SAMJUNG

SAMJUNG TECH

: Think Innovation

Absorption Chiller for Egypt

고효율기자재

특허취득

품질경쟁력 우수기업 선정서

Certificate of Excellent Quality Competitiveness Enterprise

Competitiveness and achievements

Challenging to the 21st century with the core technology

Samjung Tech has reinforced human resources, information infrastructures and technical development capacity since established. In addition, it has minimized the business crisis from economic cycles by saving the cost and expanding its market share through a high-quality service. It has successfully attained at shortening the delivery, improving quality of products from combining equipment manufacturing and construction, and spurred on the global strategy for expanding export.

Samjung Tech's competitiveness

Building up reliability with customers

Succeeding to manpower and the technology from Samsung Heavy Industries, we have maintained the good reputation as a reliable company.

Innovative technology

We acquired lots of intellectual properties by developing innovative technology and preoccupied the market prior to other competitors.

Synergy from combining manufacturing and construction

It has been a leading company shortening the time limit for delivery, improving quality of products, and saving the cost from combining equipment manufacturing and construction.

Outstanding human resources and organization

Most of the employees have job experience for a long time. We take absolutely advantageous position over accumulated technology, know-how, skillfulness, and organization.

Samjung Tech
A company with Samsung reliable technology and people

Samjung Tech has been growing and developing into a leading company since it separated from Samsung group in January 2000. On the basis of its abundant experience and high technologies, Samjung Tech has expanded its businesses into the various fields such as refrigeration & air conditioning system, parking system, platform screen doors system, construction, and all kinds of facility construction works.

Samjung Tech comprises headquarters in Seoul, five nationwide branches located in metropolitans, and factories and research institutes established in Gimpo and Changwon, Korea. Through close collaboration of each part, Samjung Tech is willing to satisfy customers.

Also Samjung Tech provides its top-notch products for foreign customers through overseas agents network worldwide.

Refrigeration & air conditioning system of Samjung Tech

Close to customers at all time –
Samjung Tech is at the center of beautiful and convenient life.

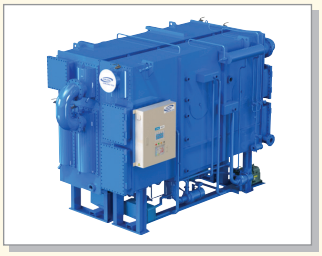
Refrigeration & air conditioning system of Samjung Tech has lead a pure and pleasant green life–culture.

Samjung Tech has directly produced and supplied various equipments such as absorption chiller & heater, air handling unit, heat recovery ventilation system, cooling tower, fan coil unit, EHP, etc.

Especially, absorption chiller & heater has become the best items of the industry because we have supplied about 3,000 units to domestic and foreign countries until now through continuous R&D and stable after–sale service.

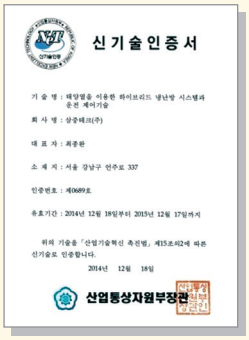
In addition, we were proudly approved our Quality Control System by being awarded the certificate for the quality competitiveness enterprise from MKE.






Hybrid solar energy absorption chiller

Samjung Tech has been approved of the research and development of a new & renewable energy technology from the government and has, as a major company, successfully completed a task of developing hybrid solar energy absorption chiller with 30RT level. Based on this, it has led many projects related to technical development in the solar energy field.


신기술인증서

기 술 명 : 태양열을 이용한 하이브리드 냉난방 시스템의 운전 제어기술
회 사 명 : 삼정테크(주)
대 표 자 : 최종환
소 재 지 : 서울 강남구 언주로 337
인증번호 : 제0669호
유효기간 : 2014년 12월 18일부터 2015년 12월 17일까지

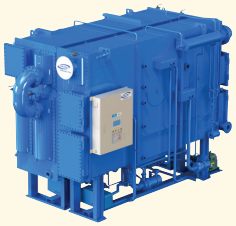
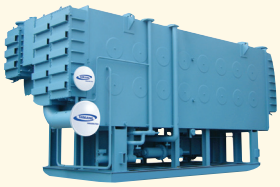
위의 기술을 「산업기술혁신 촉진법」 제15조의2에 따른 신기술로 인증합니다.

2014년 12월 18일

산업통상자원부장관

Certification for a new technology

Products Line-Up

MODEL		Use	Driven Energy	Capacity Range	Characte-ristics	Ref.
Direct Fired Absorption Chiller & Heater ME-Series		Cooling & Heating (Option)	Gas or Oil	50 ~ 1650RT	COP 1.44 (on LHV)	11P
Direct Fired Absorption Chiller & Heater ME2-Series				50 ~ 1650RT	COP 1.51 (on LHV)	
Steam Driven Absorption Chiller		Cooling	Steam	50 ~ 1650RT	Steam Consumption 3.5~ 3.9kg/h.RT @8bar	27P
Single Effect Double Lift Hot Water Driven Absorption Chiller			Hot Water	80 ~ 1000RT	COP 0.64~0.74 Hot Water Temp. 95/55℃	43P
Single Effect Hot Water Driven Absorption Chiller			Hot Water	65 ~ 1000RT	COP 0.72 Hot Water Temp. 95/80℃	51P
※ Rupture Disc Safety Device		■ Protection the body of chiller ■ This Safety Device protect the body of chiller from the accidents that the Electric Safety Devices can not prevent such as tube freezing or poor quality of tubes.				

Direct Fired Double Effect Absorption Chiller & Heater, ME-Series

Based on accumulated technical know-how along with the technical cooperation with Hitachi in the past, Samjung has achieved the high efficiency and most compactness, as well as excellent reliability and simplicity in maintenance by developing next generation Direct Fired Double Effect Absorption Chiller & Heater ME-Series, which are equipped with a highly functional PLC panel and high efficient energy saving technology. This high efficient and energy saving type produces heat source for heating and cooling with excellent capability at low costs. Samjung's absorption chiller and heater has been advanced to the new dimension of chiller and heater and it realizes energy saving as well as cost saving of total air-conditioning system.

Triple TOP Satisfaction

TOP
ENERGY SAVING
Save annual cooling cost to about 23% with new technology

TOP
HIGH RELIABILITY & COMPACTNESS
Attached high reliable PLC panel and achieved the most compactness

TOP
SIMPLE OPERATION & MAINTENANCE
Operate chiller easily and reduce cost and time for maintenance with wide color touchscreen and various function

Major characteristics

The Top energy saving is realized with the newest technology and perfect performance test facilities

1. Applied optimum cycle design technology and two stage Evaporator and Absorber

2. Applied new developed High Efficiency special type tubes to improve the Heat Transfer effects

3. Adopted High Efficient SUS-Plate and welded type Solution Heat Exchanger of SWEP to compact and improve the Heat Transfer effects

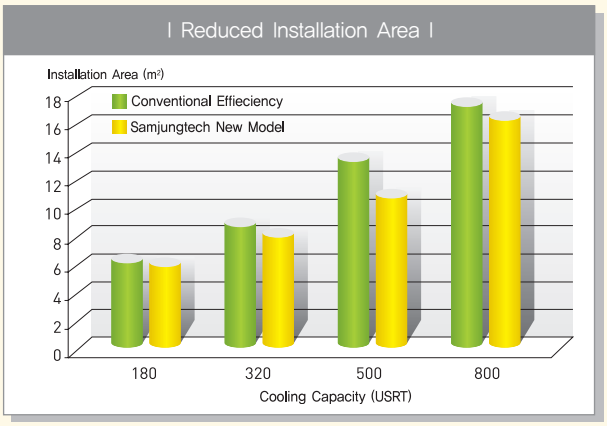
4. Adopted High Efficient SUS-Plate and welded type Condensing Refrigerant Heat Exchanger of SWEP to use the Condensing Waste Heat of Refrigerant

5. Applied optimum combustion technology and Exhaust Gas Heat Exchanger to improve the Heat Transfer effects through the Waste Heat Recovery

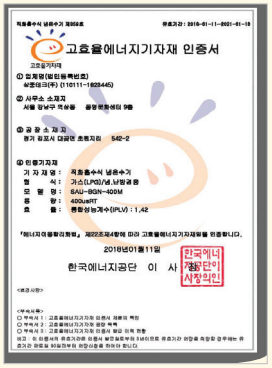
6. Applied intelligent touch screen type PLC Panel (Please see page)

7. Save 23% Running Cost for cooling per year

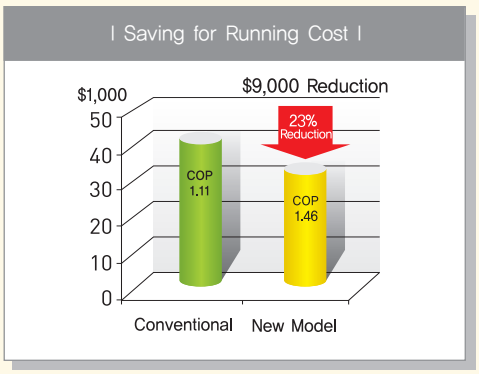
8. World-best level compact size

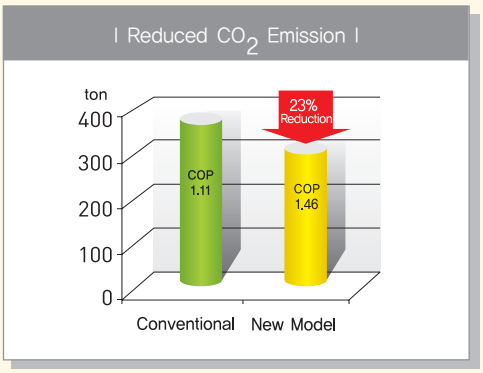


9. Qualified and acquired the Certificate of High Efficiency Chiller of all models by Government Office


고효율에너지기자재 인증서

10. Equipped the perfect Performance Test Facility in factory





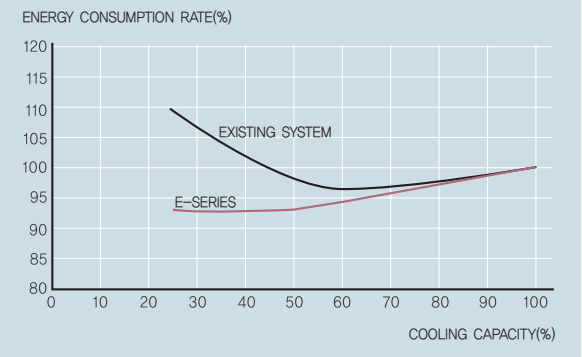
Above graph is based on followings.
1. Cooling capacity 500 usRT 2. 800 hours of cooling operation time per year 3. Korea gas tariff standard

Exquisite control

Highly efficient operation and energy saving is realized with delicate and perfect operating control

1. 10% Increase in Partial Load Characteristic Compared to the Average Load Rate of Existing Model by Control of Whole Solution Circulation Flow Rate

Optimal condition for solution circulation is maintained for the highly efficient operation.



〈Characteristic Comparison for Partial Load〉

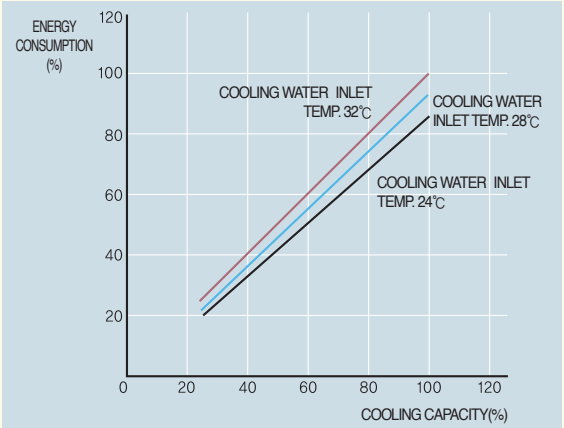
2. Energy Savings through Ideal Control of Dilution Operation Time

Stopping time has shortened compared to the conventional model through dilution operation time calculated by PLC. Also, the whole system's energy is saved by shortened operation time of pump and cooling tower during the dilution operation time.

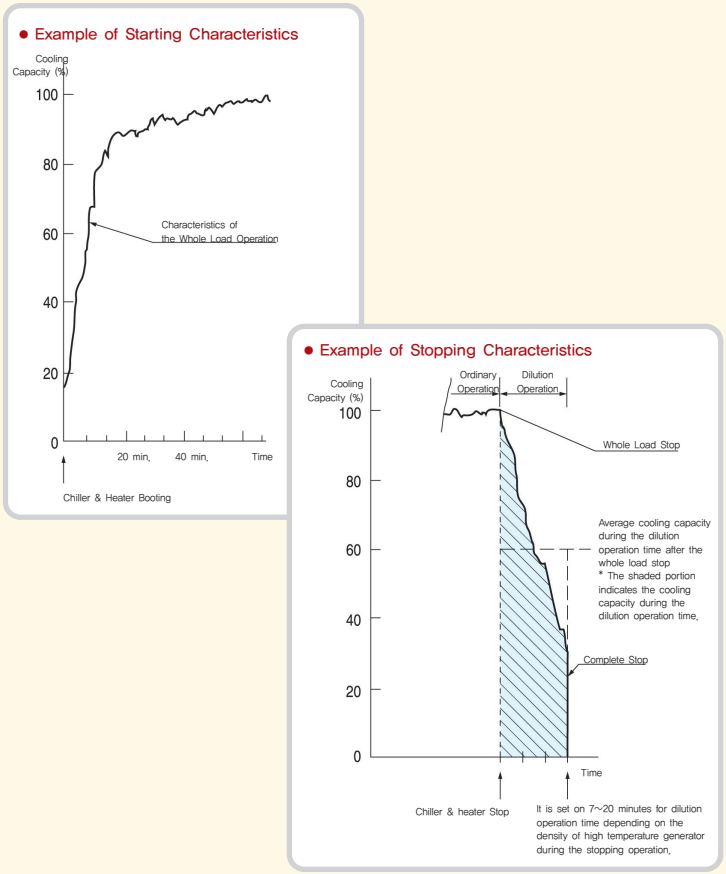
3. Characteristics of the Partial Load

Samjung Absorption Chiller and Heater is advantageous in energy saving not only under normal condition but also under the partial load condition.

The figure below indicates the relationship between cooling capacity (%) and energy consumption (%) at the cooling water's inlet temperature of 32℃, 28℃, 24℃, respectively.

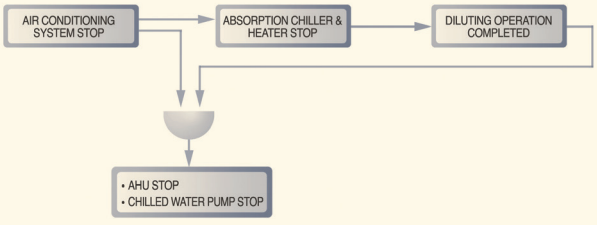


4. Characteristics of Starting and Stopping



5. Caution for stopping the Chiller and Heater

The circulating solution's temperature must be low enough from crystallization, and from the point of stopping to the complete stop by reaching the non crystallization area is known as the dilution operation. During the dilution operation, it is necessary to load the chiller and heater in order to prevent the refrigerant freezing and solution crystallization. Therefore, in case both stop at the same time, it is necessary to configure an interlock operation circuit to have chiller & heater to stop before the air conditioning unit where the air conditioning unit stops even after the completion of dilution operation.



High Efficient – Smart Control Panel

The high efficient touch screen type PLC panel make possible more energy saving, safety control and convenient maintenance of chiller

1. Energy saving and rapid control for the change of load is realized by the more accurate and advanced PID control.

2. High quality color touch screen and highest SIEMENS PLC controller

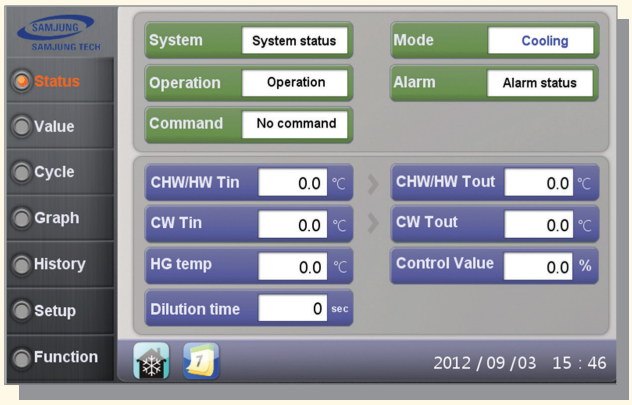
– High resolution level 65,000 color, 7″ wide color touch screen and the high reliable PLC of SIEMENS

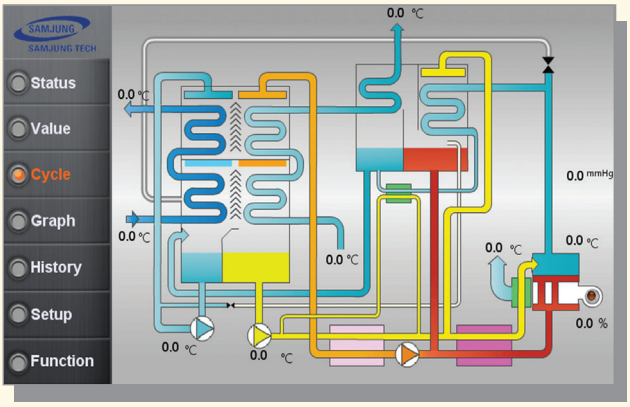
3. Provide all of convenient and advanced functions for operating

– Easily see and check the operating status of important parts and the operating trend of important values in real time at [Status], [Cycle] and [Graph] screen

– Scheduling and remote operating / Operating history / Failure and alarm history / Setup function of the important target values etc.

– Save all data for 5 years and print the operating report with USB memory





4. Various Interface Solution

– The chiller can be interfaced with the BMS (Building Management System)

– The operator can easily control and monitor the chiller with a remote PC and smart phone via RS-485 MODBUS-RTU protocol and VNC (Virtual Network Computing) server as a basis./ MODBUS –TCP/IP and BACnet-IP protocol as a option

5. Safety operation through the pre-alarm, preventive maintenance and protection of system

Remote monitoring and operating

Office or home PC

Smart phone

List of preventive protection and detection

- Preventive control of super cooled chilled water
- Limiting load control
- Frequency of purge
- Automatic anti – crystallization
- Abnormal temperature of the cooling water
- Pollution of cooling water tube
- Pollution of HTG tube
- Refrigerant over freezing prevention control

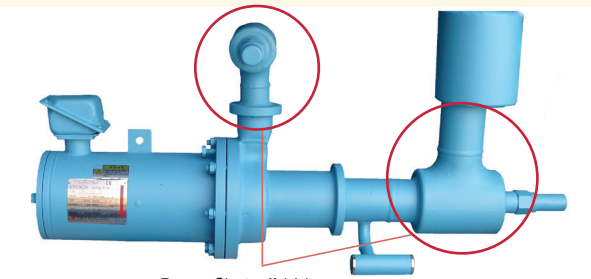
Easy maintenance

1. Water Box with Marine Hatch Type

It is not a low-cost bolt fastening structure in which piping connected to water pipe must be separated and the entire water box must be removed during pipe cleaning. By applying the MARINE HATCH structure to the entire water box, it is possible to open the cover only for convenient and quick maintenance.

2. Pump Shut off Valve

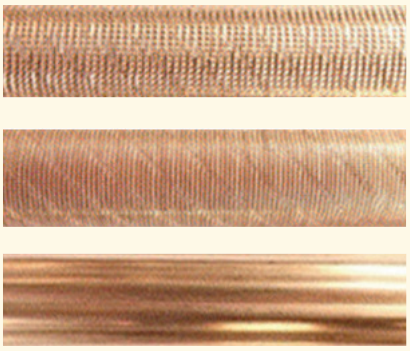
If the shut-off valve is installed at both the front and rear of the pump, there is no loss of any charged fluid and refrigerant in the chiller body when replacing the pump, which can reduce the working time and eventually reduce maintenance costs.



Pump Shut off Valve

3. High Efficient Precisely Manufactured Copper Tube

"Heat transfer tube is composed of a seamless phosphorus deoxidized copper tube, and each tube is reformed and processed to increase heat transfer effects.



4. Other Optional Specification

■ Auto Purging System

When the purge tank pressure reaches the set value, the sensor detects it and automatically operates the valve and operates the vacuum pump to discharge the non-condensed gas to the outside.

■ IP52CLASS Control Panel

Major References

- Samsung Electronics R&D center
- Office Building
- Absorption chiller 1500RT x 3 EA
- December 2004

- Dongnamkwon CES PJT
- Heat Supply Plant
- Absorption chiller 1500RT x 9 EA
- August 2008

- Hyundai Motor Company Jeonju plant
- Car Manufacturing Factory
- Absorption chiller & heater 1000RT X 2SET
- October 2014

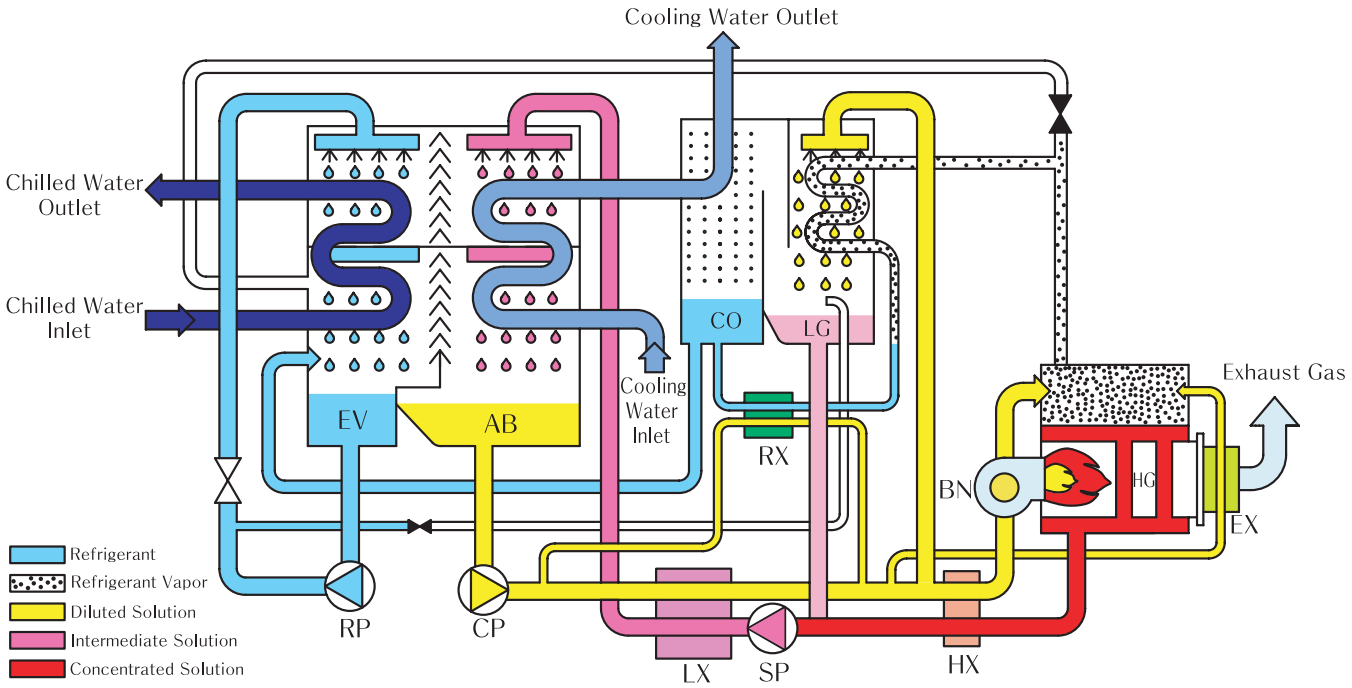
- Dongdaegu Complex Transfer Terminal
- Complex Shopping Mall
- Absorption chiller & heater
  1250RT X 6SET, 700RT X 2SET
- December 2015

M/E/M/O

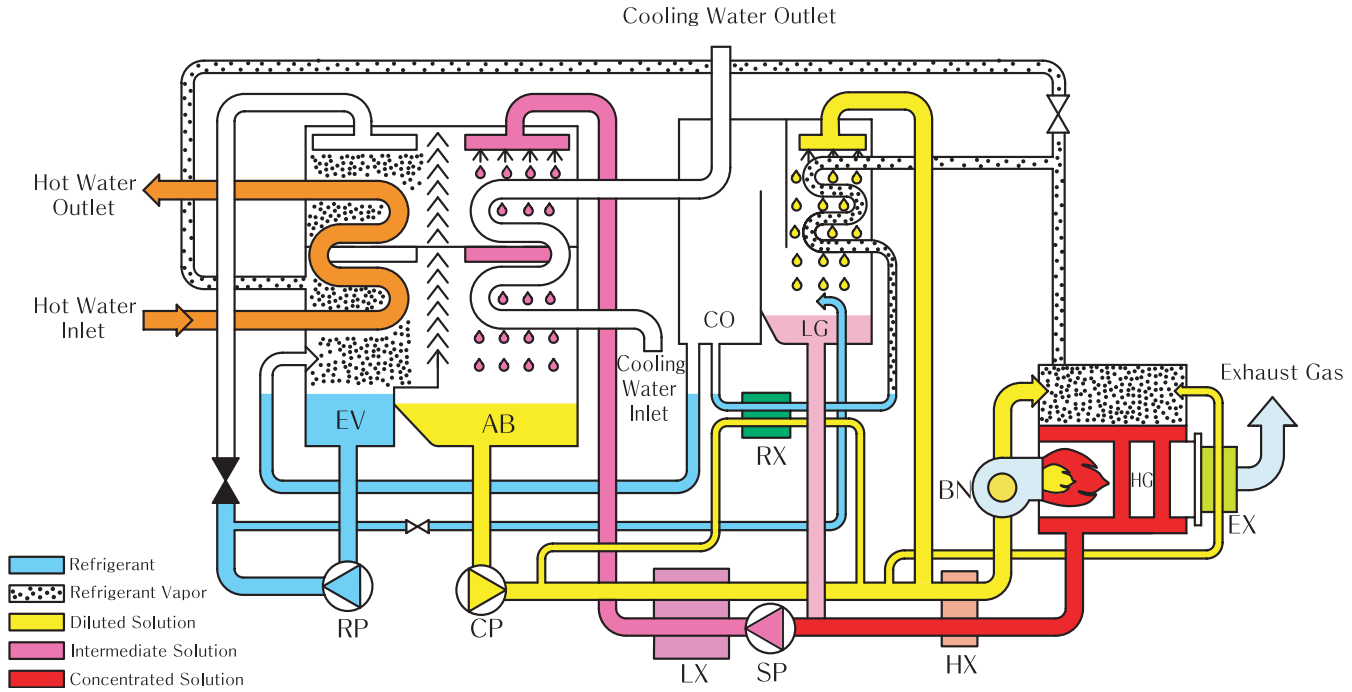
High Efficiency Direct Fired Absorption Chiller & Heater

[Cooling/Heating Cycle]

1. Cooling Cycle

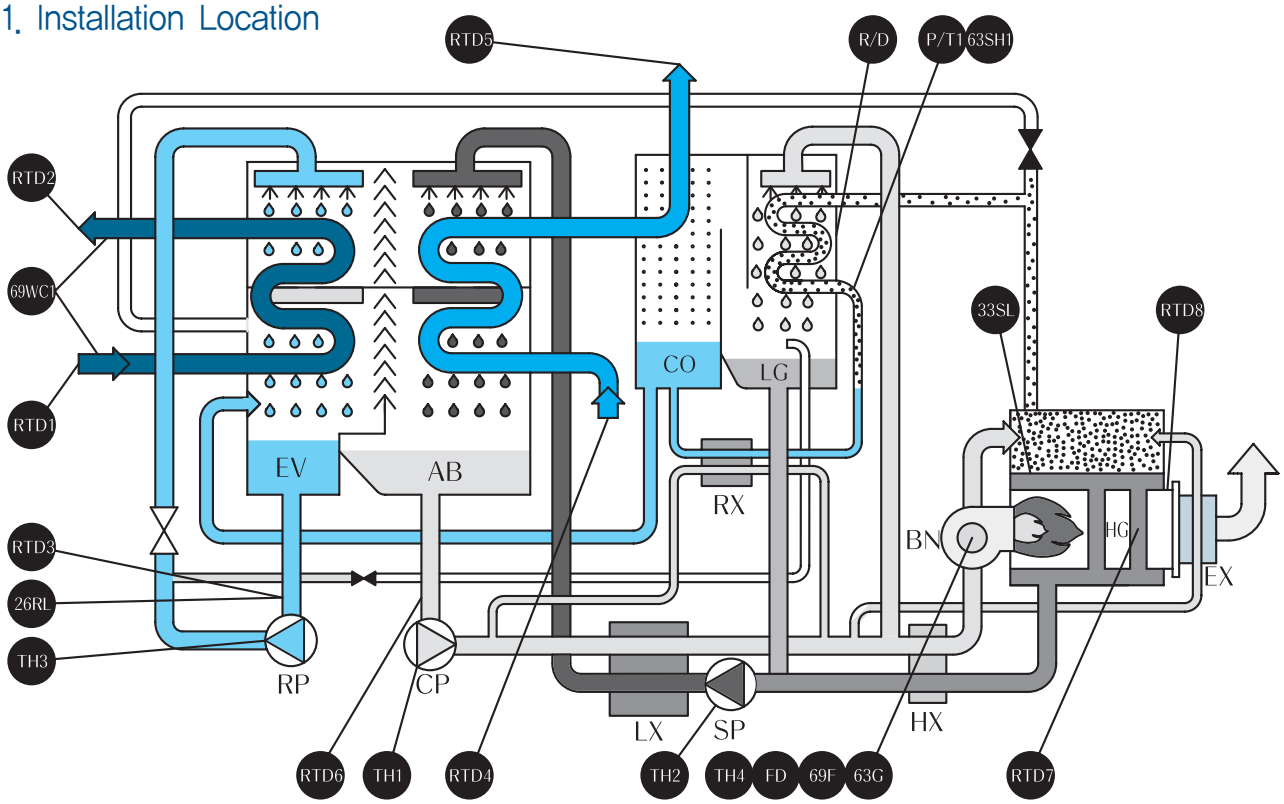


2. Heating Cycle(Option)



[Automatic Sensing & Safety Apparatus]

1. Installation Location



2. Explanation of Control & Protection Unit

Mark	Title	Function
RTD1	Temp Sensor for CHW/HW inlet	· detect each temperature, pressure · control target temperature of CHW/HW · ON–OFF control · control over–cooled of CHW & Ref. of EV · control limit of load · cut pressure of HG · monitor poor heat transfer of HG · monitor poor heat transfer of CW
RTD2	Temp Sensor for CHW/HW outlet	
RTD3	Temp Sensor for Ref. of EV	
RTD4	Temp Sensor for CW inlet	
RTD5	Temp Sensor for CW outlet	
RTD6	Temp Sensor for Sol. of AB	
RTD7	Temp Sensor for Sol. of HG	
RTD8	Temp Sensor for Exhaust Gas to EX	
P/T1	Pressure Sensor for Ref. Vapor of HG	
26RL	Temp Switch for Ref. of EV	prevent over–cooled of Ref. of EV and stop chiller
63SH1	Pressure Switch for Ref. Vapor of HG	prevent over–pressure of HG and stop chiller(with dilution)
33SL	Level Relay for Sol. of HG	monitor low level of Sol. of HG and stop chiller(with dilution)
69WC1	Cut–off Switch for CHW/HW	monitor flow of CHW/HW and stop chiller
TH1	Thermal Relay for CP	monitor over current of CP and stop chiller
TH2	Thermal Relay for SP	monitor over current of SP and stop chiller
TH3	Thermal Relay for RP	monitor over current of RP and stop chiller
TH4	Thermal Relay for BN	monitor over current of BN and stop chiller
FD	Flame Detector	detect flame extinction when igniting and block safety valves
69F	Air Pressure Switch for BN	detect air pressure error of BN fan and stop combustion
63G	Gas Pressure Switch for BN	detect gas pressure error and stop combustion
R/D	Rupture Disk	burst a round thin plate when reach at a set pressure and protect chiller body from a serious damage

SPECIFICATIONS

ME-SERIES(COP 1.44 on LHV)

ITEM(UNIT) \ SACH-G/K/D				50ME	60ME	70ME	80ME	100ME	120ME	130ME	150ME	180ME
REFRIGERATION CAPACITY			USRT	50	60	70	80	100	120	130	150	180
			kW	176	211	246	281	352	422	457	527	633
CHILLED WATER	TEMP.		℃	12 ℃ → 7 ℃								
	FLOW RATE		m³/h	30.2	36.3	42.3	48.4	60.5	72.6	78.6	90.7	108.9
	PRESSURE DROP		mAq	5.9	6.4	5.8	5.8	6.1	6.2	5.6	5.7	5.6
	PIPE CONNECTION SIZE		A	65		80		100				125
	NO. of PASS		EA	EVEN								
COOLING WATER	TEMP.		℃	32 ℃ → 37 ℃								
	FLOW RATE		m³/h	50	60	70	80	100	120	130	150	180
	PRESSURE DROP		mAq	6.4	6.9	7.4	7.4	7.6	7.6	7.9	7.6	5.8
	PIPE CONNECTION SIZE		A	80		100		125				150
	NO. of PASS		EA	EVEN								
ELECTRIC POWER	POWER SUPPLY		–	3Ø 380V 50Hz								
	GAS	ELECTRIC CAPACITY	KVA	8.2				9.4		9.7		11.4
	SOLUTION PUMP		kW/(A)	1.1(4.0)+1.2(4.0)				1.5(5.5)+1.2(4.0)				2.0(6.5)+1.5(5.5)
	REFRIGERANT PUMP			0.2(1.1)						0.3(1.6)		
	VACUUM PUMP			0.75(2.0)								
	BURNER FAN(GAS)		kW/(A)	0.45(1.3)				0.75(1.7)				
FUEL CONSU-MPTION	LNG	COOLING	Nm³/h	11.2	13.4	15.7	17.9	22.4	26.8	29.1	33.6	40.3
		PIPE CONNECTION SIZE	A	25				40				
		GAS PRESSURE	mmAq	200								
DIMENSIO-NS	LENGTH(L)		mm	2,640		2,910		3,168		3,323		4,063
	WIDTH(W)		mm	1,670				1,876		2,041		1,946
	HEIGHT(H)		mm	1,910				2,099				
WEIGHT	SHIPPING WEIGHT		ton	3.8	3.9	4.4	4.5	4.9	5.0	5.5	5.5	6.5
	OPERATION WEIGHT		ton	4.1	4.2	4.8	4.9	5.2	5.3	5.7	5.8	7.1
WATER QUANTITY	CHILLED WATER		ℓ	88	97	108	120	159	181	228	247	250
	COOLING WATER			119	131	146	162	215	246	304	330	337
EXHAUST GAS DUCT SIZE			mm	520x447				600x489				
EXCHANGE SPACE OF TUBE			mm	1,700		2,300				2,500		3,600

1. 1USRT = 3024kcal/h(3.516kW)
2. Fouling factor of chilled water, cooling water, hot water : 0.0001 $m^2h℃/kcal$(0.000086m^2K/W)
3. The maximum working pressure for chilled water, cooling water, hot water : 10 kg/cm^2G(0.98MPaG)
4. The capacity control range for standard specification.(capacity, chilled water, cooling water) : 100 ~ 25%(Gas proportional control)
5. The standard of fuel consumption – GAS(LNG) : Low Heating Value 9,390kcal/Nm^3
6. Pipe connection size of gas can be changed according to the gas pressure of site.
7. The power supply can be applied 3Ø 220V/380V/440V 50Hz also.
8. Heating capacity can be applied on demand.
9. These specification can be changed without notice for technical improvements.

SPECIFICATIONS

ME-SERIES(COP 1.44 on LHV)

ITEM(UNIT) \ SACH-G/K/D				210ME	240ME	280ME	320ME	360ME	400ME	450ME	500ME	560ME
REFRIGERATION CAPACITY			USRT	210	240	280	320	360	400	450	500	560
			kW	738	844	985	1125	1266	1407	1582	1758	1969
CHILLED WATER	TEMP.		℃	12 ℃ → 7 ℃								
	FLOW RATE		m^3/h	127.0	145.2	169.3	193.5	217.7	241.9	272.2	302.4	338.7
	PRESSURE DROP		mAq	5.4	5.8	5.1	5.5	5.3	5.4	5.4	5.4	4.9
	PIPE CONNECTION SIZE		A	125		150				200		
	NO. of PASS		EA	EVEN		ODD						
COOLING WATER	TEMP.		℃	32 ℃ → 37 ℃								
	FLOW RATE		m^3/h	210	240	280	320	360	400	450	500	560
	PRESSURE DROP		mAq	6.1	6.2	6.7	6.8	5.2	5.2	5.3	5.3	5.0
	PIPE CONNECTION SIZE		A	150		200				250		300
	NO. of PASS		EA	EVEN		ODD						
ELECTRIC POWER	POWER SUPPLY		–	3Ø 380V 50Hz								
	GAS	ELECTRIC CAPACITY	KVA	13.3		14.0		16.3		18.6		22.1
	SOLUTION PUMP		kW/(A)	2.4(7.5)+1.5(5.5)		2.4(7.5)+2.0(6.5)		3.4(10.0)+2.0(6.5)		3.7(13.0)+2.2(7.0)		
	REFRIGERANT PUMP			0.3(1.6)				0.4(1.5)				0.8(3.5)
	VACUUM PUMP			0.75(2.0)								
	BURNER FAN(GAS)		kW/(A)	1.5(3.6)				2.2(4.7)				3.7(8.1)
FUEL CONSU-MPTION	LNG	COOLING	Nm^3/h	47.0	53.7	62.6	71.6	80.5	89.5	100.7	111.9	125.3
		PIPE CONNECTION SIZE	A	50		40						
		GAS PRESSURE	mmAq	200		4000						
DIMENSIO-NS	LENGTH(L)		mm	4,063		4,998		5,005		5,392		5,430
	WIDTH(W)		mm	2,020				2,149		2,435		2,530
	HEIGHT(H)		mm	2,147				2,534		2,555		2,643
WEIGHT	SHIPPING WEIGHT		ton	7.3	7.4	8.8	8.9	10.7	10.8	13.1	13.3	15.6
	OPERATION WEIGHT		ton	8.1	8.3	9.7	9.9	11.9	12.0	14.3	14.5	17.6
WATER QUANTITY	CHILLED WATER		ℓ	308	337	388	426	492	537	636	700	821
	COOLING WATER			410	449	516	568	701	762	898	981	1,153
EXHAUST GAS DUCT SIZE			mm	600x489				740x573		818x657		
EXCHANGE SPACE OF TUBE			mm	3,600				4,600				

1. 1USRT = 3024kcal/h(3.516kW)
2. Fouling factor of chilled water, cooling water, hot water : 0.0001 $m^2h℃/kcal$(0.000086m^2K/W)
3. The maximum working pressure for chilled water, cooling water, hot water : 10 kg/cm^2G(0.98MPaG)
4. The capacity control range for standard specification.(capacity, chilled water, cooling water) : 100 ~ 25%(Gas proportional control)
5. The standard of fuel consumption – GAS(LNG) : Low Heating Value 9,390kcal/Nm^3
6. Pipe connection size of gas can be changed according to the gas pressure of site.
7. The power supply can be applied 3Ø 220V/380V/440V 50Hz also.
8. Heating capacity can be applied on demand.
9. These specification can be changed without notice for technical improvements.

SPECIFICATIONS

ME-SERIES(COP 1.44 on LHV)

ITEM(UNIT) \ SACH-G/K/D				630ME	700ME	800ME	900ME	1000ME	1100ME	1250ME	1500ME	1650ME
REFRIGERATION CAPACITY			USRT	630	700	800	900	1000	1100	1250	1500	1650
			kW	2215	2461	2813	3165	3516	3868	4395	5274	5802
CHILLED WATER	TEMP.		℃	12 ℃ → 7 ℃								
	FLOW RATE		m^3/h	381.0	423.4	483.8	544.3	604.8	665.3	756.0	907.2	998
	PRESSURE DROP		mAq	6.9	8.9	8.3	11.0	4.7	4.6	11.4	6.1	7.8
	PIPE CONNECTION SIZE		A	200		250		300			350	
	NO. of PASS		EA	ODD				EVEN		ODD	EVEN	
COOLING WATER	TEMP.		℃	32 ℃ → 37 ℃								
	FLOW RATE		m^3/h	630	700	800	900	1000	1100	1250	1500	1650
	PRESSURE DROP		mAq	6.7	8.8	6.9	9.0	11.8	11.6	9.1	14.2	15.7
	PIPE CONNECTION SIZE		A	300		350			400			450
	NO. of PASS		EA	ODD								
ELECTRIC POWER	POWER SUPPLY		–	3Ø 380V 50Hz								
	GAS	ELECTRIC CAPACITY	KVA	22.1	26.4		32.0	34.8	41.0		47.8	55
	SOLUTION PUMP		kW/(A)	3.7(13.0)+2.2(7.0)	4.5(16.0)+2.2(7.0)		5.5(20.0)+3.0(11.0)		7.5(25.0)+3.7(13.0)		7.5(25.0)+4.5(16.0)	11(30.0)+5.5(20.0)
	REFRIGERANT PUMP			0.8(3.5)			1.5(4.0)		1.8(6.5)		2.2(7.0)	3.0(9.0)
	VACUUM PUMP			0.75(2.0)								
	BURNER FAN(GAS)		kW/(A)	3.7(8.1)	5.5(11.6)			7.5(15.8)			11(22.6)	
FUEL CONSU-MPTION	LNG	COOLING	Nm^3/h	140.9	156.6	179.0	201.3	223.7	246.1	279.6	335.6	369.1
		PIPE CONNECTION SIZE	A	50		65						
		GAS PRESSURE	mmAq	4,000								
DIMENSIO-NS	LENGTH(L)		mm	5,930	6,430	6,310	6,785	7,285	7,500	6,968	7,709	8,240
	WIDTH(W)		mm	2,530		2,760			2,912	3,390		3,410
	HEIGHT(H)		mm	2,643		2,875			3,085	3,599		3,710
WEIGHT	SHIPPING WEIGHT		ton	17.3	19.2	21.3	23.7	26.0	28.7	33.5	37.9	41.2
	OPERATION WEIGHT		ton	19.8	22.0	24.9	28.0	31.1	34.8	40.3	46.0	51.0
WATER QUANTITY	CHILLED WATER		ℓ	903	985	1,157	1,289	1,387	1,553	1,796	2,029	2,200
	COOLING WATER			1,268	1,382	1,719	1,916	2,061	2,294	2,785	3,174	3,454
EXHAUST GAS DUCT SIZE			mm	818x657		970x783			1200x946			
EXCHANGE SPACE OF TUBE			mm	5,100	5,600		6,400	6,900		6,500	7,500	8,000

1. 1USRT = 3024kcal/h(3.516kW)
2. Fouling factor of chilled water, cooling water, hot water : 0.0001 $m^2h℃/kcal(0.000086m^2K/W)$
3. The maximum working pressure for chilled water, cooling water, hot water : 10 $kg/cm^2G(0.98MPaG)$
4. The capacity control range for standard specification.(capacity, chilled water, cooling water) : 100 ~ 25%(Gas proportional control)
5. The standard of fuel consumption – GAS(LNG) : Low Heating Value 9,390kcal/Nm^3
6. Pipe connection size of gas can be changed according to the gas pressure of site.
7. The power supply can be applied 3Ø 220V/380V/440V 50Hz also.
8. Heating capacity can be applied on demand.
9. These specification can be changed without notice for technical improvements.

SPECIFICATIONS

ME2-SERIES(COP 1.51 on LHV)

ITEM(UNIT) \ SACH-G/K/D				50ME2	60ME2	70ME2	80ME2	100ME2	120ME2	130ME2	150ME2	180ME2
REFRIGERATION CAPACITY			USRT	50	60	70	80	100	120	130	150	180
			kW	176	211	246	281	352	422	457	527	633
CHILLED WATER	TEMP.		℃	12 ℃ → 7 ℃								
	FLOW RATE		m^3/h	30.2	36.3	42.3	48.4	60.5	72.6	78.6	90.7	108.9
	PRESSURE DROP		mAq	5.9	6.4	5.8	5.8	6.1	6.2	5.6	5.7	5.6
	PIPE CONNECTION SIZE		A	65		80		100				125
	NO. of PASS		EA	EVEN								
COOLING WATER	TEMP.		℃	32 ℃ → 37 ℃								
	FLOW RATE		m^3/h	50	60	70	80	100	120	130	150	180
	PRESSURE DROP		mAq	6.4	6.9	7.4	7.4	7.6	7.6	7.9	7.6	5.8
	PIPE CONNECTION SIZE		A	80		100		125				150
	NO. of PASS		EA	EVEN								
ELECTRIC POWER	POWER SUPPLY		–	3Ø 380V 50Hz								
	GAS	ELECTRIC CAPACITY	KVA	8.2				9.4		9.7		11.4
	SOLUTION PUMP		kW/(A)	1.1(4.0)+1.2(4.0)				1.5(5.5)+1.2(4.0)				2.0(6.5)+1.5(5.5)
	REFRIGERANT PUMP			0.2(1.1)						0.3(1.6)		
	VACUUM PUMP			0.75(2.0)								
	BURNER FAN(GAS)		kW/(A)	0.45(1.3)				0.75(1.7)				
FUEL CONSU-MPTION	LNG	COOLING	Nm^3/h	10.7	12.8	14.9	17.1	21.3	25.6	27.7	32.0	38.4
		PIPE CONNECTION SIZE	A	25				40				
		GAS PRESSURE	mmAq	200								
DIMENSIO-NS	LENGTH(L)		mm	2,640		2,910		3,168		3,323		4,063
	WIDTH(W)		mm	1,670				1,876		2,041		1,946
	HEIGHT(H)		mm	1,910				2,099				
WEIGHT	SHIPPING WEIGHT		ton	3.8	3.9	4.4	4.5	4.9	5.0	5.5	5.5	6.5
	OPERATION WEIGHT		ton	4.1	4.2	4.8	4.9	5.2	5.3	5.7	5.8	7.1
WATER QUANTITY	CHILLED WATER		ℓ	88	97	108	120	159	181	228	247	250
	COOLING WATER			119	131	146	162	215	246	304	330	337
EXHAUST GAS DUCT SIZE			mm	520x447				600x489				
EXCHANGE SPACE OF TUBE			mm	1,700		2,300				2,500		3,600

1. 1USRT = 3024kcal/h(3.516kW)
2. Fouling factor of chilled water, cooling water, hot water : 0.0001 $m^2h℃/kcal$(0.000086m^2K/W)
3. The maximum working pressure for chilled water, cooling water, hot water : 10 kg/cm^2G(0.98MPaG)
4. The capacity control range for standard specification.(capacity, chilled water, cooling water) : 100 ~ 25%(Gas proportional control)
5. The standard of fuel consumption – GAS(LNG) : Low Heating Value 9,390kcal/Nm^3
6. Pipe connection size of gas can be changed according to the gas pressure of site.
7. The power supply can be applied 3Ø 220V/380V/440V 50Hz also.
8. Heating capacity can be applied on demand.
9. These specification can be changed without notice for technical improvements.

SPECIFICATIONS

ME2-SERIES(COP 1.51 on LHV)

ITEM(UNIT) \ SACH-G/K/D				210ME2	240ME2	280ME2	320ME2	360ME2	400ME2	450ME2	500ME2	560ME2
REFRIGERATION CAPACITY			USRT	210	240	280	320	360	400	450	500	560
			kW	738	844	985	1125	1266	1407	1582	1758	1969
CHILLED WATER	TEMP.		℃	12 ℃ → 7 ℃								
	FLOW RATE		m^3/h	127.0	145.2	169.3	193.5	217.7	241.9	272.2	302.4	338.7
	PRESSURE DROP		mAq	5.4	5.8	5.1	5.5	5.3	5.4	5.4	5.4	4.9
	PIPE CONNECTION SIZE		A	125		150				200		
	NO. of PASS		EA	EVEN		ODD						
COOLING WATER	TEMP.		℃	32 ℃ → 37 ℃								
	FLOW RATE		m^3/h	210	240	280	320	360	400	450	500	560
	PRESSURE DROP		mAq	6.1	6.2	6.7	6.8	5.2	5.2	5.3	5.3	5.0
	PIPE CONNECTION SIZE		A	150		200				250		300
	NO. of PASS		EA	EVEN		ODD						
ELECTRIC POWER	POWER SUPPLY		–	3Ø 380V 50Hz								
	GAS	ELECTRIC CAPACITY	KVA	13.3		14.0		16.3		18.6		22.1
	SOLUTION PUMP		kW/(A)	2.4(7.5)+1.5(5.5)		2.4(7.5)+2.0(6.5)		3.4(10.0)+2.0(6.5)		3.7(13.0)+2.2(7.0)		
	REFRIGERANT PUMP			0.3(1.6)				0.4(1.5)				0.8(3.5)
	VACUUM PUMP			0.75(2.0)								
	BURNER FAN(GAS)		kW/(A)	1.5(3.6)				2.2(4.7)				3.7(8.1)
FUEL CONSU-MPTION	LNG	COOLING	Nm^3/h	44.8	51.2	59.7	68.3	76.8	85.3	96.0	106.7	119.4
		PIPE CONNECTION SIZE	A	50		40						
		GAS PRESSURE	mmAq	200		4000						
DIMENSIO-NS	LENGTH(L)		mm	4,063		4,998		5,005		5,392		5,430
	WIDTH(W)		mm	2,020				2,149		2,435		2,530
	HEIGHT(H)		mm	2,147				2,534		2,555		2,643
WEIGHT	SHIPPING WEIGHT		ton	7.3	7.4	8.8	8.9	10.7	10.8	13.1	13.3	15.6
	OPERATION WEIGHT		ton	8.1	8.3	9.7	9.9	11.9	12.0	14.3	14.5	17.6
WATER QUANTITY	CHILLED WATER		ℓ	308	337	388	426	492	537	636	700	821
	COOLING WATER			410	449	516	568	701	762	898	981	1,153
EXHAUST GAS DUCT SIZE			mm	600x489				740x573		818x657		
EXCHANGE SPACE OF TUBE			mm	3,600				4,600				

1. 1USRT = 3024kcal/h(3.516kW)
2. Fouling factor of chilled water, cooling water, hot water : 0.0001 $m^2h℃/kcal(0.000086m^2K/W)$
3. The maximum working pressure for chilled water, cooling water, hot water : 10 $kg/cm^2G(0.98MPaG)$
4. The capacity control range for standard specification.(capacity, chilled water, cooling water) : 100 ~ 25%(Gas proportional control)
5. The standard of fuel consumption – GAS(LNG) : Low Heating Value 9,390kcal/Nm^3
6. Pipe connection size of gas can be changed according to the gas pressure of site.
7. The power supply can be applied 3Ø 220V/380V/440V 50Hz also.
8. Heating capacity can be applied on demand.
9. These specification can be changed without notice for technical improvements.

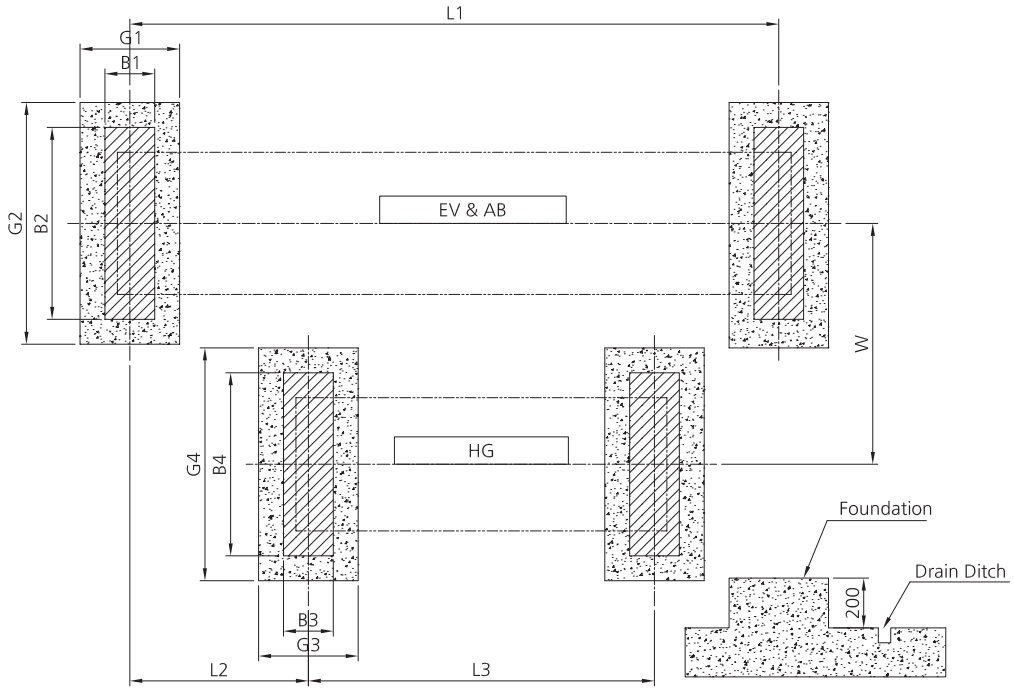
SPECIFICATIONS

ME2-SERIES(COP 1.51 on LHV)

ITEM(UNIT) \ SACH-G/K/D				630ME2	700ME2	800ME2	900ME2	1000ME2	1100ME2	1250ME2	1500ME2	1650ME2
REFRIGERATION CAPACITY			USRT	630	700	800	900	1000	1100	1250	1500	1650
			kW	2215	2461	2813	3165	3516	3868	4395	5274	5802
CHILLED WATER	TEMP.		℃	12 ℃ → 7 ℃								
	FLOW RATE		m^3/h	381.0	423.4	483.8	544.3	604.8	665.3	756.0	907.2	998
	PRESSURE DROP		mAq	6.9	8.9	8.3	11.0	4.7	4.6	11.4	6.1	7.8
	PIPE CONNECTION SIZE		A	200		250		300			350	
	NO. of PASS		EA	ODD				EVEN		ODD	EVEN	
COOLING WATER	TEMP.		℃	32 ℃ → 37 ℃								
	FLOW RATE		m^3/h	630	700	800	900	1000	1100	1250	1500	1650
	PRESSURE DROP		mAq	6.7	8.8	6.9	9.0	11.8	11.6	9.1	14.2	15.7
	PIPE CONNECTION SIZE		A	300		350			400			450
	NO. of PASS		EA	ODD								
ELECTRIC POWER	POWER SUPPLY		–	3Ø 380V 50Hz								
	GAS	ELECTRIC CAPACITY	KVA	22.1	26.4		32.0	34.8	41.0		47.8	55
	SOLUTION PUMP		kW/(A)	3.7(13.0)+2.2(7.0)	4.5(16.0)+2.2(7.0)		5.5(20.0)+3.0(11.0)		7.5(25.0)+3.7(13.0)		7.5(25.0)+4.5(16.0)	11(30.0)+5.5(20.0)
	REFRIGERANT PUMP			0.8(3.5)			1.5(4.0)		1.8(6.5)		2.2(7.0)	3.0(9.0)
	VACUUM PUMP			0.75(2.0)								
	BURNER FAN(GAS)		kW/(A)	3.7(8.1)	5.5(11.6)			7.5(15.8)			11(22.6)	
FUEL CONSU-MPTION	LNG	COOLING	Nm^3/h	134.9	149.3	170.6	192.0	213.3	234.6	266.6	320	351.9
		PIPE CONNECTION SIZE	A	50		65						
		GAS PRESSURE	mmAq	4,000								
DIMENSIO-NS	LENGTH(L)		mm	5,930	6,430	6,310	6,785	7,285	7,500	6,968	7,709	8,240
	WIDTH(W)		mm	2,530		2,760			2,912	3,390		3,410
	HEIGHT(H)		mm	2,643		2,875			3,085	3,599		3,710
WEIGHT	SHIPPING WEIGHT		ton	17.3	19.2	21.3	23.7	26.0	28.7	33.5	37.9	41.2
	OPERATION WEIGHT		ton	19.8	22.0	24.9	28.0	31.1	34.8	40.3	46.0	51.0
WATER QUANTITY	CHILLED WATER		ℓ	903	985	1,157	1,289	1,387	1,553	1,796	2,029	2,200
	COOLING WATER			1,268	1,382	1,719	1,916	2,061	2,294	2,785	3,174	3,454
EXHAUST GAS DUCT SIZE			mm	818x657		970x783			1200x946			
EXCHANGE SPACE OF TUBE			mm	5,100	5,600		6,400	6,900		6,500	7,500	

1. 1USRT = 3024kcal/h(3.516kW)
2. Fouling factor of chilled water, cooling water, hot water : 0.0001 $m^2h℃/kcal(0.000086m^2K/W)$
3. The maximum working pressure for chilled water, cooling water, hot water : 10 $kg/cm^2G(0.98MPaG)$
4. The capacity control range for standard specification.(capacity, chilled water, cooling water) : 100 ~ 25%(Gas proportional control)
5. The standard of fuel consumption – GAS(LNG) : Low Heating Value 9,390kcal/Nm^3
6. Pipe connection size of gas can be changed according to the gas pressure of site.
7. The power supply can be applied 3Ø 220V/380V/440V 50Hz also.
8. Heating capacity can be applied on demand.
9. These specification can be changed without notice for technical improvements.

[Foundation]



(unit : mm)

Model	G1	G2	G3	G4	B1	B2	B3	B4	L1	L2	L3	W
50ME	300	912	350	826	100	712	150	626	1460	630	700	877
60ME												
70ME	400	912	400	826	200	712	200	626	1538	474	1026	877
80ME												
100ME		936		906		736		706		512		973
120ME												
130ME		1072				872			1580	533	1047	1033
150ME												
180ME		952		912		752		712	2370	979	1276	976
210ME		1072		920		872		720		665	1705	1040
240ME												
280ME									3300	1267	1913	
320ME												
360ME	450	1077	450	1040	250	877	250	840	3440	1067	2245	1114
400ME												
450ME		1237		1166		1037		966		1117	2195	1257
500ME												
560ME		1317				1117				417	2563	1315
630ME									3940	917	2761	
700ME									4440	1219	2959	
800ME	550	1317	550	1322	350	1117	350	1122	3870	1300	2700	1428
900ME									4370		3000	
1000ME									4870		3400	
1100ME		1357				1157						1448
1250ME		1466		1566		1266		1366	4370	1411	3600	1585
1500ME									5370		3959	
1650ME									5870		4260	

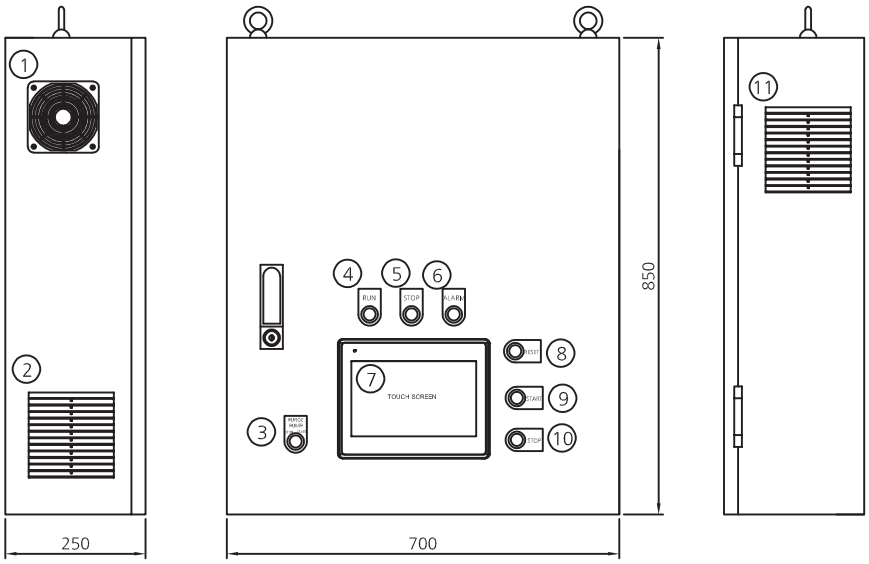
NOTE

1. Smooth the concrete foundation surface and the horizontal level must become below 1/500.
2. The horizontal level of chiller installed must become below 1/1000.
3. (▨) symbol indicates [BASE LEG] of chiller.
4. Make a drainage ditch around the chiller.

[Control Panel & Wiring]

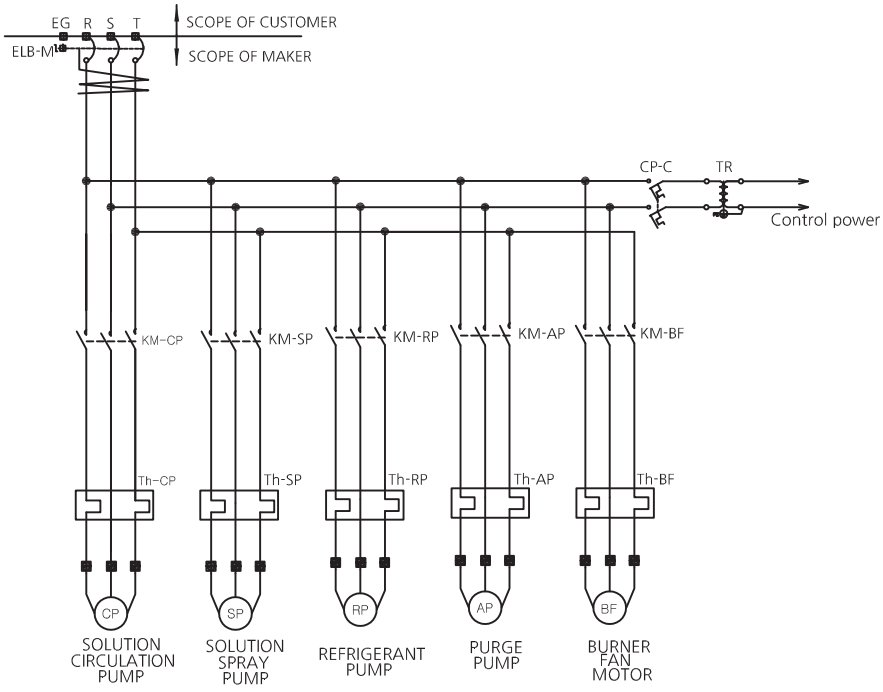
Outline

No.	Description
1	Buzzer
2	Air filter
3	Purge start/stop switch
4	Run state lamp
5	Stop state lamp
6	Alarm state lamp
7	Touch screen
8	Reset switch
9	Start switch
10	Stop switch
11	Cooling fan

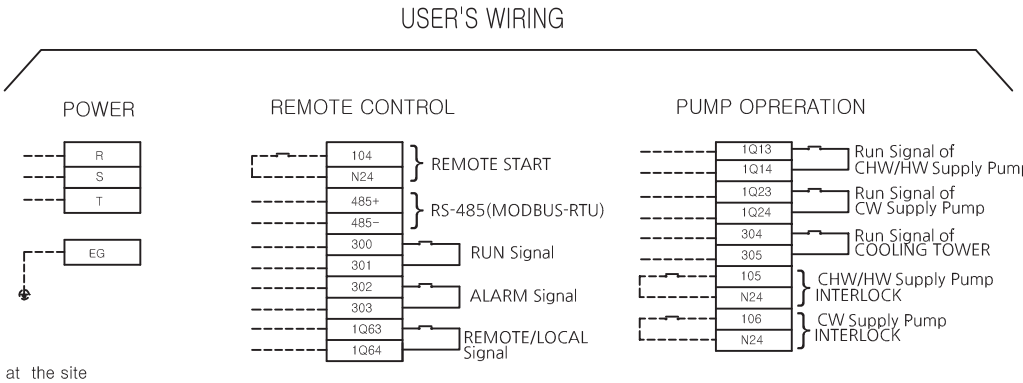


Power line

SYMBOL	Description
ELB-M	Main Circuit Breaker
KM-CP	Solution Circulation Pump M/C
KM-SP	Solution Spray Pump M/C
KM-RP	Refrigerant Pump M/C
KM-AP	Purge Pump M/C
KM-BF	Burner Fan M/C
Th-CP	Solution Circulation Pump OCR
Th-SP	Solution Spray Pump OCR
Th-RP	Refrigerant Pump OCR
Th-AP	Purge Pump OCR
Th-BF	Burner Fan OCR
CP-C	Control circuit protect
TR	Transformer



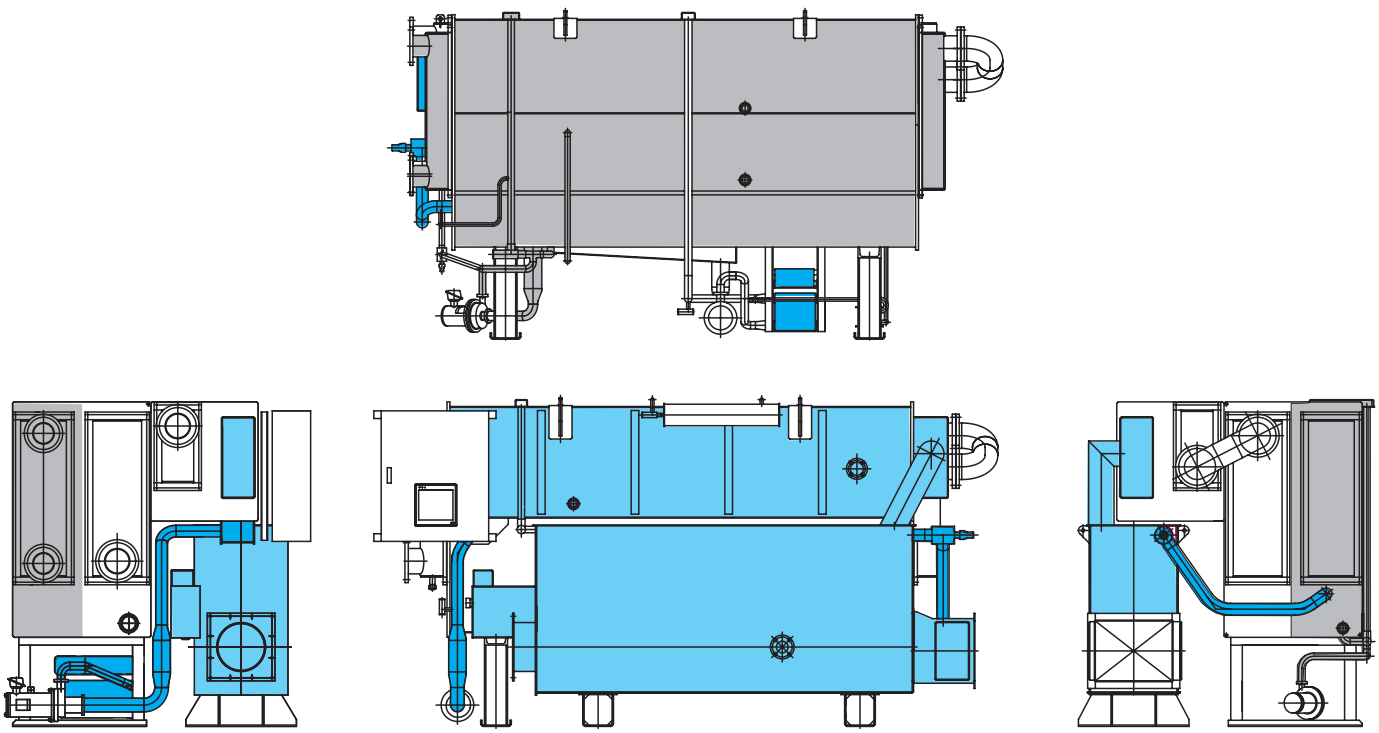
Wiring



Note

---- is field wiring at the site after completion of chiller installation

[Thermal Insulation]



	Mark	Material	Thickness	Finishing Material	Note
Hot Surface		GLASS WOOL	50mm	Galvanized Plate 0.5t	HG, LG
		Foam Rubber	19/10mm	–	HX, steam pipe
Cold Surface		Foam Rubber	19/10mm	–	EV, ref.pipes

※ Color : SKY BLUE (3.4PB 3.6/8.2)

■ Cold Surface and Hot Surface

SACH-G/K/D	50ME,60ME	70ME,80ME	100ME,120ME	130ME,150ME	180ME	210ME,240ME	280ME,320ME	360ME,400ME	450ME,500ME
Cold Surface(㎡)	5	5	6	6	8	9	10	12	16
Hot Surface(㎡)	9	10	12	13	14	16	17	21	24
SACH-G/K/D	560ME	630ME	700ME	800ME	900ME	1000ME	1100ME	1250ME	1500ME	1650ME
Cold Surface(㎡)	18	18	19	21	23	24	26	27	31	36
Hot Surface(㎡)	27	28	29	33	35	38	41	43	49	54

NOTE

1. Use only noncombustible material.
2. Valve control part, sight glass, thermometer gauge, thermowell, pressure gauge and pump motors are not insulated.
3. For insulation area for each model, please refer to the picture below.
4. Part that requires a insulation, please refer to the picture above.
5. The water box sections should be worked to be disassembled for the repair.
6. Please install an insulating materials by using adhesive, mending and etc.
7. Total insulation area includes piping.

[Chimney Size]

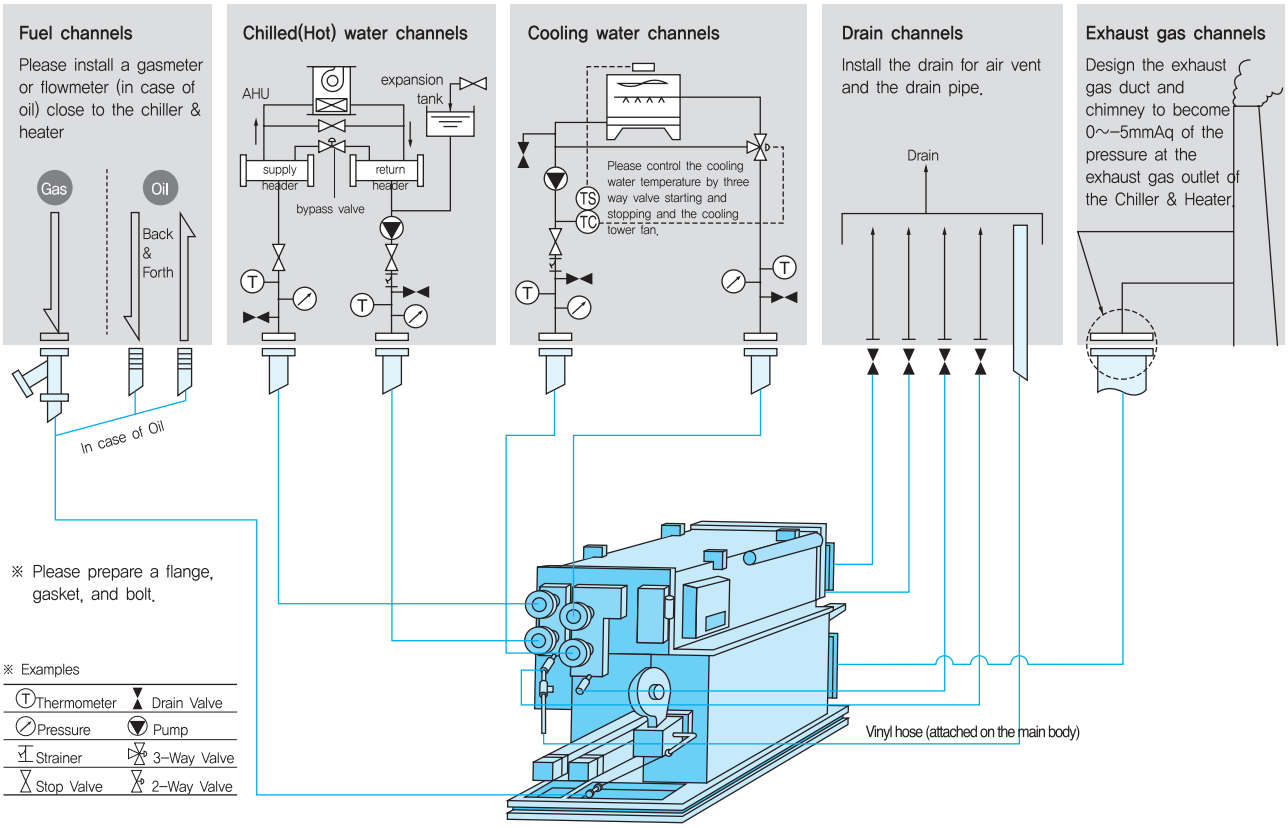
Model	Cooling GasCon. rate(Nm^3/h)	Cross-Section Area(m^2)			Square Duct(mm x mm)			Round Duct(mm)		
		4m/s	5m/s	6m/s	4m/s	5m/s	6m/s	4m/s	5m/s	6m/s
50ME	11.2	0.017	0.014	0.011	130	116	106	147	131	120
60ME	13.4	0.020	0.016	0.014	142	127	116	161	144	131
70ME	15.7	0.024	0.019	0.016	154	138	126	174	155	142
80ME	17.9	0.027	0.022	0.018	164	147	134	185	166	151
100ME	22.4	0.034	0.027	0.023	184	164	150	207	185	169
120ME	26.8	0.041	0.032	0.027	201	180	164	227	203	185
130ME	29.1	0.044	0.035	0.029	210	187	171	236	211	193
150ME	33.6	0.051	0.041	0.034	225	201	184	254	227	207
180ME	40.3	0.061	0.049	0.041	247	221	201	278	249	227
210ME	47.0	0.071	0.057	0.047	266	238	217	301	269	245
240ME	53.7	0.081	0.065	0.054	285	255	232	321	287	262
280ME	62.6	0.095	0.076	0.063	308	275	251	347	310	283
320ME	71.6	0.108	0.086	0.072	329	294	268	371	332	303
360ME	80.5	0.122	0.097	0.081	349	312	285	393	352	321
400ME	89.5	0.135	0.108	0.090	368	329	300	415	371	339
450ME	100.7	0.152	0.122	0.101	390	349	318	440	393	359
500ME	111.9	0.169	0.135	0.113	411	368	336	464	415	379
560ME	125.3	0.189	0.151	0.126	435	389	355	491	439	401
630ME	140.9	0.213	0.170	0.142	461	413	377	521	466	425
700ME	156.6	0.236	0.189	0.158	486	435	397	549	491	448
800ME	179.0	0.270	0.216	0.180	520	465	424	587	525	479
900ME	201.3	0.304	0.243	0.203	551	493	450	622	556	508
1000ME	223.7	0.338	0.270	0.225	581	520	475	656	587	535
1100ME	246.1	0.372	0.297	0.248	610	545	498	688	615	562
1250ME	279.6	0.422	0.338	0.281	650	581	531	733	656	599
1500ME	335.6	0.507	0.405	0.338	712	637	581	803	718	656
1650ME	369.1	0.557	0.446	0.372	747	668	610	842	753	688

NOTE

1. Above table apply to [standard ME-TYPE] high efficiency direct fired absorption chiller & heater.
2. The standard of gas consumption – LNG : Low Heating Value 9,390kcal/Nm^3(43.5MJ/Nm^3)
3. Recommended velocity for exhaust gas in chimney : 4m/s ~ 6m/s
4. Above data is counted by following preconditions.
   - duct length 50m
   - excess air factor 1:2
   - average temperature of duct 157.5℃
5. Therefore constructor must count exact chimney size again according to on-site conditions.

[Piping Plan]

1. Piping Work



2. Attention for the execution of piping work for chilled(hot) water and cooling water

Water piping should be installed as shown in the picture.

Please refer to approval drawing of our company for the directions for water inlet/outlet. It may vary depending on the capacity size.

Make sure chiller & heater does not get the pressure over 10kg/cm²G (Please consult our company in case the pressure is over 10kg/cm²G).

Please install the drain valve at the lowest point between the valve and chiller & heater.

Please install the air vent valve higher than the chiller & heater.

Please install the thermometer and pressure gauge as shown in the picture.

Please install the expansion tank as shown in the picture in case of chilled(hot) water channels do not open.

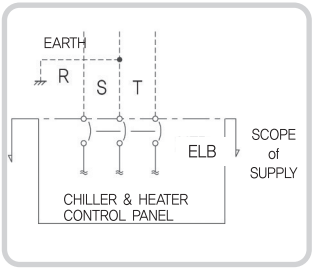
Please install the cooling tower where the exhaust gas from the chimney does not reach. Otherwise it may cause the corrosion by having the contaminated materials from the exhaust gas to the cooling water.

Please install 20MESH strainer. Too much contaminated materials in the chilled water channel may cause the freezing of chilled water in the tube and blockage of cooling water channel may cause too much pressure during operation and corrode the tube.

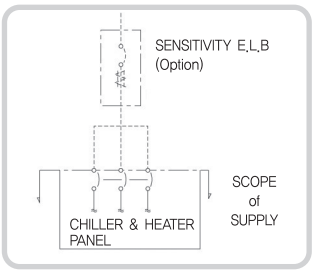
Please secure water supply source for cleaning the tube.

3. Power Supply for Chiller & Heater

Power supply for the chiller & Heater is designed for three phase/three wire as the standard. Please refer to the picture for the supplying method.



• In case of three phase/three wire, S wire should be earthed.



• In case of power supply of three phase/four wire, and S wire cannot be earthed, please install high sensitivity Earth Leakage Breaker operating under 50mA in order to prevent malfunction of combustion apparatus.

[Supply Scope(Standard)]

Division	Description	Scope
Chiller Assembly	1) 2–stage Evaporator, 2–stage Absorber, Condenser, Low temp. Generator, High temp. Generator	Vendor
	2) Low/high temp. Sol. Heat Exchanger, Condensated Ref. Heat Exchanger, Exhaust Gas Heat Exchanger	
	3) Sol. Circulation Pump, Sol. Spray Pump, Ref. Spray Pump, Purge Pump	
	4) Burner	
	5) Control Panel – Panel unit – Lamps(Operation, Stop, Alarm), Button(Reset, Operation, Stop), Touch Screen – Circuit Brakers, Relays, PLC controller	
	6) Purge device – Purge storage tank, Ejector, Oil trap, Manometer, Piping and manual valves	
	7) Interconnecting piping and wiring – Refrigerant & Solution Piping for internal mechanical components – Control & Power wiring for internal electrical components	
Initial charge	Absorbent Solution(Lithium Bromide) with inhibitor, Refrigerant(distilled water)	
Painting	Painting for chiller assembly and control panel – Chiller body : Sky Blue (Munsel No. 3.4PB 3.6/8.2) – Control panel : Light Yellow (Munsel No. 5Y 7.0/1.0)	
Insulation	Insulation of cold surface and hot surface for absorption chiller	Option
Test & Inspection	1) Check of external dimensions	Vendor
	2) Hydraulic pressure test for water boxes	
	3) Leak test (Vacuum side)	
	4) Function test for electric circuit and safety device	
Performance Test	Factory test	Option
Installation & wiring work	1. Foundation of chiller	Buyer
	2. Installation of chiller (Only, vendor supply vibration–proof rubber, base plate)	
	3. Piping and wiring connections out of chiller	
	4. Interlock wiring of chilled water pump, cooling water pump	
Start–up operation test	At site with vendor	Option

※ Items to be confirmed when ordering

① Purpose : General air conditioning, Process cooling, etc.

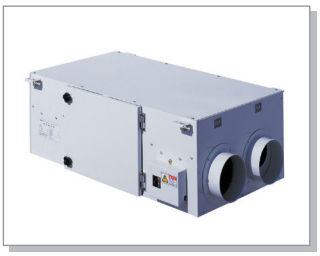
② Specification

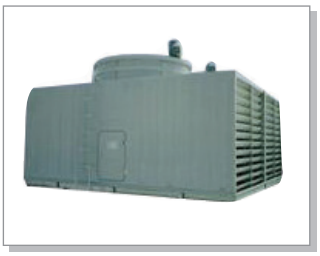
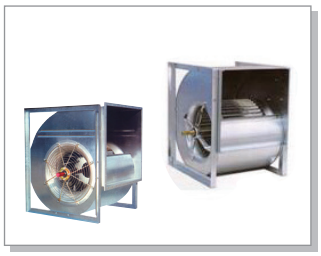
- Cooling/Heating Capacity : usRT, Kw
- Chilled/Cooling/Hot water : inlet/outlet temperature(℃), flowrate(m^3/h)
- Power supply : voltage, frequency
- Fuel : kind, heating value(gas:high, oil:low), supply pressure in case of gas

③ Installation condition : indoor, outdoor, special consideration(ex. Sea water, etc.), having noise or gas(Nox, etc.) emission regulation

④ Operation condition : year–round operating, 24–hour operating

Absorption Chiller


SAMJUNG

SAMJUNG TECH

www.samjungtech.com

History of Samjung Tech Absorption Chiller

Oct.	1991	Enter into a technical partnership with HITACHI in japan
Jun.	1992	Delivered the Absorption chiller & heater #1
Dec.	1999	Separated from SAMSUNG and Established Samjung Tech Co., Ltd.
Jul.	2000	Acquired ISO 9001 certification
Apr.	2004	Exported the Absorption chiller & heater to Iran
Dec.	2004	Delivered 1500RT * 9units, the largest capacity in Korea
Jan.	2007	Acquired the High Efficiency Certification for the Direct Fired Absorption Chiller from Government
Jan.	2007	Assigned a national project for Hybrid chiller development using solar for Government
Sep.	2008	Exported the Absorption chiller & heater to Pakistan
Oct.	2008	Acquired ISO 14001 certification
Sep.	2009	Registered as a New & renewable energy specialized company(MKE)
Dec.	2012	Acquired the NET[New Excellent Technology] certification from Government for the Hybrid chiller
Dec.	2015	Assigned a national project for the Triple Effect Direct Fired Absorption Chiller
Jul.	2016	Acquired High Efficiency Certification for the Single Effect Double Lift Hot water Driven Absorption Chiller
May.	2017	Assigned a national project for the Low Temperature Hot Water Driven Adsorption Chiller
Jun.	2018	Signed an agent contract to supply Direct Fired Absorption Chiller to Egypt ICE Company Co.

Head office

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Egypt office

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