	5700	7520	4595	3000Ø	6	33820
452D-C1	10.7	8415	5020	6095	6310	5080	4595	3600Ø	6	22090
2 Cells	21.4	8415	9900	6095	6310	9960	4595	3600Ø	6	44180
453D-C1	12.8	9025	6240	6095	6920	6300	4595	4270Ø	6	28060
2 Cells	25.6	9025	12340	6095	6920	12400	4595	4270Ø	6	56120
454D-C1	16.2	9025	7460	6595	6920	7520	4595	4270Ø	6	32760
2 Cells	32.4	9025	14780	6595	6920	14840	4595	4270Ø	6	65520
456D-C1	8.6	9025	3800	6095	6920	3860	4595	3000Ø	6	20665
2 Cells	17.2	9025	7460	6095	6920	7520	4595	3000Ø	6	41330
457D-C1	11.8	9635	5020	6095	7530	5080	4595	3600Ø	6	27015
2 Cells	23.6	9635	9900	6095	7530	9960	4595	3600Ø	6	54030
458D-C1	16.2	10245	6240	6595	8140	6300	4595	4270Ø	6	34120
2 Cells	32.4	10245	12340	6595	8140	12400	4595	4270Ø	6	68240
459D-C1	17.9	10245	7460	6595	8140	7520	4595	4270Ø	6	39955
2 Cells	35.8	10245	14780	6595	8140	14840	4595	4270Ø	6	79910
472D-C1	15.1	10080	5020	7010	7530	5080	5510	3600Ø	7	30850
2 Cells	30.3	10080	9900	7010	7530	9960	5510	3600Ø	7	61700
473D-C1	19.1	10590	6240	7510	8140	6300	5510	4270Ø	7	38850
2 Cells	38.2	10590	12340	7510	8140	12400	5510	4270Ø	7	77700
474D-C1	20.6	10590	7460	7510	8140	7520	5510	4270Ø	7	45600
2 Cells	41.2	10590	14780	7510	8140	14840	5510	4270Ø	7	91200
475D-C1	22.4	11300	7460	7510	8750	7520	5510	4880Ø	7	47600
2 Cells	44.8	11300	14780	7510	8750	14840	5510	4880Ø	7	95200

Remarks : 1. Standard design condition is based on Water Inlet 37 °C Water Outlet 32 °C Ambient Wet Bulb Temp. 27 °C
 2. Operating weight including tower body, water basin with contained up to 130 mm. water level from the bottom.

Project References



Project : Thai Plastic Line 5
LHC-475SD-C1 35.5-32-28.5 °C 1,100 M³/Hr./Set



Project : Thai Cold Rolled Steel Sheet Public
Company Limited
LHC-475D-C4 37-32-28 °C 2,800 M³/Hr./Set



Project : Ibrahim Fibre Power Plant (Phase III)
LHC-452D-C1x 5 Sets, 50-34-30 °C, 250 M³/Hr./Set



Project : Internation Industrial Limited
LHC-453D-C2, 44-32-29 °C, 800 M³/Hr./Set



Project : Internation Steel Limited
LHC-373D-C1, 44-32-29 °C, 180 M³/Hr./Set



Project : Quality Coffee Product Co., Ltd. (Nestle)
LHC-M1200-FR1, 38-32-28 °C, 860 M³/Hr./Set



Project : Ploen Chit Building (BBTV)
LHC-369D-C6, 38-32-28 °C, 1,536 M³/Hr./Set



Project : Rajburi Ethanol Plant
LHC-458D-C4, 42-34-29.4 °C, 700 M³/Hr./Set



Project : Tanakorn VEGETABLE OIL PRODUCT
LHC-577-5D-AC1, 40-32-28.5 °C, 1,500 M³/Hr./Set



Service & Renovation

Replacement parts

We understand what our valuable customer care which we need to give those spare parts to you immediately. We stock those spare parts such as drive shaft, motor, gear, nozzles, fan, etc. to you and deliver right away.

Tower Inspection & Upgrading

We apply and upgrading or retrofitting techniques to maximize the performance of your cooling tower. Our experienced engineers will report to you the overall physical appearance, current level of thermal operation, structural condition, mechanical equipment status and upgrading potential after each inspection.

Thermal Performance

With our digital instruments testing, we can use those data to realize you're cooling tower thermal performance and efficiency.

Quality Control

All materials and parts such as Motor/Gear/Fan assemble/Drive Shaft of cooling tower will be inspected as per our quality control procedure to assure that all items supplied are in standards and contract requirements

Field Erection

Liang Chi is a leader as a design/engineer and specializes in field-erected cooling towers in both counter-flow and cross-flow applications.



Before After



Before After



LIANG CHI STRONG WORLDWIDE SALES AND SERVICE NETWORKS



Together we cool



บริษัท เทลียงชี อุตสาหกรรม (ประเทศไทย) จำกัด
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