TRUWATER®

SEAGULL GROUP OF COMPANIES

Distributed by:

TKSF/001/2025

TRUWATER®

ONE STOP COOLING SOLUTION PROVIDER

FH-S SERIES

Closed Circuit Tower

Factory Mutual Approved Tower

Axial Fan, Induced Draft, Single Flow / Double Flow

Lowest Operating Cost | Reliability | Heavy Duty

FM APPROVED

Over

Years of Pioneering Cooling Solutions

This is the

Truwater Advantage

For more than a quarter-century, **Truwater Cooling Towers Sdn Bhd** has been at the forefront of cooling innovation. As an ISO 9001 and ISO 14001 certified manufacturer, Truwater specializes in advanced wet and hybrid cooling tower solutions that cater to a wide array of industries, including power generation, petrochemicals, biomass, co-generation, district cooling, data center, and oil and gas.

Truwater's cutting-edge cooling towers constructed from premium materials such as reinforced concrete, pultruded composite FRP, PVC, steel and timber are designed to excel in both cross-flow and counter-flow applications. These versatile systems are meticulously engineered to deliver reliable and high-performance cooling solutions tailored for diverse application.

At Truwater, our unwavering commitment to innovation, reliability and versatility ensures that we remain the trusted choice for cooling excellence. Experience the Truwater difference - where over 25 years of experience converge to redefine the cooling landscape.

Truwater: The Cooling Tower Company with Experience You Can Trust

Our Environmental Commitment

At Truwater, we understand that the environment—Mother Nature's greatest gift—and water, mankind's most vital resource, are essential for life on Earth. Recognizing their importance, we are committed to protecting our fragile ecosystem.

Our efforts focus on three key pillars:

ENERGY EFFICIENCY

Our modern cooling towers are designed to optimize energy use, minimizing electricity consumption and reducing carbon footprints. By integrating energy-efficient motors, fans, and controls, we ensure our solutions are both powerful and sustainable.

EMISSION CONTROL

We take proactive measures to protect the atmosphere by implementing advanced drift eliminators and rigorous chemical treatment protocols. These efforts help minimize the release of harmful substances, keeping our air clean and safe.

MATERIAL SUSTAINABILITY

We prioritize the use of durable, corrosion-resistant, and sustainable materials in the construction of our cooling towers. This reduces the need for frequent replacements, minimizes waste, and lowers the environmental impact over the lifespan of our products.

Our long-term vision guides us as we continue to innovate and refine our cooling towers, ensuring we meet the highest environmental standards for a sustainable future.

Leading the Way in Cooling Solutions Worldwide

With a commitment to excellence, Truwater has become a leading provider of cooling tower solutions across Southeast Asia and beyond. Our innovative products serve diverse markets, including Malaysia, Thailand, Indonesia, Singapore, Taiwan, Indochina, South Korea, Australia, East Africa, and the Middle East.

Wherever cooling challenges arise, Truwater stands ready with cutting-edge technology and exceptional service, ensuring that every cooling demand is met with excellence.

FH-S SERIES

Combined Crossflow Closed Circuit Tower

Axial Fan, Induced Draft, Single Flow / Double Flow

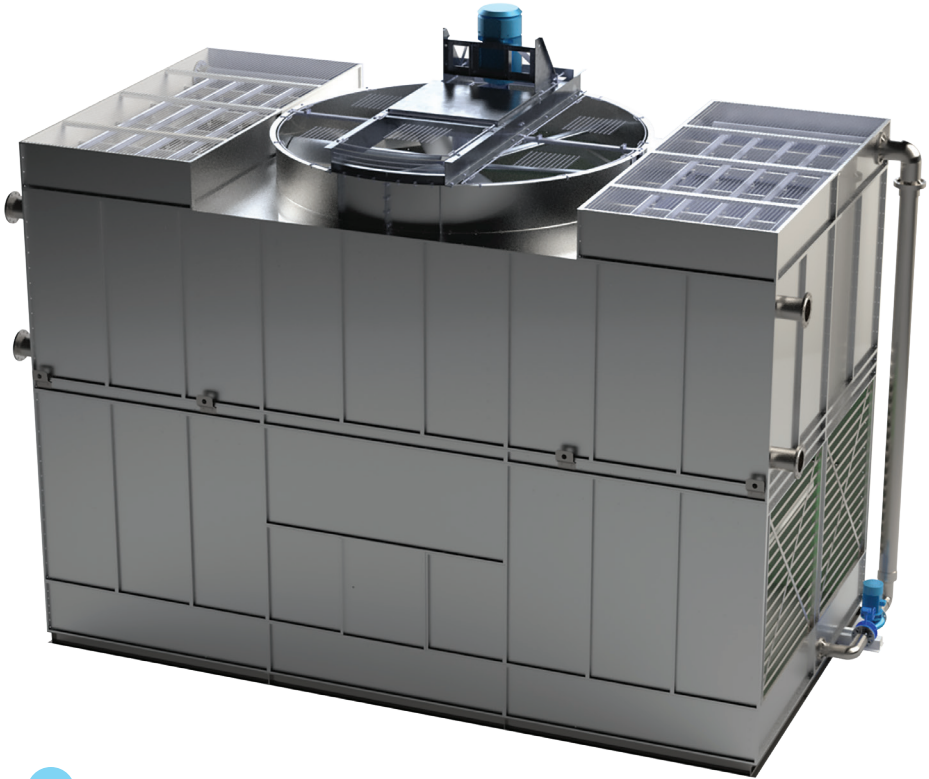
Overview

The FH-S Series by TRUWATER is Factory Mutual (FM) Approved, a globally recognised certification that underscores the tower's adherence to the highest standards of safety, performance, and reliability.

The FH-S Series Cooling Tower is engineered to high thermal capacity in a compact footprint making it ideal for large-scale projects requiring efficient and reliable cooling solutions, such as commercial and HVAC systems, Industrial process cooling, District cooling plants, Data Centers and so on. Its modular design allows for scalable installations and significantly reduces field labour and setup time, minimizing overall installation cost.

The FH-S Series with CTI certification eliminates the need for costly field thermal performance testing for both water and glycol closed loop system.

The FH-S Series Cooling Towers can be equipped with OSHA compliant safety features, such as handrails and caged ladder for secure access during inspection and maintenance activities.



Advantages

Structure Reliability
FH-S Series Cooling Towers is engineered with G-235 (Z700 Metric) hot-dip galvanized steel frame, ensuring long-lasting structural integrity even in demanding environments.

Energy Saving
Combined Crossflow design and consistent efficient heat transfer coil provide high thermal conductivity, minimizing the need for evaporative cooling and reducing make-up water requirements.

Clean Process & Lower Maintenance Costs
Closed loop design enhances system cleanliness, minimizes fouling and helps maintain optimal performance while reducing maintenance requirements.

Simplified Installation with Modular Construction
Modular design simplifies assembly, reduces on-site labour and lowers overall installation costs.


1
2
3
4
5
6
7
8
9
10
11
12
13

Features

1. **Motor**
   - Default premium high efficiency IE3 Motor,
   - TEFC, IP55 weather proof and VSD compatible

2. **V-Belt & Pulley or Gear Reducer Drive System**
   - Multi-groove belt combined with durable Pulley Cover
   - Optional Gear Reducer Drive System for Double Flow Models

3. **Heat Exchanger Coil**
   - HDG Steel / Stainless Steel / Copper
   - Excellent corrosion-resistance
   - Excellent heat transfer

4. **Axial Fan Assembly**
   - Default Aluminium Alloy

5. **Water Distribution System**
   - Non-corrosive PVC spray branches
   - Intersecting spray pattern with Three Splash Nozzle to ensure full coil coverage for efficient heat transfer

6. **Main Frame Structure**
   - G-235 (Z700) HDG Steel
   - Ensures excellent structural integrity, reducing the risk of rust and material degradation over time

7. **High Performance Firm Fill**
   - Vacuum-formed, corrugated PVC sheets
   - Featuring a maximum flame spread rating of 25 per ASTM E84
   - Integral with Drift Eliminator effectively reduces drift loss by up to 0.001%

8. **Inspection Door**
   - G-235 (Z700) HDG Steel
   - Designed for quick and convenient access to inspect and service internal components with ease.

9. **Cold Water Basin Floor**
   - G-235 (Z700) HDG Steel
   - Durable against chemicals and moisture

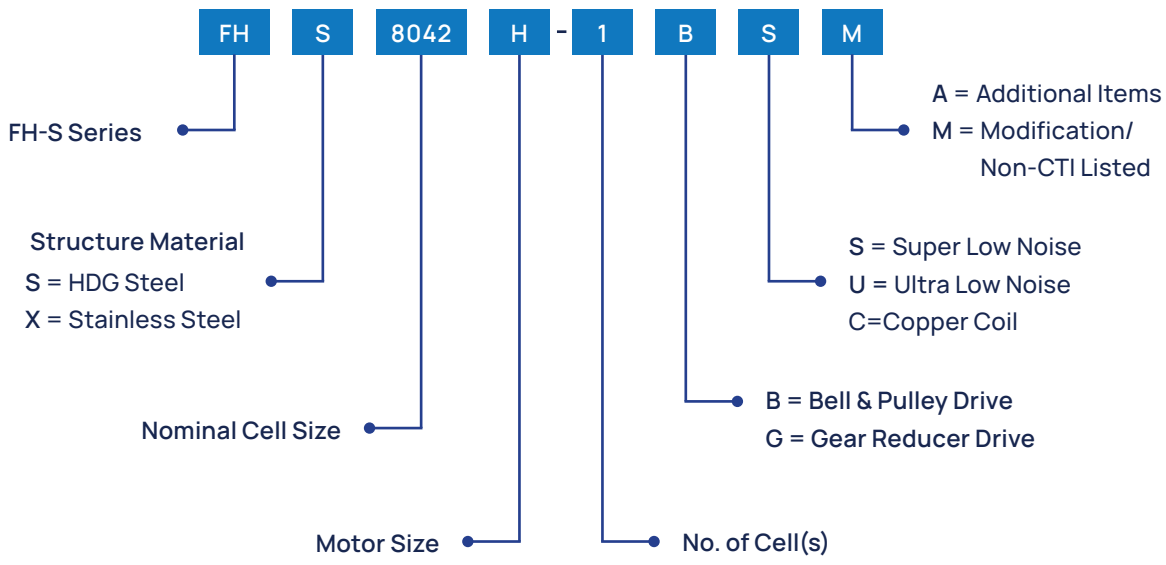
10. **Recirculating Spray Pumps**
    - Centrifugal pipeline pumps
    - Cast Iron and corrosion-resistant
    - Total Enclosed Fan Cooled (TEFC IP55) Class F

11. **Casing**
    - G-235 (Z700) HDG Steel
    - Excellent corrosion-resistance

12. **Air Intake Louvers**
    - G-235 (Z700) HDG Steel
    - Allowing easy inspection of the fill-air interface

13. **OSHA Standard Handrail & Caged Ladder**
    - G-235 (Z700) HDG Steel construction
    - To ensure maximum protection during maintenance and inspection

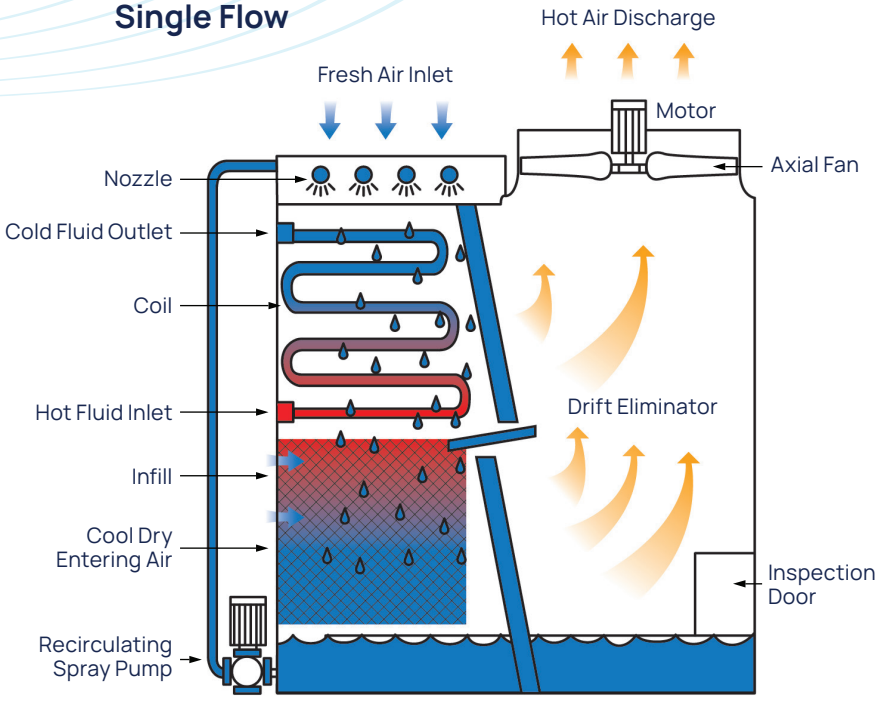
Model Definition Example



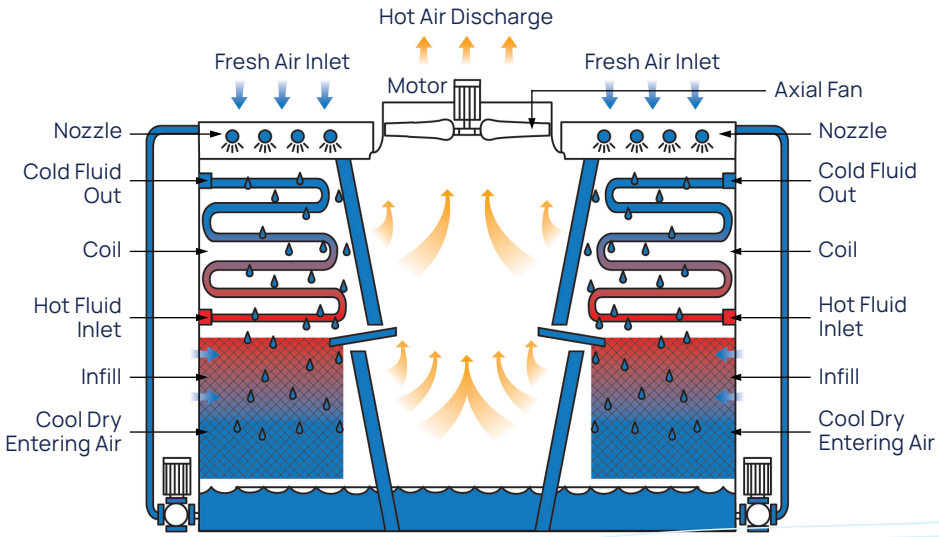
Operating Principle of Combine Crossflow Closed Circuit Cooling Tower

This tower adopts a hybrid flow that combines crossflow air movement with a closed-circuit loop system, offering high transfer system efficiency and convenient maintenance.

Single Flow



Double Flow



1. Heat Coil Exchange (Upper Section)

The hot process fluid flows inside the sealed coil surface by the spray system. Meanwhile, air is drawn horizontally across by the fan, creating a corssflow pattern where air and water interact on the coil surface. This enhances heat transfer through the coil wall and enables primary cooling as heat is removed by both water and air.

2. Water-Air Mixing Cooling (Lower Fill Section)

After passing over the coil, the spray water continues downward into the fill section. Here, it comes into full contact with horizontally entering air, promoting a secondary water-air heat exchange process. This further reduces the water temperature, achieving secondary cooling. The full section increases overall cooling efficiency while minimizing water drift loss.

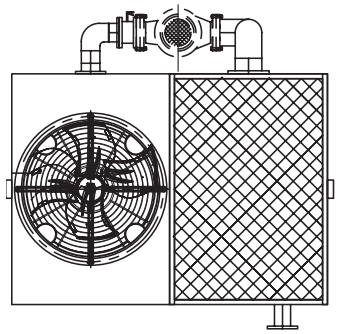
3. Water Collection and Recirculation

The cooled water is collected in the cold water basin and is recirculated to the spray system at the top by a circulating pump, forming a closed-loop water cycle. The hot process fluid inside the coil never comes into contact with outside air or water, thereby preventing contamination and maintaining water quality.

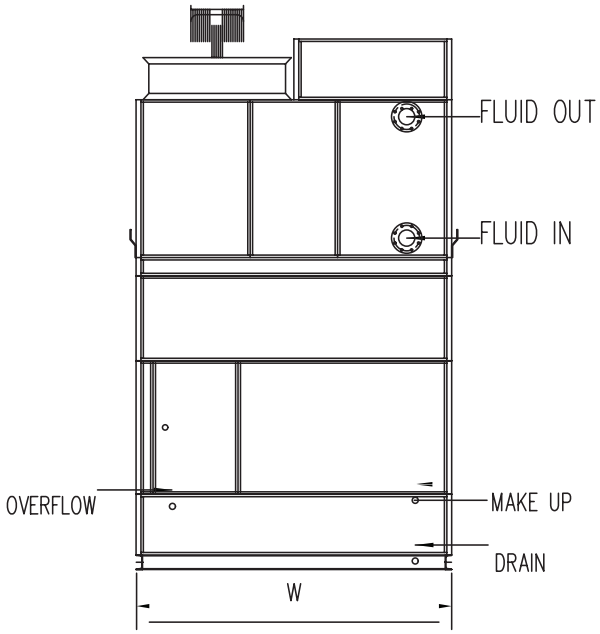
Product Specifications

Outline and Foundation Drawings (Single Flow)

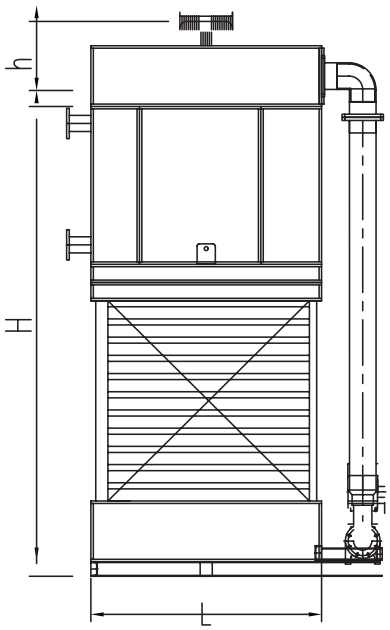
MODEL: FH-S 2618#



PLAN VIEW



SIDE ELEVATION



AIR INLET ELEVATION

*All dimensions in MM.

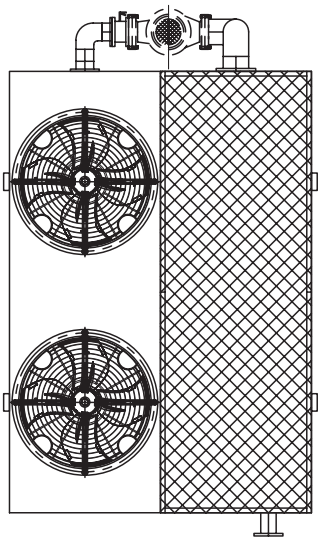
FH-S RANGE													
Tower Model FH-S	OVERALL DIMENSIONS				FAN MOTOR				AXIAL FLOW FAN				
	L	W	H	h	Rated Output (kW)	Current at 415V 50Hz	Type	Power Source	No. of fan	A	Fan Speed RPM	No. of Blades	Drive System
2618Y	1830	2600	5422	900	2.2	4.7	TEFC, Outdoor, 3 Phase, Induction Motor, 4 Pole	3 Ph/ 380V/ 50Hz or 3Ph/ 415V/ 50Hz	1	1525	450	Four (4) to Six (6)	Belt & Pulley
2618Z	1830	2600	5422	900	3	6.1			1	1525	450		
2618A	1830	2600	5422	900	4	8.1			1	1525	450		
2618B	1830	2600	5422	900	5.5	11			1	1525	450		
2618C	1830	2600	5422	900	7.5	13.6			1	1525	450		
2618D	1830	2600	5422	900	11	20.1			1	1525	450		
2627Y	2760	2600	5422	750	2.2	4.7			2	1220	450		
2627Z	2760	2600	5422	750	3	6.1			2	1220	450		
2627A	2760	2600	5422	750	4	8.1			2	1220	450		
2627B	2760	2600	5422	750	5.5	11			2	1220	450		
2627C	2760	2600	5422	750	7.5	13.6			2	1220	450		
2627D	2760	2600	5422	750	11	20.1			2	1220	450		
2627E	2760	2600	5422	750	15	26.7			2	1220	450		
2636B	3680	2600	5422	1000	5.5	11			2	1525	450		
2636C	3680	2600	5422	1000	7.5	13.6			2	1525	450		
2636D	3680	2600	5422	1000	11	20.1			2	1525	450		
2636E	3680	2600	5422	1000	15	26.7			2	1525	450		
2636F	3680	2600	5422	1000	18.5	33.2			2	1525	450		
2636G	3680	2600	5422	1000	22	39.3			2	1525	450		

Note that due to continuous product improvements by the manufacturer, these parameters may be subject to change without prior notice.

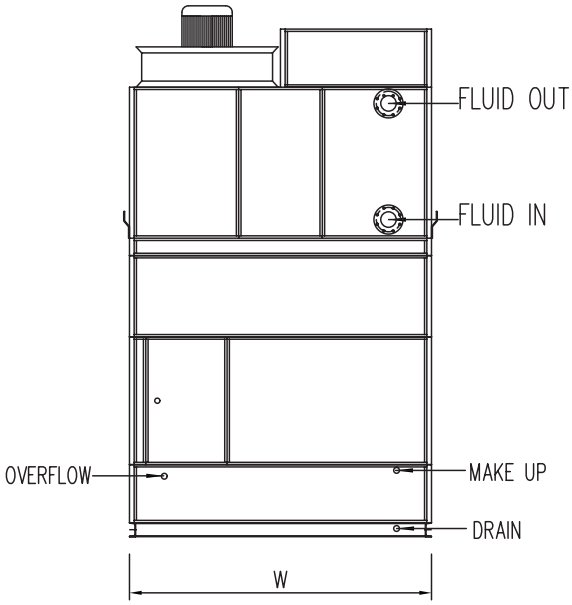
Product Specifications

Outline and Foundation Drawings (Single Flow)

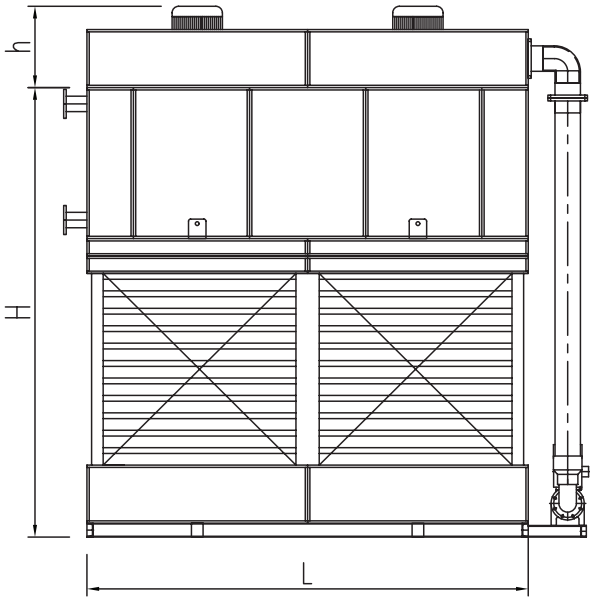
MODEL: FH-S 2627#, FH-S 2636#



PLAN VIEW



SIDE ELEVATION



AIR INLET ELEVATION

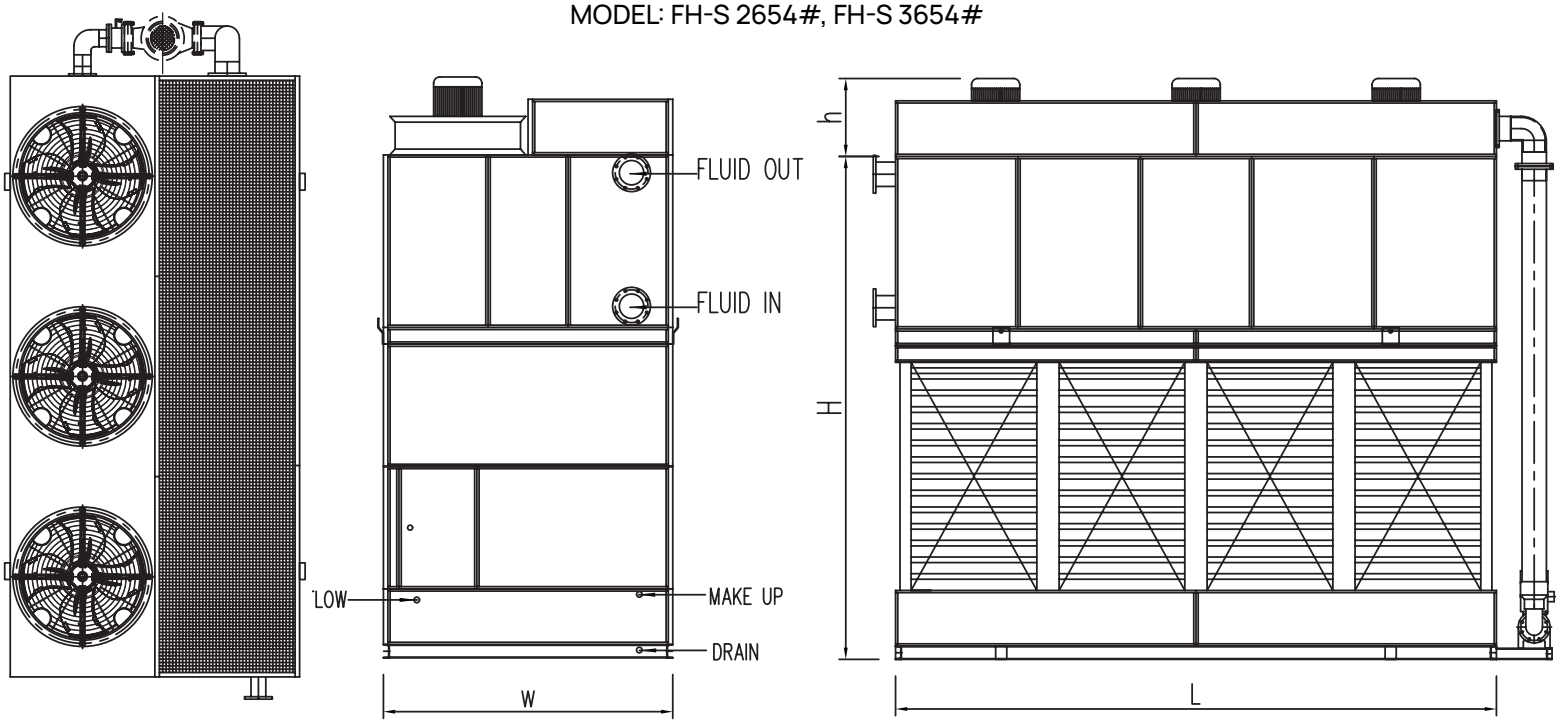
SPRAY PUMP		PIPING SIZE					WEIGHT (KG)	
No. of Spray Pump	kW	Water Inlet	Water Outlet	Overflow	Drain	Make up Auto & Manual	Dry Weight	Operating Weight
1	2.2	100	100	50	40	25	2625	4305
1	2.2	100	100	50	40	25	2625	4305
1	2.2	100	100	50	40	25	2625	4305
1	2.2	100	100	50	40	25	2625	4305
1	2.2	100	100	50	40	25	2625	4305
1	2.2	100	100	50	40	25	2625	4305
1	3	150	150	50	40	25	4935	7875
1	3	150	150	50	40	25	4935	7875
1	3	150	150	50	40	25	4935	7875
1	3	150	150	50	40	25	4935	7875
1	3	150	150	50	40	25	4935	7875
1	3	150	150	50	40	25	4935	7875
1	3	150	150	50	40	25	4935	7875
1	4	150	150	50	40	25	5775	9450
1	4	150	150	50	40	25	5775	9450
1	4	150	150	50	40	25	5775	9450
1	4	150	150	50	40	25	5775	9450
1	4	150	150	50	40	25	5775	9450
1	4	150	150	50	40	25	5775	9450

1. For Internal Piping Detail, Please Contact Truwater's Engineer.
2. Balancing Pipe Connection Is Available Upon Request.
3. External Piping to Open End. Internal Piping & Water Outlet to ANSI / ASME B16.5 Flange
4. Overflow, Drain, Make Up Auto & Manual to BSP Female Thread.

Product Specifications

Outline and Foundation Drawings (Single Flow)

MODEL: FH-S 2654#, FH-S 3654#



PLAN VIEW SIDE ELEVATION AIR INLET ELEVATION

*All dimensions in MM.

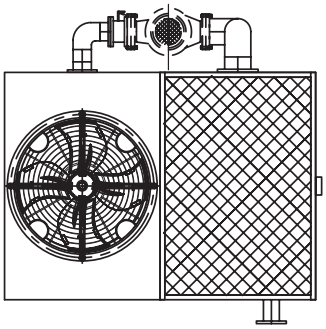
FH-S RANGE													
Tower Model FH-S	OVERALL DIMENSIONS				FAN MOTOR				AXIAL FLOW FAN				
	L	W	H	h	Rated Output (kW)	Current at 415V 50Hz	Type	Power Source	No. of fan	A	Fan Speed RPM	No. of Blades	Drive System
2654D	5480	2600	5422	1000	11	20.1	TEFC, Outdoor, 3 Phase, Induction Motor, 4 Pole	3 Ph/ 380V / 50Hz or 3Ph/ 415V / 50Hz	3	1525	450	Four (4) to Six (6)	Belt & Pulley
2654E	5480	2600	5422	1000	15	26.7			3	1525	450		
2654F	5480	2600	5422	1000	18.5	33.2			3	1525	450		
2654G	5480	2600	5422	1000	22	39.3			3	1525	450		
2654H	5480	2600	5422	1000	30	51.9			3	1525	450		
3636C	3680	3600	5622	1000	7.5	13.6			2	1600	450		
3636D	3680	3600	5622	1000	11	20.1			2	1600	450		
3636E	3680	3600	5622	1000	15	26.7			2	1600	450		
3636F	3680	3600	5622	1000	18.5	33.2			2	1600	450		
3636G	3680	3600	5622	1000	22	39.3			2	1600	450		
3636H	3680	3600	5622	1000	30	51.9			2	1600	450		
3654D	5480	3600	5622	1000	11	20.1			3	1600	450		
3654E	5480	3600	5622	1000	15	26.7			3	1600	450		
3654F	5480	3600	5622	1000	18.5	33.2			3	1600	450		
3654G	5480	3600	5622	1000	22	39.3			3	1600	450		
3654H	5480	3600	5622	1000	30	51.9			3	1600	450		
3654I	5480	3600	5622	1000	37	66			3	1600	450		
3654J	5480	3600	5622	1000	45	78.7			3	1600	450		

Note that due to continuous product improvements by the manufacturer, these parameters may be subject to change without prior notice.

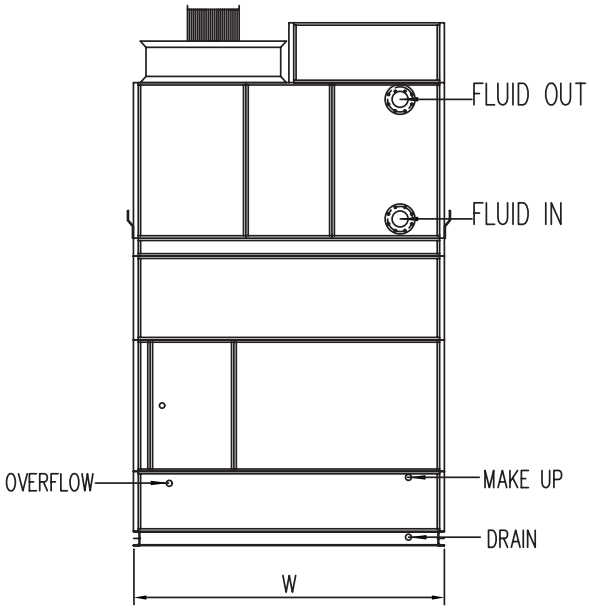
Product Specifications

Outline and Foundation Drawings (Single Flow)

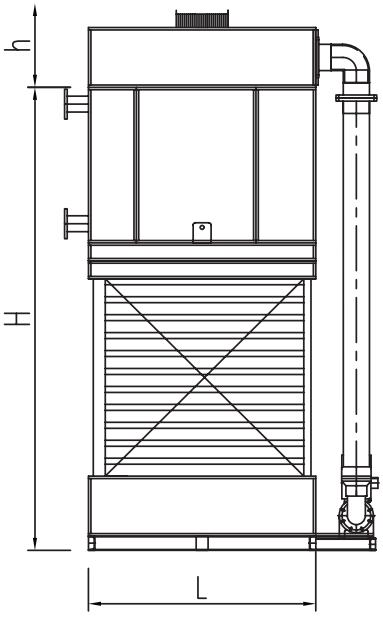
MODEL: FH-S 3636#



PLAN VIEW



SIDE ELEVATION



AIR INLET ELEVATION

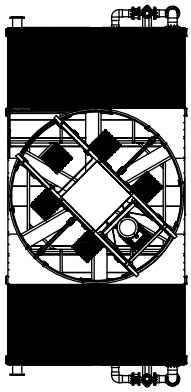
SPRAY PUMP		PIPING SIZE					WEIGHT (KG)	
No. of Spray Pump	kW	Water Inlet	Water Outlet	Overflow	Drain	Make up Auto & Manual	Dry Weight	Operating Weight
1	5.5	150	150	50	40	25	7350	12600
1	5.5	150	150	50	40	25	7350	12600
1	5.5	150	150	50	40	25	7350	12600
1	5.5	150	150	50	40	25	7350	12600
1	5.5	150	150	50	40	25	7350	12600
1	5.5	150	150	50	40	25	9450	16800
1	5.5	150	150	50	40	25	9450	16800
1	5.5	150	150	50	40	25	9450	16800
1	5.5	150	150	50	40	25	9450	16800
1	5.5	150	150	50	40	25	9450	16800
1	5.5	150	150	50	40	25	9450	16800
1	7.5	150	150	50	40	25	11550	21000
1	7.5	150	150	50	40	25	11550	21000
1	7.5	150	150	50	40	25	11550	21000
1	7.5	150	150	50	40	25	11550	21000
1	7.5	150	150	50	40	25	11550	21000
1	7.5	150	150	50	40	25	11550	21000
1	7.5	150	150	50	40	25	11550	21000

1. For Internal Piping Detail, Please Contact Truwater's Engineer.
2. Balancing Pipe Connection Is Available Upon Request.
3. External Piping to Open End. Internal Piping & Water Outlet to ANSI / ASME B16.5 Flange
4. Overflow, Drain, Make Up Auto & Manual to BSP Female Thread.

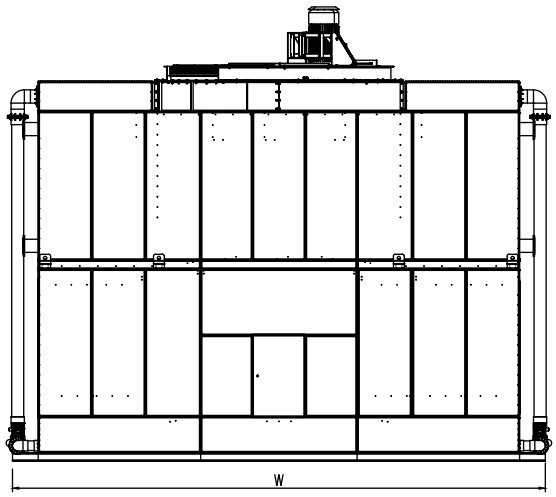
Product Specifications

Outline and Foundation Drawings (Double Flow)

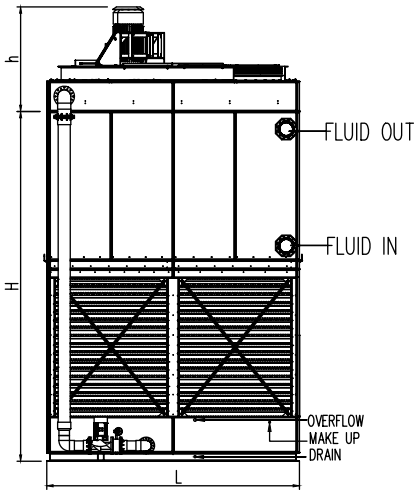
FH-S 7230# , FH-S 7336#, FH-S 8042#



PLAN VIEW



SIDE ELEVATION



AIR INLET ELEVATION

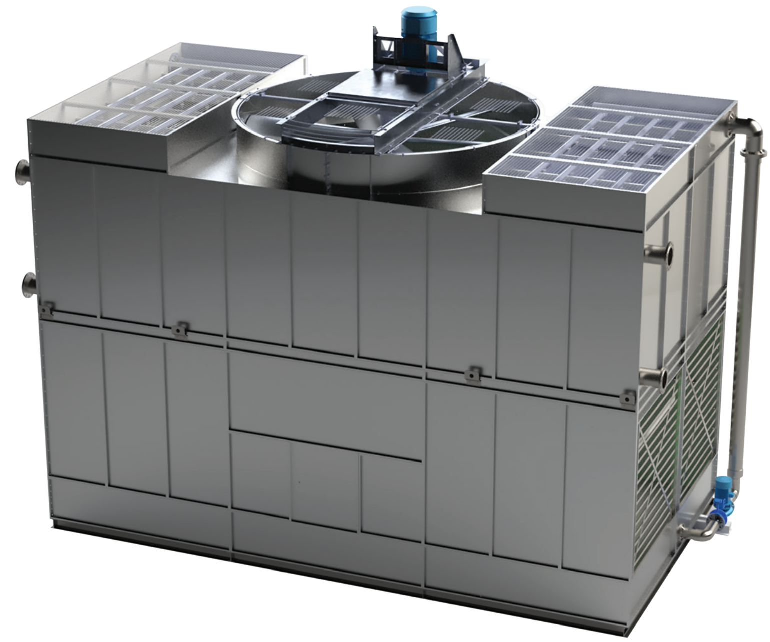
*All dimensions in MM.

FH-S RANGE													
Tower Model FH-S	OVERALL DIMENSIONS				FAN MOTOR				AXIAL FLOW FAN				
	L	W	H	h	Rated Output (kW)	Current at 415V 50Hz	Type	Power Source	No. of fan	A	Fan Speed RPM	No. of Blades	Drive System
7230C	3000	7200	4290	1600	7.5	13.6	TEFC, Outdoor, 3 Phase, Induction Motor, 4 Pole	3 Ph/ 380V / 50Hz or 3Ph/ 415V / 50Hz	1	2800	400	Four (4) to Six (6)	Belt & Pulley or Gearbox
7230D	3000	7200	4290	1600	11	20.1			1	2800	400		
7230E	3000	7200	4290	1600	15	26.7			1	2800	400		
7230F	3000	7200	4290	1600	18.5	33.2			1	2800	400		
7230G	3000	7200	4290	1600	22	39.3			1	2800	400		
7230H	3000	7200	4290	1600	30	51.9			1	2800	400		
7230I	3000	7200	4290	1600	37	66			1	2800	400		
7230J	3000	7200	4290	1600	45	78.7			1	2800	400		
7336C	3600	7340	5812	1700	7.5	13.6			1	3355	320		
7336D	3600	7340	5812	1700	11	20.1			1	3355	320		
7336E	3600	7340	5812	1700	15	26.7			1	3355	320		
7336F	3600	7340	5812	1700	18.5	33.2			1	3355	320		
7336G	3600	7340	5812	1700	22	39.3			1	3355	320		
7336H	3600	7340	5812	1700	30	51.9			1	3355	320		
7336I	3600	7340	5812	1700	37	66			1	3355	320		
7336J	3600	7340	5812	1700	45	78.7			1	3355	320		
7336K	3600	7340	5812	1700	55	93.5			1	3355	320		
8042D	4200	8000	5812	1800	11	20.1			1	4000	280		
8042E	4200	8000	5812	1800	15	26.7			1	4000	280		
8042F	4200	8000	5812	1800	18.5	33.2			1	4000	280		
8042G	4200	8000	5812	1800	22	39.3			1	4000	280		
8042H	4200	8000	5812	1800	30	51.9			1	4000	280		
8042I	4200	8000	5812	1800	37	66			1	4000	280		
8042J	4200	8000	5812	1800	45	78.7			1	4000	280		
8042K	4200	8000	5812	1800	55	93.5			1	4000	280		
8042L	4200	8000	5812	1800	75	124			1	4000	280		

Note that due to continuous product improvements by the manufacturer, these parameters may be subject to change without prior notice.

Product Specifications

Outline and Foundation Drawings (Double Flow)



SPRAY PUMP		PIPING SIZE					WEIGHT (KG)	
No. of Spray Pump	kW	Water Inlet	Water Outlet	Overflow	Drain	Make up Auto & Manual	Dry Weight	Operating Weight
2	3	125	125	50	50	50	9050	19400
2	3	125	125	50	50	50	9050	19400
2	3	125	125	50	50	50	9050	19400
2	3	125	125	50	50	50	9050	19400
2	3	125	125	50	50	50	9050	19400
2	3	125	125	50	50	50	9050	19400
2	3	125	125	50	50	50	9050	19400
2	3	125	125	50	50	50	9050	19400
2	5.5	150	150	50	50	50	14000	25000
2	5.5	150	150	50	50	50	14000	25000
2	5.5	150	150	50	50	50	14000	25000
2	5.5	150	150	50	50	50	14000	25000
2	5.5	150	150	50	50	50	14000	25000
2	5.5	150	150	50	50	50	14000	25000
2	5.5	150	150	50	50	50	14000	25000
2	5.5	150	150	50	50	50	14000	25000
2	5.5	150	150	50	50	50	14000	25000
2	5.5	200	200	50	50	50	22000	37000
2	5.5	200	200	50	50	50	22000	37000
2	5.5	200	200	50	50	50	22000	37000
2	5.5	200	200	50	50	50	22000	37000
2	5.5	200	200	50	50	50	22000	37000
2	5.5	200	200	50	50	50	22000	37000
2	5.5	200	200	50	50	50	22000	37000
2	5.5	200	200	50	50	50	22000	37000
2	5.5	200	200	50	50	50	22000	37000

1. For Internal Piping Detail, Please Contact Truwater's Engineer.
2. Balancing Pipe Connection Is Available Upon Request.
3. External Piping to Open End. Internal Piping & Water Outlet to ANSI / ASME B16.5 Flange
4. Overflow, Drain, Make Up Auto & Manual to BSP Female Thread.

FH-S Combined Crossflow Closed Circuit Cooling Tower

1.0 GENERAL

The cooling tower shall be induced draft Crossflow type vertical discharge combined flow, rectangular, film filled full steel structure cooling tower. It shall conform to the FM Approval Standard for Cooling Tower Class Number 4930, listed in the current FM Approval Guide and has successfully passed the full scale fire test, stactic cyclic wind pressure test, and structural design evaluation as administered by FM Approval.

2.0 CAPACITY

The cooling tower shall be capable of delivering the scheduled thermal performance.

3.0 PERFORMANCE WARRANTY

The rated capacity shall be certified by the Cooling Tower Institute (CTI). The manufacturer shall guarantee that the tower supplied meets the specified performance conditions when installed according to the design plans.

4.0 CONSTRUCTION

The main frame structure & casing panels of the cooling tower shall be constructed of heavy-gauge G-235 (Z700 metric) hot dip galvanized steel with all edges given a protective coating of zinc-rich compound. Type 304 stainless steel shall be considered an acceptable alternative.

5.0 MECHANICAL EQUIPMENT

5.1 Fan(s) shall be of propeller type, incorporating heavy duty blades made of aluminium alloy. The blades shall be individually adjustable to optimize performance.

5.2 The Drive System shall be V-Belt & Pulley drive assembly for single flow models, suitable for motor capacities ranging from 2.2kW to 45kW. The belt shall be made of rubber, reinforced with fabric to withstand adverse ambient conditions of 50°C and 100% relative humidity. The pulleys shall be constructed from cast iron with standard dimension grooves. The entire V-belt and pulley assembly shall be fully enclosed in a molded case to protect the V-belts from exposure to humid discharge air.

5.3 For double flow configurations, a Gear Reducer option shall be available for bigger motor capacities up to 75kW. The Gear Reducer shall be constructed from high-strength, heat-treated alloy steel gears and ductile iron housing for superior strength and reliability.

5.4 The motor(s) shall be IE3 premium efficient, TEFC, weatherproof, squirrel cage induction type, suitable for a 3-phase, 50Hz, 415V power supply, and shall operate at a speed of 1450 RPM.

6.0 FILLS, LOUVERS AND DRIFT ELIMINATORS

6.1 The fill shall consist of high-efficiency film type, rigid, corrugated PVC sheets, integrated with drift eliminators, designed to support effective cooling tower operation and UV protected.

6.2 The fills shall be resistant to rot, decay, and biological attack, achieving a maximum flame spread rating of 25 in accordance with ASTM E84. The Fill Sheet shall be hanging type with structure tubing supported from the lower level of tower structure.

6.3 Drift eliminators shall limit drift loss to 0.001% of the designed flow rate.

7.0 RECIRCULATING SPRAY PUMP

The recirculating spray pump shall be designed for use in a closed-circuit combined crossflow cooling tower to ensure efficient water distribution over the heat changed coils. The pump shall be durable, corrosion-resistant, and capable of operating under specified conditions with minimal maintenance.

8.0 HEAT EXCHANGER COIL

The Heat Exchanger Coil shall be designed for efficient heat transfer, ensuring minimal fouling, corrosion resistance, and long service life. The coil shall be constructed from stainless steel (SS304), with copper coil as an optional alternative.

9.0 SAFETY FEATURES

OSHA standard Handrail and Caged Ladder shall be provided for inspection and maintenance purposes.

FH-S/001/2025