

Love Green High Energy Efficiency

HYBRID SOLUTIONS



## Evaporative Air-cooled Modular Hybrid Chiller

SABREN(Hongkong) Energy Science and Technology Co., Limited

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**ARLCHO**  
HYBRID SOLUTIONS



# COMPANY PROFILE

As we live on the same planet, conserving its natural resources is now everyone's responsibility. And Going Green has become the rule in the air-conditioning industry.

Our company always commits to strive for the best manufacturing quality and development of new product. Since its establishment, Our company has grown to become a major green cooling solutions provider. Our company has introduced German advanced manufacturing technology to develop a highly efficient evaporative air-cooled hybrid chiller system.

As an eco-friendly cooling system, the ARLCHO hybrid chiller system helps to save energy and water, reduce noise pollution, conserve building space and earth's other natural resources – making it the foremost green cooling solution for today's needs. It is the optimal green cooling solution for various types of buildings in all climatic conditions - and it is the ideal choice for centralized air conditioning systems in offices, commercial buildings, hotels, schools, hospitals and industrial plants.

Today, ARLCHO serves clients all over the world through its selected team of technical professionals who have many years of experience in the air-conditioning industry. Driven by commitment and value creation, these efforts will always be supplemented with unwavering technical support that promises only excellence and the best service to its customers.

ARLCHO, Your Hybrid Technology Partner in Green Cooling Solutions.



Yantai Factory In China



Foshan Factory In China





## Overview

ARLCHO Evaporative Air-cooled Modular Hybrid Chiller combines its patented Tube-to-Plate Evaporative condenser design with other European technology to meet the needs in the current air conditioning industry.

It has also been optimized for better product efficiency, safety, smartness and comfort.

This modular version of hybrid chiller operates using refrigerant R410a which is environmental friendly. Its high efficiency and energy saving features provides customers with more flexibility in their airconditioning system designs while still maintaining the BEST Total Lifecycle Cost and BEST Total Cost of Ownership.



## Nomenclature

**LSQW(R)F**      **Z**      **75**      **M**      **A**      **/H**      **M**  
 1                      2                      3                      4                      5                      6                      7

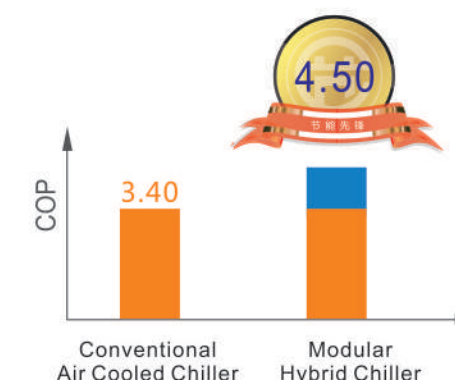
- 1: ARLCHO Chiller
- 2: Evaporative Air-cooled Hybrid Condensation
- 3: Cooling Capacity Code
- 4: Modular
- 5: Refrigerant Code (A: R-410a)
- 6: Power Supply Features (D: 415V / 3Ph / 50Hz, H: 380V / 3Ph / 50Hz)
- 7: Unit Code (M: Master Unit, S: Slave Unit)



## Feature

### High Efficient Hybrid System

- Full load C.O.P up to 4.50
- Up to 40% Energy Saving Compare with Conventional Air-cooled Chiller System



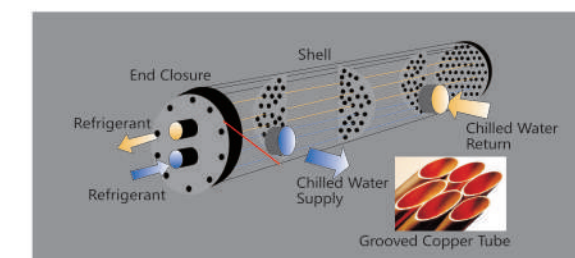
### High Efficient Scroll Compressor

- Modules of the system are best matched to improve heat exchange efficiency. Multi-loop compressors are used to provide multiple capacity adjustment gears.
- This reduces startup current and electric investment. Excellent COP greatly reduces energy consumption and operation cost



### High Efficient Evaporator

- ARLCHO's heat exchanger is designed using high efficient, anti-fouling U-shaped type copper tubes which improve heat transfer between water and refrigerant side. Thus reducing power consumption and operating cost.

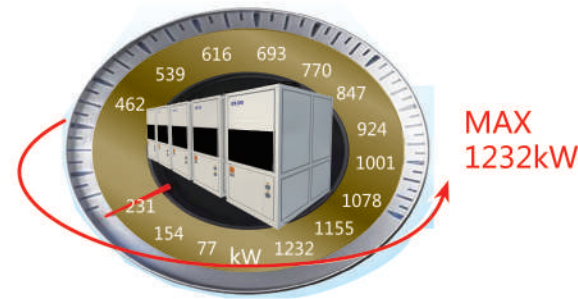






## Flexible Installation and Eliminates Mechanical Chiller Plant Room

- The unit does not require a mechanical chiller plant room, and can be mounted on the floor, building roof, etc. Modular design makes each unit small in dimension and suitable for transportation by cargo elevator, thus saving hoisting cost during construction.
- Each unit has a separate refrigerant circuit. This reduces the probability of refrigerant leakage which could damage the ozoneosphere.
- Up to 16 modules of Modular Chiller can be installed in a single system.
- Its flexibility allows each chiller to be installed at different stages. Thus reduces the construction period and provides owner with lower first cost.



## Silent and Comfortable Operation

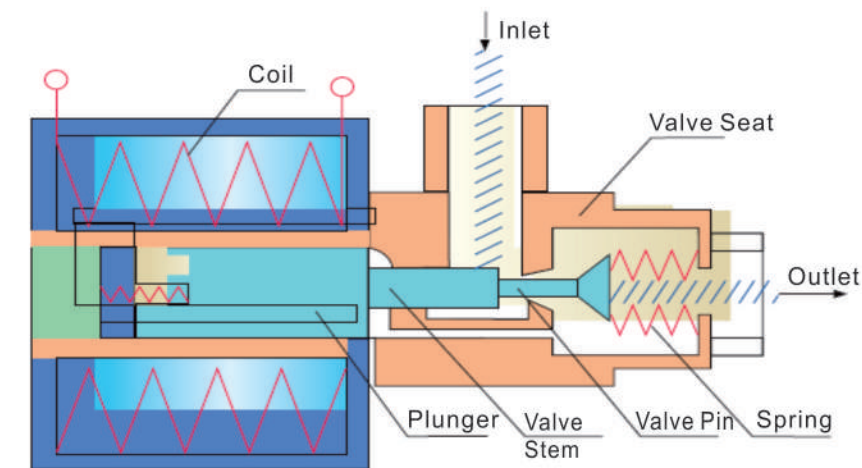
- Its fan is specially designed to generate low noise level and minimum vibration.
- Air outlet pipes of the compressor are optimized to reduce vibration passed to the unit.

## Component Feature

Evaporative Air-cooled Modular Hybrid Chiller

### Precise Electronic Flow Control

- The unit uses a 500-step PMV electronic expansion valve for precise PID control, dynamic and real-time adjustment of the cooling system, and higher-precision water temperature control. This helps optimize the performance of each and every part of the system.
- The unit can work reliably under any load and automatically adapt to fluctuation of ambient temperatures, completely eliminating cooling system vibration.



### Smart Control and Simple Operation

- The unit uses a micro-computer controller with a large LCD screen to facilitate operation.
- Each controller can control and dynamically monitor the operation of up to 16 units. This facilitates centralized management.



### Environment Friendly and Excellent Performance

- The unit uses environment friendly refrigerant R410A. The R410A refrigerant does not cause any ozone depletion.
- The heat exchange performance is excellent, improving the COP.

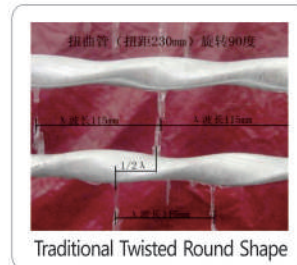
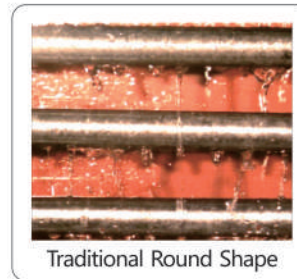




# Traditional Evaporative Condenser

## ■ Disadvantages Of Traditional Design Condenser

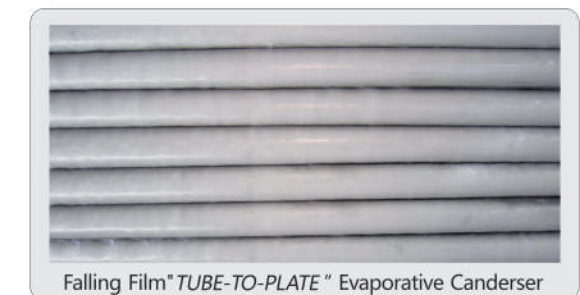
- Welding point on turning point, easy for shapedeform and refrigerant leakage, low reliability
- Water not eventually distribute on surface, lower heat transfer coefficient
- Easy to occurred dry-spot, increase chance of scaling formed
- Leeward side of tubes, lower heat transfer coefficient
- Large in size
- Low resistance, low life span
- Difficult for maintenance and cleaning



# ARLCHO'S Independent Patent: Tube To Plate Evaporative Condenser

## ■ Advantages Of New Design Condenser

- No welding point on heat transfer area
- Pneumatic testing pressure at 520 psig, strength and reliable
- Completely made by SS304, anti-corrosion and durable
- Continuous falling film cover whole heat transfer area, no dry-spot, no scaling on surface
- Totally enhance stainless steel tube, increase heat transfer coefficient
- Proper space between each row, easy for cleaning by brush, reduce maintenance cost



## ■ Summary:

Small in size, low pressure drop, no obstruct of dirt, no scaling form ,high&stable in performance

# Features & Advantage

Features	Advantages
<b>High Efficient Hybrid System</b>	
Evaporative air-cooled technology	Full load C.O.P up to 4.50
Scroll compressor	Reduces power consumption and low noise
Building management system	Can be integrated with a building management system
Superior system part load performance	Suitable for various application at different system part load
<b>All-In-One Factory Configuration</b>	
All-in-one package	Easy installation, commissioning and operation
Eliminates the need for cooling towers, condenser water pumps and piping system	Less maintenance work
Weather proof	Do not require any additional work for outdoor installation
<b>Installation</b>	
Similar size compare with conventional air-cooled chiller	Similar footprint with conventional air-cooled chiller
Similar weight compare with conventional air-cooled chiller	Simple structural load calculation
Single point power connection	No modification on existing facilities
Flexibility for future expansion	Able to combine up to 16 modules in a single system
<b>Stainless Steel Construction and Design</b>	
Stainless steel “Tube-to-Plate” evaporative condenser coil	Increases durability and operating lifecycle
Stainless steel receiver tank	Improved service life and durability

# Technical Specifications

Model		LSQWFZ75MAH	LSQWRFZ75MAH
Cooling Capacity	kW	77.0	77.0
	Tr	21.9	21.9
Heating Capacity	kW	—	69.0
	Tr	—	19.6
System	Power Input (Cooling)	kW	17.1
	RLA (Cooling)	A	32.5
	COP (Cooling)		4.50
	Power Input (Heating)	kW	—
	RLA (Heating)	A	40.4
	MCC	A	64.9
Compressor	Power Input (Cooling)	kW	15.1
	RLA (Cooling)	A	28.4
	COP (Cooling)		5.10
	Power Input (Heating)	kW	—
	RLA (Heating)	A	36.9
	MCC	A	59.0
Power Supply		380V / 3Ph / 50Hz	
Compressor	Type	Fully-Hermetic Scroll Type	
	Capacity Control	0-50%-100%	0-50%-100%
	Nos.	2	2
	Refrigerant	R410a	
Evaporator	Control Strategy	Electronic Expansion Valve	
	Type	Shell and Tube Heat Exchanger	
	Flow Rate (Cooling)	m <sup>3</sup> /h	13.2
	Flow Rate (Heating)	m <sup>3</sup> /h	11.9
	Connection	mm	DN50
	Water Pressure Drop	kPa	30
Evaporative Condenser	Type	Tube To Plate Evaporative Condenser	
	Air Flow (Cooling)	m <sup>3</sup> /h	9250
	Fan P.I (Cooling)	kW	0.87*1
	Fan FLA (Cooling)	A	1.68*1
	Air Flow (Heating)	m <sup>3</sup> /h	18000
	Fan P.I (Heating)	kW	1.64*1
	Fan FLA (Heating)	A	3.54*1
	Pump P.I	kW	1.10*1
	Pump FLA	A	2.31*1
	Water Consumption	l/h	108
Dimension	Length	mm	1995
	Width	mm	1270
	Height	mm	2395
Noise Level		dB(A)	63
Shipping Weight		Kg	960
Operating weight		Kg	1160

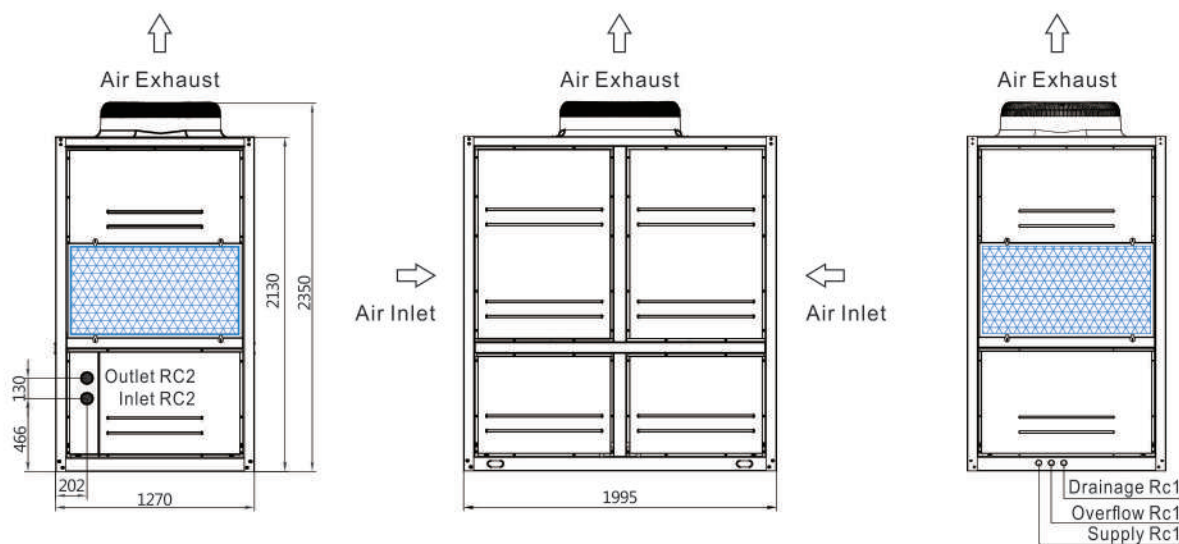
- Notes:
- 1) Rated conditions for cooling operating: temperature of inlet/outlet chilled water: 12 ℃/7 ℃;  
Ambient dry/wet bulb temperature: 35 ℃ / 28 ℃;
- 2) Supply cooling water temperature: 32 ℃;



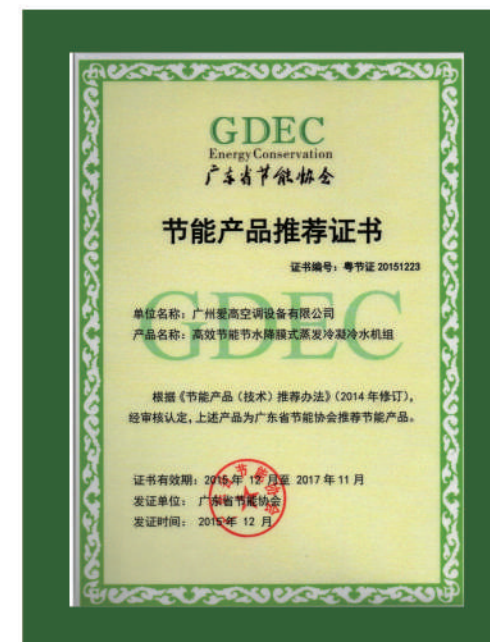
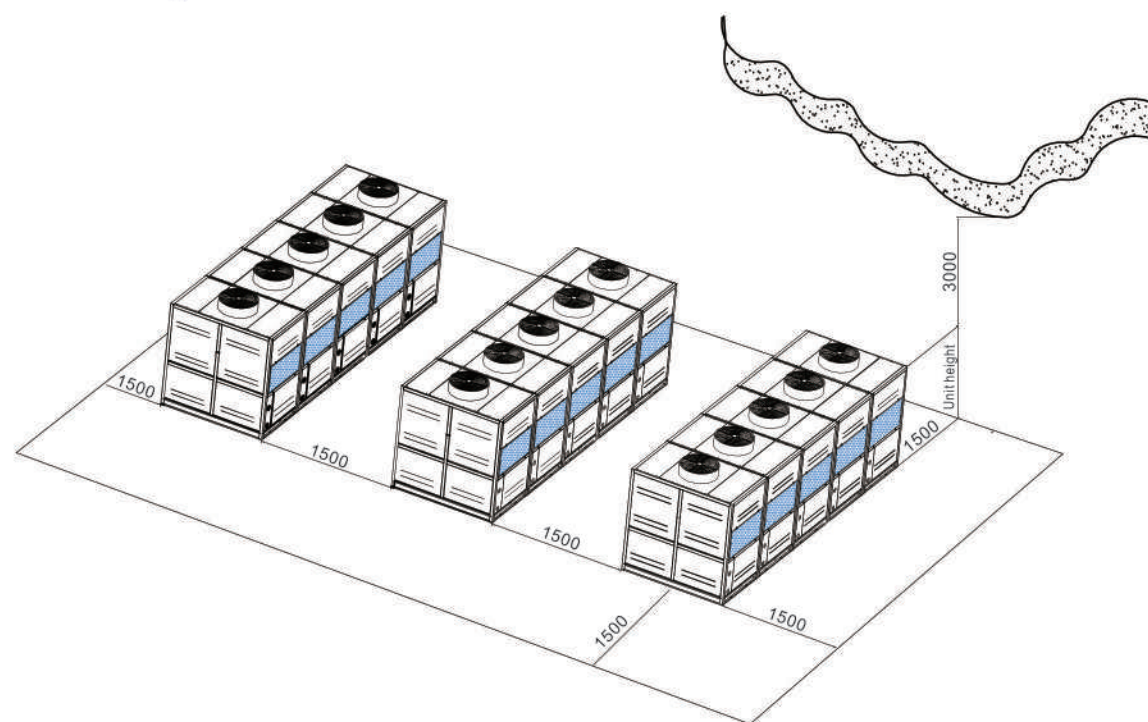
# Dimension

# CERTIFICATE

## ■ Dimension



## ■ Unit Layout

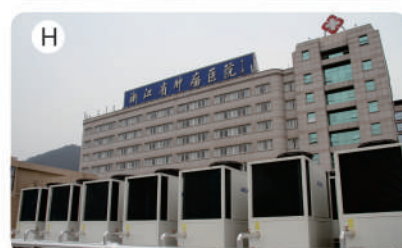
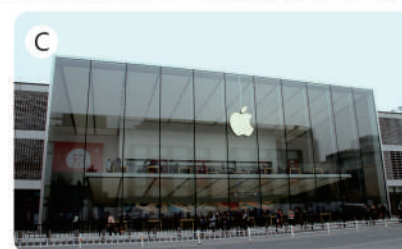




# JOB REFERENCES

## LOCAL PROJECT

- A L'OREAL R&D Center (Shanghai)
- B Subway Station (Hangzhou)
- C Apple Corp Branch (Hangzhou)
- D Hanban Barbecue Shop (Guangzhou)
- E SOGO Department Store (Sanya)
- F Hanban Barbecue Shop (Zengcheng)
- G South China Agricultural University (Guangzhou)
- H Zhejiang Tumor Hospital (Hangzhou)
- I Dongfeng Yueda KIA Factory (Yancheng)
- J TOKAI RIKI CO., LTD. (Foshan)
- K Dongfeng Nissan Passenger Vehicle Co., Ltd. (Guangzhou)
- L Beilun Power Plant (Ningbo)



# JOB REFERENCES

## OVERSEAS PROJECT

- A St. Teresa's Hospital(Hongkong)
- B Tin Shing Shopping Center(Hongkong)
- C Tai Po Unliever Factory(Hongkong)
- D Ho Man Tin Shopping Center(Hongkong)
- E Fu Huang Community Hall(Hongkong)
- F Sau Mao Ping Shopping Center(Hongkong)
- G Lung Cheung Shopping Center(Hongkong)
- H Tai Wo Hau Sport Hall(Hongkong)
- I Fu Shin Shopping Center(Hongkong)
- J Macau Hospital(Macau)
- K INTI College,Subang(Malaysia)
- L Rawang Specialist Hospital(Malaysia)
- M Hospital Port Dickson (Malaysia)

