

**ETCO** 昇歌



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## MULTI EVAPORATIVE CONDENSER UNIT

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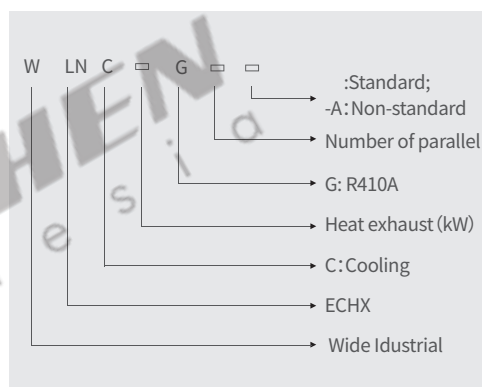
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# PRODUCT INTRODUCTION

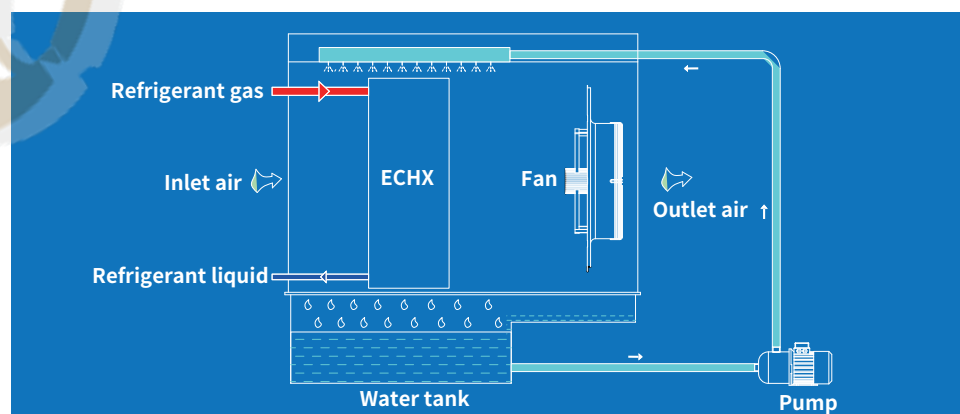


## Multi evaporative condenser unit | Product type

- Multi evaporative condenser unit is an AC product utilizing evaporative condensing technology. It is 35% more efficient than general air cooled condenser.
- Using the plane liquid film evaporative condensing technology. No cooling tower, water savings of more than 50% compared to traditional water cooled condenser system.



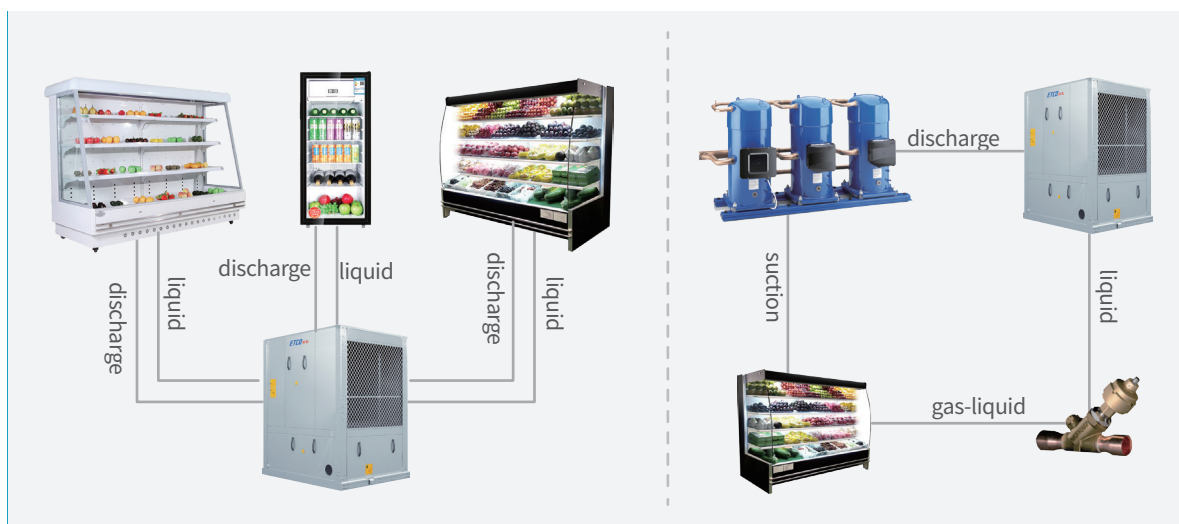
## Construction diagrams



- Mainly composed of evaporative condenser, water pump, fan, tank and control system.
- The cooling water is sent to the water pipe at the top of the condenser and sprayed evenly on the surface of the condenser to form a liquid film. The high temperature gaseous refrigerant is entered by the upper part, condenses into the liquid in the condenser to release the heat, and the water that absorbs the heat is evaporated as water vapor, and the rest falls in the tank. The forced air of the fan passes through the condenser at a speed of 3~5m/s, causing the water film to evaporate, intensifying heat release and cooling the water droplets in the falling process.
- Can be connected with multiple independent control refrigeration systems, intelligent and efficient operation control.



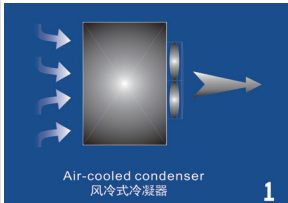
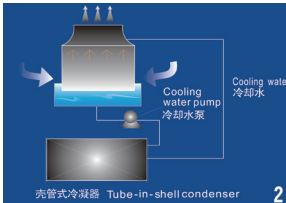
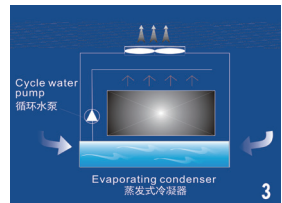
## Replace the traditional condenser



## Comparison with traditional air cooled condenser.

Comparison		Unit	Traditional air cooled condenser	Multi evaporative condenser	Compare results
Cooling capacity		kW	41	41	Equal
Cooling power input		kW	13	9.5	Less than 26.6%
Cooling COP		\	3.17	4.32	More than 36.3%
Compressor type		\	Scroll	Scroll	Equal
Condenser	Heat exhaust	kW	54	50.5	Less
	Condensation T	°C	48	38	Lower
	Air flow	m <sup>3</sup> /h	12000	7500	Less
	Water Consumption	m <sup>3</sup> /h	0	0.07	Less
Running time		h	5840	5840	Equal
Running energy		kWh	75628	55480	Less
Electricity price		RMB/kWh	0.95	0.95	Equal
Running cost		RMB	71847	52706	Save 19141RMB
Maintaining		\	Complex	Simple	Simpler
Working life		Years	10	20	Longer
Running noise		\	Louder	Lower	Lower

## Comparison of evaporative condenser air cooled condenser and water cooled condenser

	Air cooled	Water cooled	Evaporative condenser
Water flow per 100kW	—	22m <sup>3</sup> /h	10-12 m <sup>3</sup> /h
Pump head	—	≥20m	5m
Condensation Temp	48°C	about 40°C	below 38°C
System consumption per kW	0.026kW	0.038 kW	0.014 kW
System SCOP	2.5—3.5	3.5—4.6	4.2—5.2
Operation mode	 <p>Air-cooled condenser 风冷冷凝器</p> <p>1</p> <p>Air---Air-cooled (sensible heat exchange) ---Away heat ---Axial fans---Atmosphere</p>	 <p>壳管式冷凝器 Tube-in-shell condenser</p> <p>2</p> <p>Water---Water-cooled (sensible heat exchange) ---Away heat---Pump---Cooling tower (latent heat exchange) Fans---Atmosphere</p>	 <p>Evaporating condenser 蒸发式冷凝器</p> <p>3</p> <p>Cooling heat---Evaporative condenser (sensible heat exchange) ---Transfer to the water film --Evaporative (latent heat exchange) ---Away heat---Fans---Atmosphere</p>



International leader of evaporative cooling air conditioning technology



Energy-saving



Easy-Install



Intelligent



Efficient



Eco-Friendly



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Indonesia

### Distributed by

PT. Forthen Indonesia  
Jl. Mangga besar I No. 61-G  
Jakarta barat - 11180, Indonesia  
Ph. (021) 624 6211, (021) 624 6226  
[www.forthen-indonesia.com](http://www.forthen-indonesia.com)



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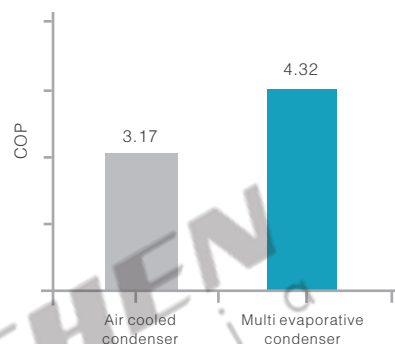


# PRODUCT FEATURES



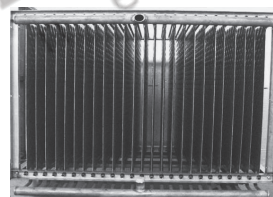
## Energy saving and efficiency

- Low condensation temperature and higher energy efficiency;
- Compared with the traditional air-cooled condenser unit, the energy saving is over 35%.

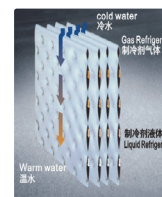


## Independent patent

- Using corrosion resistant composite metal materials, high heat exchange efficiency;
- No dry point, no leeward, effectively prevent scaling;
- Tube structure, easy to clean, easy to maintain;
- The service life is 20 years.



WIDE plate-tube ECHX

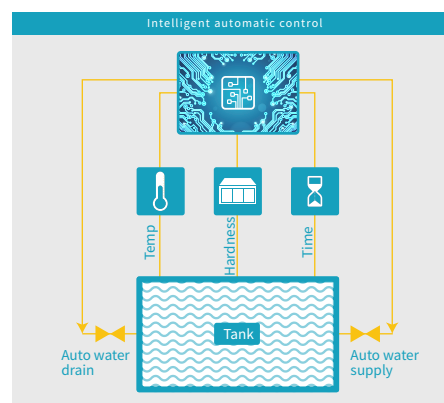


plane liquid film evaporative condensing technology



## Intelligent and reliable

- Through water temperature, time and water hardness to achieve accurate, efficient, intelligent automatic sewage and water control technology.
- Can be connected with multiple independent refrigeration systems, intelligent and efficient operation control.



## Full enclosure structure

- Full enclosure structure, good protection of heat exchanger and other components.
- Compact product structure, neat appearance and fashion;



# TECHNICAL PARAMETERS

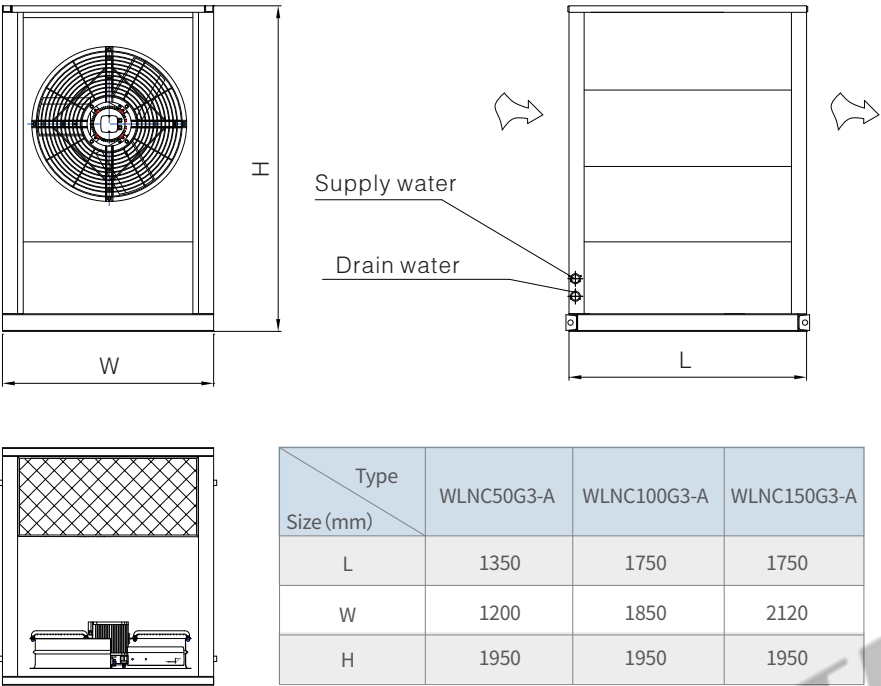


Name			Multi evaporative condenser		
Type			WLNC50G3-A	WLNC100G3-A	WLNC150G3-A
Nominal operating performance	Heat exhaust	kW	50	100	150
Number of systems	-	-	3	3	3
Power requirements	Max Operating Current	A	3	6	7
	Power supply	-	3Ph/380-415V/50Hz		
System description	Refrigerant	-	R410A		
Evaporative condenser	Type	-	Patented Plate-tube Evaporative Type Condenser		
	Number of fan	Set	1	1	1
	Static pressure	Pa	10		
	Air flow	m <sup>3</sup> /h	7500	15000	23000
	Water consumption	m <sup>3</sup> /h	0.07	0.14	0.21
	Pump input power	kW	0.75	1.1	1.5
	Fan input power	kW	0.75	1.5	1.5
Dimension	Length	mm	1350	1750	1750
	Width	mm	1200	1850	2120
	Height	mm	1950	1950	1950
Shipping Weight	-	kg	800	1100	1400
Operating weight	-	kg	1200	1600	2000
Supply water (internal thread)		in	1		1-1/2
Drain water (internal thread)		in	1		1-1/2

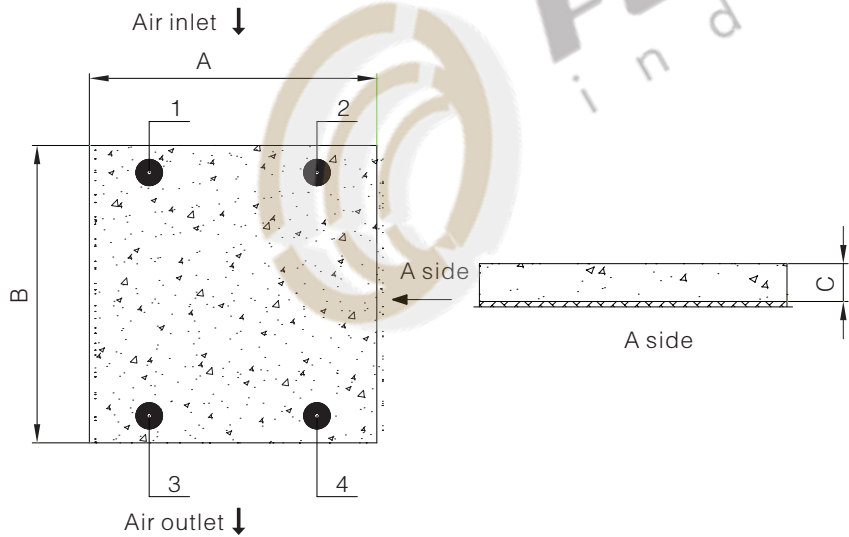
- Notes:**
- 1)Nominal condition : outdoor DB=35 °C, WB=24°C,condensation temperature 38 °C;
  - 2)Cooling supply water temperature 30 °C, pressure is 0.06 ~ 0.15 MPa.
  - 3)The unit is composed of three independent systems and each system is independently controlled.
  - 4)Please refer to the "Maximum operating current" value for the unit distribution design parameters;
  - 5)When the unit is installed in the machine room, the equipment selection must consider the condensing exhaust resistance .Non-standard requirements for external static pressure of condensing exhaust fan are proposed, Please accord to the air flow velocity of the air inlet in the machine room, the air velocity must  $\leq 2.0$ m/s.
  - 6)When the local water quality is higher than 400mg/L, the water treatment scheme is recommended.
  - 7)The lowest environment temperature is 15 °C in cooling mode.



| Shape size diagram



| Fundamental force diagram



Type Size (mm)	WLNC50G3-A	WLNC100G3-A	WLNC150G3-A
A	1350+200	1750+200	1750+200
B	1650	2300	2570
C	≥300	≥300	≥300
Type Weight	WLNC50G3-A	WLNC100G3-A	WLNC150G3-A
1	27%	27%	27%
2	27%	27%	27%
3	23%	23%	23%
4	23%	23%	23%

Notes: the force distribution parameter of each point in the table is the percentage of the whole weight of each point.





## Select and request installation sites

- The unit shall be installed on the non-deformed rigid base or concrete foundation .The basic surface is smooth and can withstand the weight of the unit.
- The installation of the unit must be based on the structural features, and the installation site should be determined to avoid the cooling effect of the condenser due to improper installation site.
- The unit is installed with the adjacent wall to keep the proper distance, so as to avoid blocking air circulation while ensuring adequate space for unit maintenance and clear filter.
- The static pressure standard of the condensing exhaust fan of the unit is 10Pa. If the unit is installed in the room, the air duct should be installed according to the actual situation, and the appropriate flow fan shall be selected.
- The installation position of the unit should be close to the power supply and the water supply source, so as to make the wiring and piping construction.
- The installation site of the unit should be equipped with drainage floor drain, so that the discharge of pipe sewage in the operation of the unit and the release of water in the maintenance of the machine should be maintained.

## Install the shock absorber

- The unit installs spring shock absorber, and according to the weight force arrangement, ensures each spring shock absorber is in the correct position.
- Be careful to place the unit on the shock absorber to ensure that the shock absorber is fitted with positioning and base vacancy alignment.
- The adjusting nut is installed on the rotary spring shock absorber.

## Installation of water system

- The water supply and discharge pipe of the unit and condenser must be filled with water valve. The discharge and overflow pipe shall be connected to drain floor drain or corresponding drain pipe or drainage ditch. The overflow pipe shall be kept free.
- When the unit is used in the area with relatively high water hardness, it is recommended to install the water softener in the unit inlet pipe.
- After connecting the water pipes, open the inlet valve and start the machine to ensure no leakage at all joints.Observe the water inlet and valve opening for more than 6 hours before starting up to ensure that the connection is not leaking.
- The unit enters and exits the water pipe to install the discharge valve, so as to discharge water and blowdown during the long period of shutdown.

## Matters need attention

Handle	<ul style="list-style-type: none"><li>• In order to avoid damage to the unit and spare parts, please handle with care .It is restricted to use the</li><li>• specified hoisting cable perforation for hoisting, and forklift mobile unit is prohibited;The unit should be</li><li>• balanced when handling or hoisting, do not suddenly raise, reduce or shake violently;When lifting to ensure</li><li>• that the cable is firm, and horizontal Angle is not less than 60 ° , sling can withstand load is 2.5 times the weight of the unit, at least contact should add protection pad, the crew capsized, thank you for your cooperation.</li></ul>
Inspect	<ul style="list-style-type: none"><li>• Unit before delivery has been tested, and have the precise doses of refrigerant filling, coat plastic cover, users receive the goods in response to carefully check, to confirm whether the goods damaged during the process of transportation, and confirm that all parts have been received</li></ul>
Deposit	<ul style="list-style-type: none"><li>• After the customer has completed the inspection of the unit, the customer shall be responsible for the correct storage and proper installation of the unit.If the unit needs to be stored before installation, the following preventive measures should be taken.Ensure that all openings, such as water pipes, have protective cover and do not tear off the protective film of the unit.Keep the unit in dry, non-vibration and less personnel activities;It should be protected from rain when stored outdoors. Please do not expose the unit with insulation layer to sunlight.If there is ash on the unit, do not wash with steam or water;Should make regular check for the unit, especially every month should check whether there is refrigerant leakage, high and low pressure gauge shows pressure too low or if no pressure, the refrigerant leakage, contact after-sales maintenance.</li></ul>