

Revolutionizing
Cooling Performance
with Nihon Spindle
Cooling Towers

Nihon Spindle

COOLING TOWERS



INTRODUCTION



Established in 1995, *Nihon Spindle Cooling Tower* is a premium, high-performance solution engineered to meet the demands of modern industrial and HVAC applications. With a strong focus on sustainability, technological innovation, and customized design, Spindle delivers efficient and environmentally responsible cooling systems tailored to specific site and operational needs all in 30 years.

Each system is supported by advanced engineering tools such as real-use environment simulation, noise field analysis, and site-specific performance modeling. Nihon Spindle's in-house laboratories—ranging from Filler Performance Testing to Heat Exchange Module R&D—ensure that every unit meets rigorous performance and durability standards.

With an annual output of over 4,000 cooling towers, Nihon Spindle continues to lead in delivering energy-efficient, low-noise, and long-lasting cooling solutions—driven by a highly skilled R&D team and supported by over 70 intellectual property rights.



Key Competitive Advantages

Nihon Spindle Cooling Towers combine innovative engineering with user-focused design. Each feature has been carefully developed to ensure high efficiency, environmental sustainability, and adaptability across demanding conditions.



HIGH PERFORMANCE COOLING TOWERS

BEST IN CLASS IN ENERGY-SAVING

CTI-201 CERTIFICATION

ENSURES PEACE OF MIND PERFORMANCE

CFD MODELING

*FOR OPTIMAL AIRFLOW AND
HEAT EXCHANGE PERFORMANCE ANALYSIS*

ADVANCED NOISE MODELING CAPABILITY

PROVIDES STRINGENT NOISE CRITERIA SOLUTIONS

SMART INTEGRATION WITH IOT AND BMS

ENABLES REMOTE MONITORING AND OPTIMIZED PERFORMANCE

High-Performance Certified PVC Filler with Rigorous Quality Control

Modified PVC filler, 100% virgin material, UV-resistant, flame retardants (oxygen index >32), certified by China national fire authorities and international SGS.

Quality ensured through in-house lab tests (tensile strength, elongation, tear strength, thermal shrinkage) and outsourced monitoring (low-temp folding, Vicat softening, oxygen index, density).

Strict raw material control and in-house lab tests—covering tensile strength, elongation, tear strength, and thermal shrinkage—along with outsourced checks for low-temperature folding, Vicat softening, oxygen index, and density ensure stable, high-quality PVC performance.



Durable, Low-Noise Fan Options in Fiberglass or Aluminum Alloy

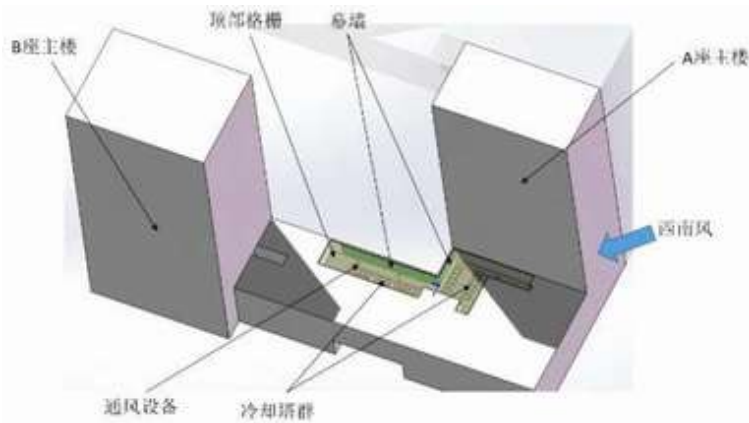


Fans come in a variety of products with different materials such as fiberglass, aluminum alloy, as well as different noise levels including standard and silent types for you to choose from.

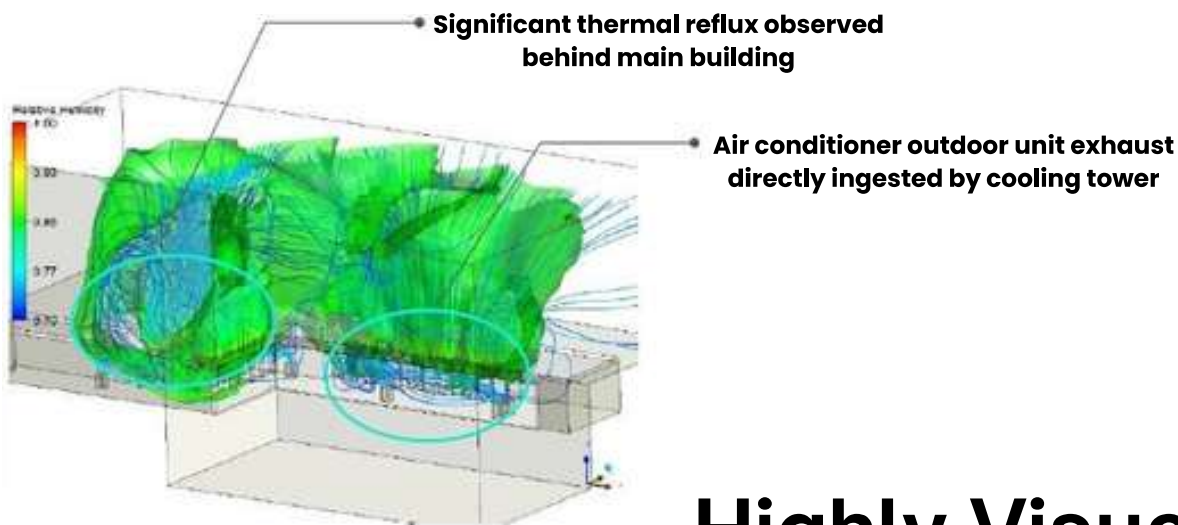
When the fan works in the humid and hot air for a long time, the FRP has good corrosion resistance and weather resistance.

Aluminum alloy is relatively good in terms of environmental protection and appearance, and its corrosion resistance can also meet stringent requirements.

CFD Airflow Organization Simulation Analysis - Case Study :

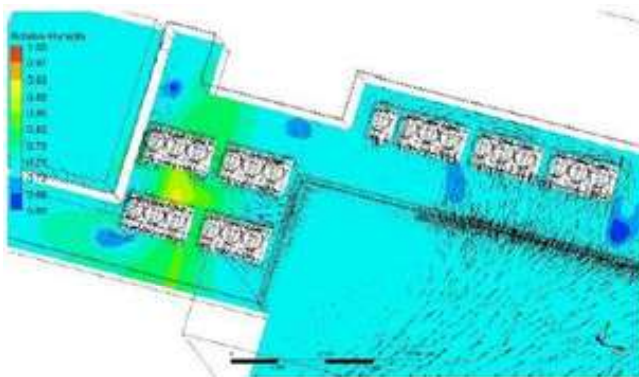


- Dalian Real Estate Project
- Cooling towers installed on podium with main buildings on both sides and surrounding AC outdoor units
- Owner considering louver installation on curtain wall

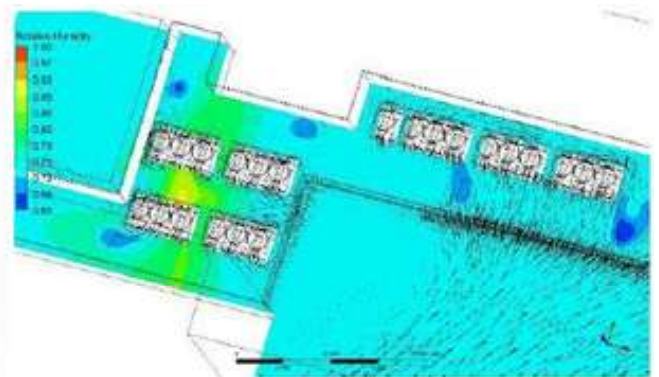


Highly Visualized Qualitative Analysis

Specific Identification of Thermal Recirculation Location and Severity

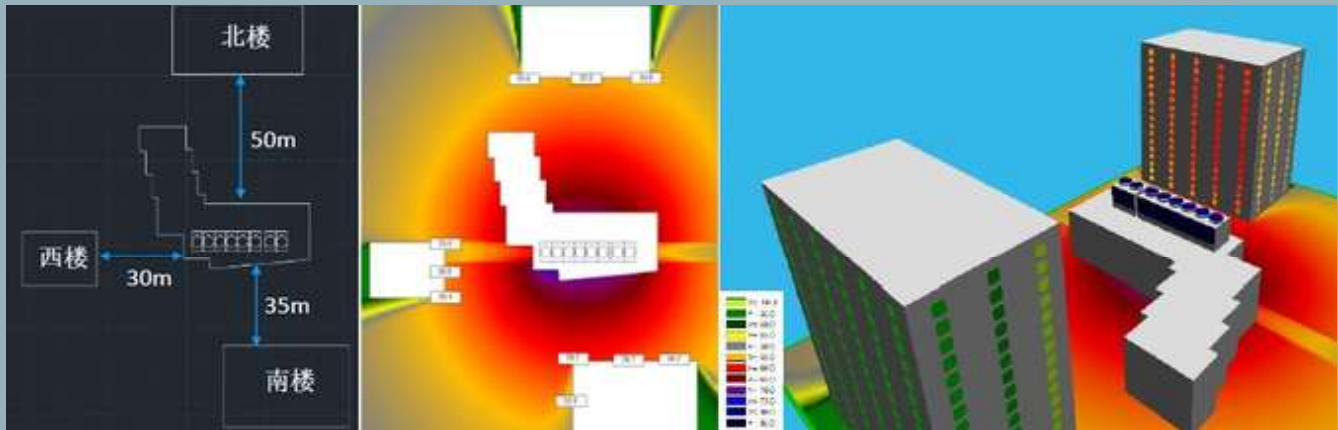


Relative Humidity Distribution on
Horizontal Section of Tower Inlet

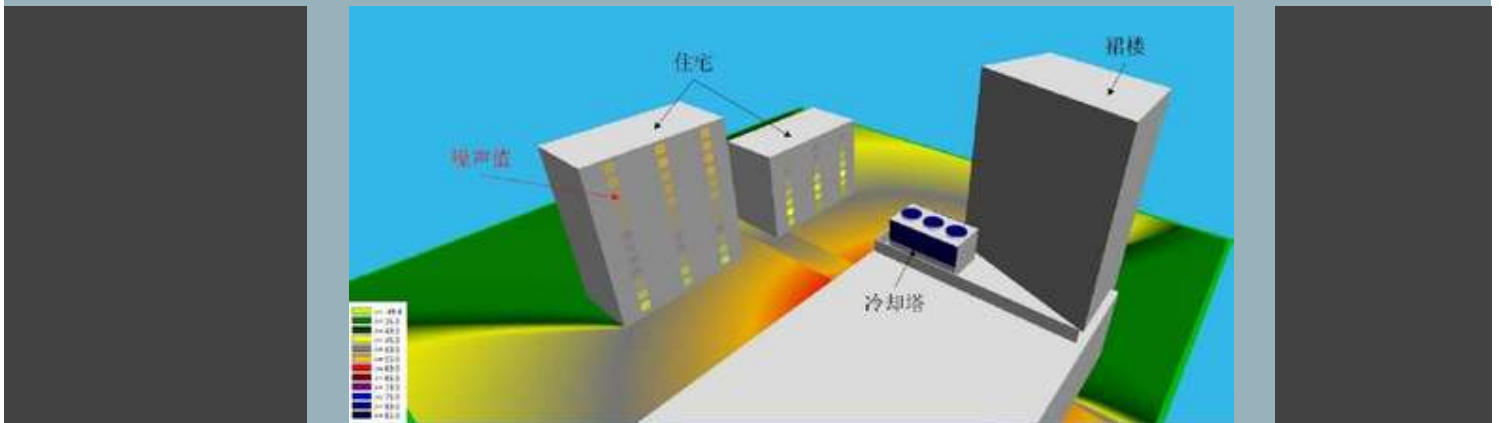


Relative Humidity Distribution on
a Vertical Section

Noise Field Simulation Analysis



Through equipment noise simulation analysis, the noise levels at various positions during cooling tower operation can be calculated to determine optimal equipment selection and layout, ensuring noise compliance with client requirements at the design stage.



Given the complexity of on-site conditions and challenges in theoretical calculation of noise levels, the professional noise analysis software *CadnaA* can be used to calculate, display, evaluate, and predict noise impacts.

By selecting fans with different noise levels or installing silencers, the most cost-effective and reasonable noise reduction solution can be chosen based on software simulation results to meet the project's noise compliance requirements.

R&D Team

The R&D team currently consists of 44 full-time professionals, ***including top talents in thermodynamics, mechanical engineering, refrigeration and other disciplines.***

Equipped with specialized software such as 3D product structural design tools, stress analysis software Solidworks, fluid heat transfer simulation software Fluent, and noise calculation software CadnaA. Annual R&D investment accounts for 5% of operating revenue. We develop proprietary technologies and innovative products tailored to China's national conditions and user requirements.



Industry-Academia-Research Collaboration

In 2016, we signed a technical service agreement to establish a student practice base with Dalian University of Technology.

In 2019, we jointly founded the "Dalian University of Technology - Dalian Spindle Joint Research Center" with the university.

Currently, we are collaborating with Dalian University of Technology on R&D projects including internal/external flow field analysis of cooling towers, nozzle structural technology development, and packing simulation.

R&D Center - Cooling Tower Performance Laboratory

The cooling tower performance laboratory covers approximately 300 m² and is capable of CTI performance tests for all models.

As the only CNAS-certified cooling tower laboratory in the industry, it conducts national standard energy-saving and water-saving tests. The entire test system includes internal/external circulation systems, heat exchange systems, and a central monitoring system.



The internal circulation system, with two Panasonic vacuum boilers and two vertical pumps, delivers up to 3240 kW output with ± 0.2 °C temperature control. The external system, with three horizontal pumps, supplies cooling tower water with variable-frequency flow control. Two plate heat exchangers stabilize inlet temperatures by integrating internal and external water flows. A central monitoring system tracks flow, temperature, and other parameters in real time, stores data curves, and adjusts pump and fan speeds to simulate varied steam-to-water ratios.

SHOWCASE OF SELECTED PROJECTS



Sentosa Resort & Spa Singapore



Wuhan Capital Mall



Shanghai World Financial Center



Central Military Commission of China



Ministry of State Security



Jakarta Shangri-La Hotel



Ningbo InterContinental Hotel



Xiamen Shimao Twin Towers



Alibaba Ant Group HQ (Hangzhou)



Industrial and Commercial Bank of China

Significance of FM Approval



The FM Approval standard, designated as a third-party certification, not only meets consumer requirements for product quality but also enhances the product's position in the market. FM certificates and test reports for industrial and commercial products are widely recognized globally, and the FM Approval mark is regarded by consumers as a symbol of high-quality standards.

The value of the FM Approval mark extends beyond certification itself: cooling towers that have passed FM Approval can effectively prevent large-scale fires caused by cooling tower ignition, fundamentally reducing losses for users. Additionally, enterprises insured with FM Global can reduce their insurance premiums by using FM-approved cooling towers.

FM Approval Process

- Customer submits application for Approval
- FM Approval Agreement
- Customer authorization
- FM Approval review
- Testing procedures
- Product marking
- Inspection of manufacturing site and production processes
- Drafting of the Approval report by the project reviewer
- Approval report review process
- Final report
- Approval manual or certified test report certificate
- Conducting periodic audits

Mission of FM Approval

FM Approval has a unique focus when certifying products and services:

Objectively testing property loss prevention products and services, while certifying those that meet rigorous loss prevention standards.

Encouraging the development and use of FM Approved products and services that help improve and promote property loss prevention.



FM Approval Capabilities and Facilities

FM engineers often hold leadership positions in national and international committees, ensuring their level of technical knowledge and expertise, while their testing work is conducted at the state-of-the-art FM Global Research Campus in the United States to ensure consistency of testing quality worldwide.

Testing Procedures

– Fire Test



FM Cooling Tower

fire test is conducted to verify their ability to withstand damage from fire and explosion without posing a hazard to adjacent structures or the surrounding environment.

During installation, cooling tower piping involves welding processes, which are often performed at the top of the cooling tower. If welding spatter falls into the cooling tower during welding, and the tower's fire performance is inadequate, it can easily lead to a fire. The FM fire test evaluates the overall fire performance of cooling towers. Passing this test signifies that even in the event of a fire, the fire damage within the cooling tower is confined to the room of origin and does not spread to adjacent cooling towers over, under, around, or through walls or partitions. This fundamentally limits the scope of cooling tower fires.

Testing Procedures

- Wind Load Resistance Test

FM Cooling Tower

wind load resistance tests are conducted to verify their capability to withstand wind disasters.

Through continuous and repeated tests using the wind resistance testing system of the FM Approval company, the cooling tower's ability to endure wind pressure is determined. Passing this test signifies that, under the wind pressures recognized by FM Approval, no disasters will be caused by the cooling tower even after a wind disaster strikes.



Testing Procedures

- Seismic Certification



FM Cooling Tower

seismic certification confirms the tower's seismic resistance capability.



FM Approval verifies the cooling tower's seismic resistance by reviewing its design documentation, ensuring its performance in seismic zones with a 50-year return period event.

Product Control

Quality System Audit

FM engineers conduct quality system audits at cooling tower manufacturing facilities and process audits of cooling tower production to ensure consistent product quality from the manufacturer while maintaining the conformity of FM certified products.

Product Management

FM Approval registers certified products on its official website for user inquiries and records information about certified products for on-site engineering reviews. FM certified products must have unique identification and an identification management system to distinguish them from non-FM products.

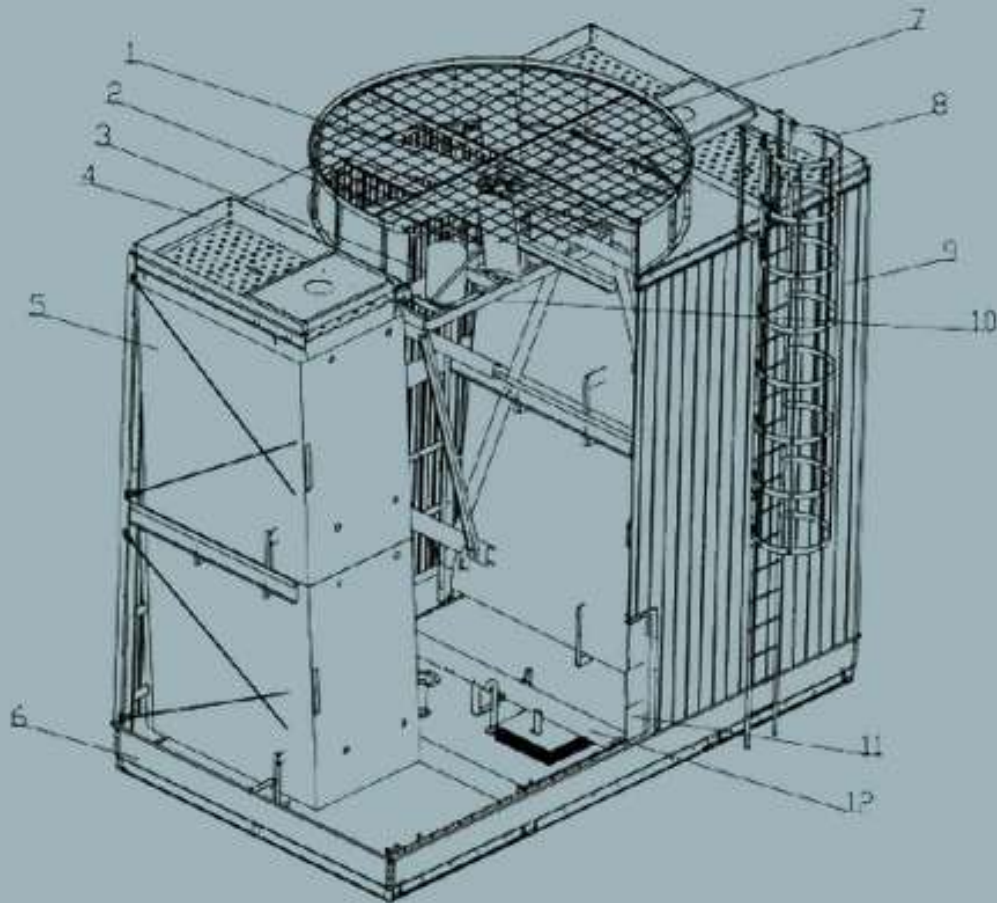
Subcontractor Audit

FM engineers perform factory inspections on manufacturers of cooling tower fill materials to ensure consistent quality of their fill materials and maintain consistency with the fill materials used in the FM certified cooling tower products.

Periodic Audit

FM Approval conducts periodic audits of product manufacturers to ensure product quality is maintained at an acceptable level for FM Approval or FM Approval certification testing.

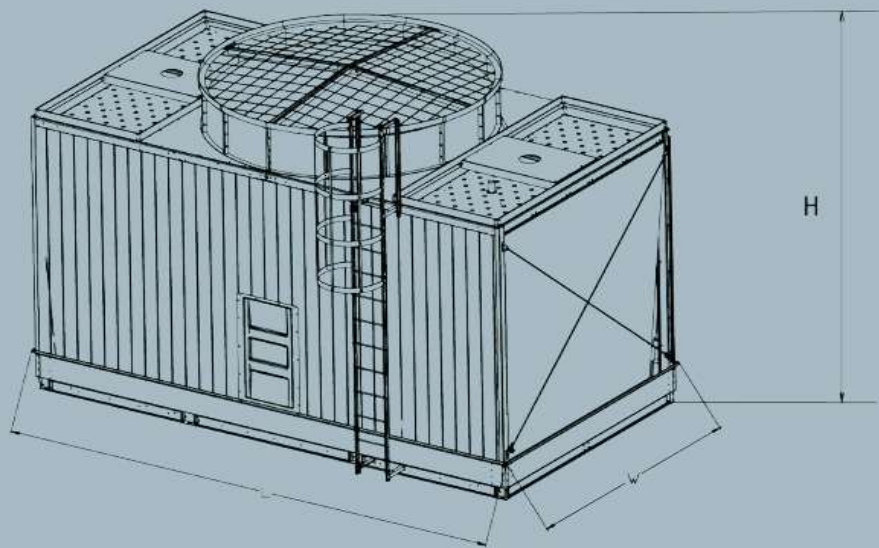
Cooling Tower Structural Diagram



- 1. Fan Blade
- 2. Fan Shaft
- 3. Motor
- 4. Water Basin
- 5. Infills
- 6. Cold Water Basin

- 7. Fan Stack
- 8. Ladder
- 9. Panel
- 10. Fan Support
- 11. Inspection Door
- 12. Walkway

DM Series



Model	Flow Rate	Dimensions			Rated Output	Dry Weight	Ope Weight	Pipe				
		L	W	H				Inlet	Outlet	Drain	Overflow	Make up
	m/Hr	mm	mm	mm	kW	Kg	Kg	mm	mm	mm	mm	mm
DM-LB31-D	216.6	5330	2350	3930	5.5	1740	5650	150X2	200	50	50	40X2
DM-LB31-E	238.4	5330	2350	3930	7.5	1756	5666	150X2	200	50	50	40X2
DM-LB31-F	270.5	5330	2350	3930	11	1800	5710	150X2	200	50	50	40X2
DM-LC31-E	268.0	5530	2750	3900	7.5	1985	6585	150X2	200	50	50	40X2
DM-LC31-F	302.8	5530	2750	3900	11	2029	6629	150X2	200	50	50	40X2
DM-LC31-G	336.2	5530	2750	3900	15	2050	6650	150X2	200	50	50	40X2
DM-LC31-H	361.8	5530	2750	3900	18.5	2100	6700	150X2	200	50	50	40X2
DM-LD31-E	299.5	5930	3050	4100	7.5	2240	7650	150X2	250	80	80	40X2
DM-LD31-F	338.3	5930	3050	4100	11	2287	7697	150X2	250	80	80	40X2
DM-LD31-G	375.8	5930	3050	4100	15	2310	7720	150X2	250	80	80	40X2
DM-LD31-H	404.6	5930	3050	4100	18.5	2375	7785	150X2	250	80	80	40X2
DM-LD31-J	430.6	5930	3050	4100	22	2390	7800	150X2	250	80	80	40X2
DM-LE31-E	334.5	6330	3450	4100	7.5	2493	8793	200X2	250	80	80	40X2
DM-LE31-F	376.5	6330	3450	4100	11	2536	8836	200X2	250	80	80	40X2
DM-LE31-G	421.6	6330	3450	4100	15	2546	8846	200X2	250	80	80	40X2
DM-LE31-H	453.2	6330	3450	4100	18.5	2624	8924	200X2	250	80	80	40X2
DM-LE31-J	478.2	6330	3450	4100	22	2632	8932	200X2	250	80	80	40X2
DM-LE31-K	536.2	6330	3450	4100	30	2700	9000	200X2	250	80	80	40X2
DM-LE41-F	451.2	6330	3450	5245	11	4032	11261	200X2	300	80	80	50X2
DM-LE41-G	496.9	6330	3450	5245	15	4046	11275	200X2	300	80	80	50X2
DM-LE41-H	532.2	6330	3450	5245	18.5	4111	11340	200X2	300	80	80	50X2
DM-LE41-J	564.2	6330	3450	5245	22	4182	11411	200X2	300	80	80	50X2
DM-LE41-K	628.6	6330	3450	5245	30	4314	11543	200X2	300	80	80	50X2
DM-LE41-L	677.8	6330	3450	5245	37	4370	11599	200X2	300	80	80	50X2
DM-LJ41-G	549.5	6730	3850	5245	15	4521	12811	250X2	300	80	80	50X2
DM-LJ41-H	588.1	6730	3850	5245	18.5	4552	12842	250X2	300	80	80	50X2
DM-LJ41-J	623.2	6730	3850	5245	22	4636	12926	250X2	300	80	80	50X2
DM-LJ41-K	694.1	6730	3850	5245	30	4749	13039	250X2	300	80	80	50X2
DM-LJ41-L	748.4	6730	3850	5245	37	4873	13163	250X2	300	80	80	50X2
DM-LJ41-M	804.2	6730	3850	5245	45	4882	13172	250X2	300	80	80	50X2
DM-LN41-H	674.5	7330	4550	5295	18.5	5416	15604	250X2	350	80	80	50X2

Note (1): The listed models are for single units. This series also includes multi-unit configurations, but they are not listed here.

Note (2): The design conditions for circulating water flow are: inlet water temperature 37°C, outlet water temperature 32°C, and external wet-bulb temperature 28°C.

Note (3): The indicated weights are for standard products. For non-standard design requirements, please contact our office to obtain accurate data.

Note (4): For foundation dimensions, please consult our office.

Model	Flow Rate m/Hr	Dimensions			Rated Output kW	Dry Weight Kg	Ope Weight Kg	Pipe				
		L	W	H				Inlet	Outlet	Drain	Overflow	Make up
		mm	mm	mm				mm	mm	mm	mm	mm
DM-LN41-J	713.9	7330	4550	5295	22	5452	15640	250X2	350	80	80	50X2
DM-LN41-K	793.6	7330	4550	5295	30	5589	15777	250X2	350	80	80	50X2
DM-LN41-L	855.0	7330	4550	5295	37	5703	15891	250X2	350	80	80	50X2
DM-LN41-M	918.5	7330	4550	5295	45	5804	15992	250X2	350	80	80	50X2
DM-LN41-N	995.7	7330	4550	5295	55	5917	16105	250X2	350	80	80	50X2
DM-LE51-G	569.2	6330	3450	6045	15	4616	12316	200X2	300	80	80	50X2
DM-LE51-H	606.1	6330	3450	6045	18.5	4686	12386	200X2	300	80	80	50X2
DM-LE51-J	642.9	6330	3450	6045	22	4708	12408	200X2	300	80	80	50X2
DM-LE51-K	711.5	6330	3450	6045	30	4780	12480	200X2	300	80	80	50X2
DM-LE51-L	748.2	6330	3450	6045	37	4836	12540	200X2	300	80	80	50X2
DM-LJ51-H	674.6	6730	3850	6045	18.5	5210	14030	250X2	300	80	80	50X2
DM-LJ51-J	706.2	6730	3850	6045	22	5225	14045	250X2	300	80	80	50X2
DM-LJ51-K	790.5	6730	3850	6045	30	5297	14117	250X2	300	80	80	50X2
DM-LJ51-L	850.4	6730	3850	6045	37	5310	14130	250X2	300	80	80	50X2
DM-LJ51-M	850.4	6730	3850	6045	45	5319	14140	250X2	300	80	80	50X2
DM-LN51-J	822.1	7330	4550	6095	22	5955	16775	250X2	350	80	80	50X2
DM-LN51-K	906.4	7330	4550	6095	30	6025	16845	250X2	350	80	80	50X2
DM-LN51-L	975.0	7330	4550	6095	37	6075	16895	250X2	350	80	80	50X2
DM-LN51-M	1003.6	7330	4550	6095	45	6130	16950	250X2	350	80	80	50X2
DM-LN51-N	1003.6	7330	4550	6095	55	6243	17065	250X2	350	80	80	50X2
DM-LP51-J	954.3	8180	5450	6275	22	7299	20739	300X2	400	80	80	50X2
DM-LP51-K	1054.0	8180	5450	6275	30	7364	20804	300X2	400	80	80	50X2
DM-LP51-L	1133.1	8180	5450	6275	37	7403	20843	300X2	400	80	80	50X2
DM-LP51-M	1212.1	8180	5450	6275	45	7482	20922	300X2	400	80	80	50X2
DM-LP51-N	1212.6	8180	5450	6275	55	7560	21000	300X2	400	80	80	50X2
DM-LJ61-H	718.0	6730	3850	7270	18.5	6081	15991	250X2	300	80	80	50X2
DM-LJ61-J	757.6	6730	3850	7270	22	6096	16006	250X2	300	80	80	50X2
DM-LJ61-K	837.5	6730	3850	7270	30	6168	16078	250X2	300	80	80	50X2
DM-LJ61-L	850.4	6730	3850	7270	37	6181	16091	250X2	300	80	80	50X2
DM-LJ61-M	850.4	6730	3850	7270	45	6246	16156	250X2	300	80	80	50X2
DM-LJ61-N	850.4	6730	3850	7270	55	6326	16236	250X2	300	80	80	50X2
DM-LJ61-P	850.4	6730	3850	7270	75	6500	16410	250X2	300	80	80	50X2
DM-LN61-J	878.7	7330	4550	7500	22	6947	18927	250X2	350	80	80	50X2
DM-LN61-K	969.5	7330	4550	7500	30	7017	18997	250X2	350	80	80	50X2
DM-LN61-L	1003.6	7330	4550	7500	37	7067	19047	250X2	350	80	80	50X2
DM-LN61-M	1003.6	7330	4550	7500	45	7122	19102	250X2	350	80	80	50X2
DM-LN61-N	1003.6	7330	4550	7500	55	7215	19195	250X2	350	80	80	50X2
DM-LN61-P	1003.6	7330	4550	7500	75	7400	19380	250X2	350	80	80	50X2
DM-LP61-K	1131.0	8130	5450	7500	30	8424	23174	300X2	400	80	80	50X2
DM-LP61-L	1210.8	8130	5450	7500	37	8463	23213	300X2	400	80	80	50X2
DM-LP61-M	1212.5	8130	5450	7500	45	8542	23292	300X2	400	80	80	50X2
DM-LP61-N	1212.5	8130	5450	7500	55	8620	23370	300X2	400	80	80	50X2
DM-LP61-P	1212.5	8130	5450	7500	75	8800	23550	300X2	400	80	80	50X2

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Note (3): The indicated weights are for standard products. For non-standard design requirements, please contact our office to obtain accurate data.

Note (4): For foundation dimensions, please consult our office.

DM

Product Description

Product Summary

Product	Class of Work	Listing Country	Cooling Tower Type	Certification Type
DM	4930	China	Field Erected Induced Draft Crossflow	FM Approved

Product Specification

Wall Panel	Nominal Panel Thickness		Max Panel Width		FM Seismic Rating	Wind Load Rating & Zone
	(mm)	in	(mm)	in		
Casing Panels: Galvanized or Stainless Steel	1.5	(0.06)	880	(34.6)	*	+70/-70 PSF Zone TC

*Site specific design for up to FM Earthquake Zone 50-yr or less

DM Cooling Towers are factory assembled or shipped as complete knock down units for field assembly. They are induced draft, crossflow cooling towers and are Approved with a minimum installation of 1 cell. They are provided in cell sizes ranging from 2,350 mm wide x 5,330 mm long x 3,930 mm high (7.7 ft. x 17.5 ft. x 12.9 ft.) to 5,450 mm wide x 8,180 mm long x 7,500 mm high (17.9 ft. x 26.8 ft. x 24.6 ft.).

DM cooling towers are Approved with a minimum of one cell. When multiple cells are installed, the cell exterior walls are spaced a minimum of 200 mm (7.87 in.) apart. Towers are installed with a noncombustible basin (galvanized or stainless steel) around the base of the unit. DM cooling towers are Approved for roof-mounted applications.

They consist of a non-combustible (galvanized or stainless steel) basin, galvanized or stainless-steel casing panels, a galvanized or stainless-steel support structure system, PVC fill and a non-combustible fan. The PVC fill is designated as YZY-000288-00 and measures maximum 0.38 mm (0.015 in.) thick.

Details

Category	Cooling Towers, Single Cell
Approval Standard	FM 4930 - Cooling Towers
Certification Type	FM Approved
Class of Work	4930 - Cooling Towers
Cooling Tower Type	Field Erected Induced Draft Crossflow
Listing Country	China

DM

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Details

Category	Cooling Towers, Multi-cell
Approval Standard	FM 4930 - Cooling Towers
Certification Type	FM Approved
Cooling Tower Type	Field Erected Induced Draft Crossflow
Class of Work	4930 - Cooling Towers
Listing Country	China

Exclusive Partner

CHEM&TECH

CHEM TECHNOLOGIES SDN BHD

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